Prepoznavanje specijalnih klasa π-lavirinata automatima

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Uvod

Izučavanje ponašanja automata u lavirintima počinje 50-tih godina, u jednom od radova K. Šenona [10]. Od tog vremena pa do danas na ovu temu je objavljeno stotinjak radova. Formalizovan je model Šenona [6, 7]; za lavirint se razmatrala šahovska tabla – odgovarajuća konfiguracija kvadratića u ravni ili kocki u prostoru, a u slučaju automata – konačni automat koji posmatra okolinu kvadratića na kome se nalazi i može se kretati u jednom od mogućih koordinatnih smjerova. Nametnulo se i pitanje o postojanju automata koji obilazi svaki ravanski lavirint. Na ovo pitanje dobijen je negativan odgovor. L. Budah [4] je konstruisao šahovsku zamku, no dokaz je bio jako glomazan. A. S. Podkolzin [17, 18] je znatno uprostio ovaj dokaz, dok je u radu [14] dat još jednostavniji dokaz na svega nekoliko stranica. Veliki broj rezultata je ukazivao na ograničene mogućnosti automata. No, uporedo se dobijaju primeri klasa lavirinata koje se mogu obići jednim automatom [1, 5, 6, 7, 12]. Dokazano je da se klasa lavirinata koja obuhvata sve ravanske lavirinte koji imaju rupe ograničenog dijametra, mogu obići jednim automatom [11].

Nemogućnost obilaska svih ravanskih lavirinata jednim automatom navela je na jačanje modela automata. Uveden je pojam kolektiva automata. U [8, 9] je dokazano da kolektiv od jednog automata i jednog kamena ne može obići sve konačne ravanske mozaične lavirinte. Kolektiv koji se sastoji od jednog automata i dva kamena, kao i kolektiv od dva automata rješava problem obilaska svih ravanskih lavirinata [2].

U posljednje vrijeme, veliku pažnju privlači ispitivanje mogućnosti automatne analize slika, grafova, formalnih jezika i drugih diskretnih sistema. Osnovni pojmovi i opis zadatka, razmatranog u ovom radu, dati su u prvom poglavlju. Problem razmatran u ovom radu se sastoji u ispitivanju mogućnosti prepoznavanja specijalnih klasa π-lavirinata automatima.

Opis tih klasa je dat u drugom poglavlju. Klase su definisane analitički. Elementi ovih beskonačnih klasa su podskupovi skupa $\mathbf{Z}^2$, koji predstavljaju mozaične lavirinte, tzv. π-lavirinte. *π-lavirint* je svako preslikavanje $c : \mathbf{Z}^2 \to E^2$, ($E^2 = \{1, 0\}$), takvo da je skup $P_c = c^{-1}(\{1\})$ povezan skup. *Rupa* π-lavirinta je proizvoljna komponenta slabe povezanosti skupa $\mathbf{Z}^2 \setminus P_c$. Te klase u geometrijskom smislu predstavljaju cifre.

U trećem poglavlju je pokazano da metrika ima veliki uticaj na mogućnost prepoznavanja lavirinata automatima. Dokazano je da postoji pravougaoni lavirint L za koji ne postoji automat koji prepoznaje inicijalni lavirint L_v, $v \in V(L)$. S druge strane, za proizvoljan mozaični lavirint postoji automat koji ga prepoznaje polazeći iz proizvoljnog čvora tog lavirinta.

U četvrtom poglavlju razmatraju se klase koje predstavljaju brojeve 1, 2, 3, 5, 7, tj. one klase čiji elementi ne sadrže rupu. Konstrukcijom odgovarajućih automata, dokazuje se da postoji automat koji ih prepoznaje.

Za preostale klase π-lavirinta (one koje predstavljaju cifre 0, 4, 6, 8, 9), dokazano je da ne postoji automat koji ih prepoznaje. Ovim rezultatom je ukazano na ograničene mogućnosti automata u prepoznavanju lavirinata. Uvodeći jači model automata, kolektiv

automata, dokazano je da postoji kolektiv tipa (1, 1) (kolektiv koji se sastoji od jednog automata i jednog kamena) koji prepoznaje ove klase.

U posljednjoj glavi je data složenost konstruisanih automata iz četvrtog i petog poglavlja. Kako je teško izvršiti provjeru rada ovih automata, izvršena je programska realizacija konstruisanih automata. Programska realizacija koja "simulira" rad kolektiva automata izvršena je tako da promjenljiva u programu pamti tačku na kojoj je "postavljen" automat kamen. Implementacija je izvršena na programskom jeziku C++.

Treba napomeniti da su svi rezultati dati u disertaciji orginalni. Sve teoreme i leme, formulisane u disertaciji su rezultati autora disertacije.

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I Osnovni pojmovi i opis zadatka

Svi uvedeni pojmovi mogu se naći u [17, 18] kao i u [14, 16, 19].

Neka je $X_{\alpha\,\{\alpha\in I\}}$, indeksirana familija skupova X_α. Tada za svako $\alpha \in I$ sa Πp_α označimo funkciju projekcije proizvoda $\prod_{\alpha\in I} X_\alpha$ na α-ti član proizvoda X_α.

Neka je $L = (V, E)$ povezan orijentisan graf, bez petlji i višestrukih grana, gdje je V-skup čvorova i E-skup orijentisanih grana grafa L. Na dalje ćemo sa L(V) i L(E) označavati skup grana i skup čvorova grafa L.

Graf $L = (V, E)$ je simetričan graf ako zajedno sa orijentisanom granom (v_1,v_2) sadrži i orijentisanu granu (v_2, v_1), $(v_1, v_2) \in E$. Par $< v_1, v_2> = \{(v_2, v_1), (v_1, v_2)\}$ nazivamo granom grafa L.

Neka su Ω i Σ disjunktne azbuke slova ω i σ, pri čemu $\Omega \setminus \Sigma$ sadrži prazan simbol λ. Ako su svim čvorovima i orijentisanim granama grafa $L = (V, E)$ pridružene oznake iz tih azbuka, tako da su različitim orijentisanim granama koje su incidentne istom čvoru pridružene različite oznake, takav označen graf L nazivamo *lavirintom*. Oznake svih $u \in V$ i $\gamma \in E$ označimo, redom, sa $|u|$ i $|\gamma|$. Lavirint L sa izdvojenim čvorovima $v_0, v_1,\ldots, v_n$ nazivamo inicijalnim i označavamo sa $L_{v_0,v_1,\ldots,v_n}$ ili $(L; v_0, v_1,\ldots, v_n)$. Označimo sa $\Theta(\Omega, \Sigma)$ klasu svih lavirin ata sa skupom oznaka čvorova Ω i skupom oznaka grana Σ.

Neka je $E^n=\{e_1, e_2,\ldots, e_n\}$ skup baznih jediničnih vektora n-dimenzionalnog Euklidovog prostora $\mathbf{R}^n$. Sa $\mathbf{E}^n$ označimo skup $\{e_1, e_2,\ldots, e_n, -e_1, -e_2,\ldots, -e_n\}$, gdje $-e_i = e_i^{-1}$, $1 \le i \le n$. U slučaju $n = 2$ umjesto oznaka baznih vektora i, j i vektora –i, -j koristićemo oznake *e*, *n*, *w*, *s*, redom.

Lavirint $L \in \Theta(\Omega, \Sigma)$, koji je simetričan graf, nazivamo *n-dimenzionalnim lavirintom*, $n \ge 2$, ako:

1) $\Sigma = \mathbf{E}^n$ i $\Omega = \{\lambda\}$;

2) za sve $u, v \in V$, ako je $(u, v) \in E(L)$, tada je $|(v, u)| = |(u, v)|^{-1}$.

Neka su $M, N \in \mathbf{R}^n$, $M \ne N$ i $\overline{MN} = \alpha_1 e_1 + \alpha_2 e_2 + \ldots + \alpha_n e_n$. Kažemo da duž $\overline{MN}$ ide u smjeru e_i, ako je $\alpha_i > 0$ i $\alpha_j = 0$, u smjeru $-e_i$ ako je $\alpha_i < 0$ i $\alpha_j = 0$, za sve $i \ne j$, $1 \le i \le n$, $1 \le j \le n$. Skup **T** duži iz $\mathbf{R}^n$ nazivamo *n-konfiguracijom*, ako svake dvije duži iz tog skupa mogu imati ne više od jedne zajedničke tačke, pri čemu, ako ona postoji, tada je ona krajnja tačka obje te duži.

n-dimenzionalni lavirint $L = (V, E)$, gdje je $V \subseteq \mathbf{R}^n$, nazivamo *n-dimenzionalnim pravougaonim lavirintom*, ako:

1) za sve $u, v \in V$ ako je $(u, v) \in E$ tada duž $\overline{uv}$ ide u smjeru $|(u, v)|$;

2) skup duži $\mathbf{T} = \{\overline{uv} \mid (u, v) \in E\}$ jeste n-konfiguracija.

n-dimenzionalni lavirint L, izomorfan nekom n-dimenzionalnom pravougaonom lavirintu, naziva se *kvazipravougaonim*.

Neka je L n-dimenzionalni pravougaoni lavirint. Figura $\overline{L} = \bigcup_{(u,v)\in E(L)} \overline{uv}$ u $\mathbf{R}^n$ nazivamo *realizacijom* n-dimenzionalnog pravougaonog lavirinta.

Neka je $\mathbf{Z}^n$ cjelobrojna rešetka u $\mathbf{R}^n$. Ako je $V \subseteq \mathbf{Z}^n$, tada n-dimenzionalni pravougaoni lavirint L = (V, E) nazivamo *n-dimenzionalni cjelobrojni lavirint* a n-dimenzionalni cjelobrojni lavirint L = (V, E) nazivamo *n-dimenzionalni mozaični lavirint* ako je $\mathbf{T} = \{\overline{uv} \mid (u, v)\in E\}$ – skup duži dužine 1.

Za čvor v n-dimenzionalnog mozaičnog lavirinta L kažemo da je *otvoren* u L, ako postoji beskonačni n-dimenzionalni mozaični lavirint L_1 takav da $\overline{L}\cap\overline{L_1} = \{v\}$ i $v \in V(L_1)$. Ako je čvor v_1 otvoren u L, to n-dimenzionalni mozaični lavirint L_{v_0,v_1} nazivamo *n-dimenzionalnim pravilnim lavirintom*.

Kroz tačke skupa $\mathbf{Z}^n$ povučimo sve prave paralelne koordinatnim osama. Dobijena figura jeste realizacija n-dimenzionalnog pravougaonog lavirinta, koga označimo sa Z^n. Skup čvorova tog lavirinta je skup $\mathbf{Z}^n$. *n-dimenzionalni šahovski lavirint* jeste bilo koji povezani (označeni) podgraf grafa Z^n.

Neka je L = (V, E) 2-dimenzionalni pravougaoni lavirint. Skup $\mathbf{R}^2 \setminus \overline{L}$ je otvoren i u opštem slučaju nepovezan skup. Lavirint L je (r + 1)-*svezan*, ako skup $\mathbf{R}^2 \setminus \overline{L}$ ima r ograničenih komponenti povezanosti. Ako je L = (V, E) 2-dimenzionalni šahovski lavirint i $U_1, U_2, \ldots, U_r$ sve komponente povezanosti skupa $\mathbf{R}^2 \setminus \overline{L}$, tada svaki neprazan podskup D oblika $U_i \cap \mathbf{Z}^2$, nazivamo *rupom* lavirinta L, $1\le i \le r$. Ako je skup D konačan, rupu nazivamo konačnom, a u suprotnom beskonačnom. 2-dimenzionalni šahovski lavirint L nazivamo (r + 1)- *svezanim* ako u njemu postoji tačno r konačnih rupa, $r \in \mathbf{N}$.

Apstraktni konačni automat (od sada, automat) je petorka A = (A, Q, B, φ, ψ), gdje su A, B i Q konačne azbuke, koje se redom nazivaju ulazna azbuka, izlazna azbuka i skup stanja; $\varphi : Q \times A \to Q$ funkcija prelaza i $\psi : Q \times A \to B$ funkcija izlaza. Automat **A** kod kojeg je izdvojeno tzv. početno stanje $q\in Q$ nazivamo inicijalnim automatom i označavamo sa $\mathbf{A}_q$. Neka su A* i B* skupovi svih riječi $a=a(1)a(2)\ldots a(n)$ i $b=b(1)b(2)\ldots b(n)$ nad azbukama A i B, redom. Funkcionisanje automata $\mathbf{A}_q$ je preslikavanje $\mathbf{F}(\mathbf{A}_q) : A^* \to B^*$, definisano rekurentno:

$$\begin{cases} q(1) = q, \\ q(t+1) = \varphi(q(t), a(t)), \\ b(t) = \psi(q(t), a(t)). \end{cases}$$

Predmet našeg izučavanja jeste ponašanje automata u lavirintima. Automat **A** je *dopustiv* za klasu lavirinata $\Theta(\Omega, \Sigma)$ ako se ulazna azbuka sastoji od slova a oblika $(w, \{\sigma_1, \sigma_2, \ldots, \sigma_n\})$, gdje je $w\in\Omega$ i $\{\sigma_1, \sigma_2, \ldots, \sigma_n\}\subseteq\Sigma$, i izlazna azbuka je $\Sigma \cup \{k\}$, $k \notin \Sigma$, i pri tome je uvijek $\psi(q, a) \in \Pi p_2(a) \cup \{k\}$. Klasu svih takvih automata označimo sa $At(\Omega,\Sigma)$.

Neka je $\mathbf{A}_{q_0} \in At(\Omega, \Sigma)$ i $L_{v_0} \in \Theta(\Omega, \Sigma)$. Funkcionisanje automata $\mathbf{A}_{q_0}$ u lavirintu L_{v_0} interpretirajmo na sljedeći način: Automat $\mathbf{A}_{q_0}$ se postavlja na čvor v_0 lavirinta L_{v_0}. Pretpostavimo da se u nekom momentu automat $\mathbf{A}_{q_0}$ nalazi u čvoru v lavirinta L_{v_0} i u stanju q. Kažemo da on posmatra označenu zvijezdu, obrazovanu orijentisanim granama

koje izlaze iz tog čvora. U tom momentu njegovo ulazno slovo je par, obrazovan oznakom čvora i skupom oznaka zvijezde. U sljedećem momentu, ako je $\psi(q, a) \neq k$, tada automat prelazi u čvor , u koji vodi orijentisana garana označena sa $\psi(q, a)$, a ako je $\psi(q, a) = k$, to on ostaje na mjestu, i uvijek prelazi u stanje $\varphi(q, a)$. Na ovaj način automat ostvaruje kretanje po lavirintu. Funkcionisanje automata $\mathbf{A}_{q_0}$ u lavirintu L_{v_0} možemo definisati kao ponašanje automata $\mathbf{A}_{q_0}$ u lavirintu L_{v_0}. Niz parova $\pi\left(\mathbf{A}_{q_0}; L_{v_0}\right) = (q_0, v_0), (q_1, v_1), \ldots$ nazivamo *ponašanjem automata* $\mathbf{A}_{q_0}$ *u lavirintu* L_{v_0}, ako je v_{i+1} čvor lavirinta L_{v_0}, u kojem automat, nalazeći se u stanju q_i, prelazi iz čvora v_i, a q_{i+1}-stanje , u kome pri tom prelazi automat $\mathbf{A}_{q_0}$. Niz $|(v_0, v_1)|, |(v_1, v_2)|, \ldots$ označimo sa $\mathrm{Tr}\left(\mathbf{A}_{q_0}, L_{v_0}\right)$, početak dužine s niza $\mathrm{Tr}\left(\mathbf{A}_{q_0}, L_{v_0}\right)$ sa $\mathrm{Tr}\left(\mathbf{A}_{q_0}, L_{v_0}; s\right)$. Ako za neko $u \in V(L_{v_0})$ postoji $q \in Q_{A_{q_0}}$ tako da par (q, u) pripada $\pi\left(\mathbf{A}_{q_0}; L_{v_0}\right)$, tada kažemo da automat $\mathbf{A}_{q_0}$ obilazi čvor u lavirinta L_{v_0}. Označimo skup svih čvorova, koje obilazi automat $\mathbf{A}_{q_0}$ u lavirintu L_{v_0} sa $\mathrm{Int}\left(\mathbf{A}_{q_0}, L_{v_0}\right)$. Očigledno da $\mathrm{Int}\left(\mathbf{A}_{q_0}, L_{v_0}\right) = \bigcup_{i=1}^{\infty} \{v_i\}$.

Neka je $L_{v_0} \in \Theta(\Omega, \Sigma)$ i $\mathbf{A}_{q_0} \in \mathrm{At}(\Omega, \Sigma)$. Ako je $\mathrm{Int}\left(\mathbf{A}_{q_0}, L_{v_0}\right) = V(L_{v_0})$, tada kažemo da automat $\mathbf{A}_{q_0}$ obilazi lavirint L_{v_0}, a inače da je lavirint L_{v_0} zamka za automat $\mathbf{A}_{q_0}$.

V_1-ponašanjem automata $\mathbf{A}_{q_0}$, $v_0 \in V_1 \subseteq V$, nazivamo podniz $(q_{i_0}, v_{i_0}), (q_{i_1}, v_{i_1}), \ldots$ niza $\pi\left(\mathbf{A}_{q_0}; L_{v_0}\right)$, dobijen iz niza $\pi\left(\mathbf{A}_{q_0}; L_{v_0}\right)$ izbacivanjem svih parova (q_i, v_i), za koje $v_i \notin V_1$. Za sve $V_1 \subseteq V$ definišimo vrijednosti

$\mathrm{st}(\pi, V_1)$, $\mathrm{pl}(\pi, V_1)$, $\mathrm{dr}(\pi, V_1)$, $\mathrm{tm}(\pi, V_1)$

gdje je $\pi = \pi\left(\mathbf{A}_{q_0}; L_{v_0}\right)$, na sljedeći način: Ako postoji t, $t > 0$, takvo da $v_t \in V_1$ i za sve t', $0 < t' < t$, $v_{t'} \notin V_1$, tada

$\mathrm{st}(\pi, V_1) = q_t$, $\mathrm{pl}(\pi, V_1) = v_t$, $\mathrm{dr}(\pi, V_1) = \psi(q_t, [v_t]_L)$, $\mathrm{tm}(\pi, V_1) = t$,

a u suprotnom vrijednosti $\mathrm{st}(\pi, V_1)$, $\mathrm{pl}(\pi, V_1)$, $\mathrm{dr}(\pi, V_1)$, $\mathrm{tm}(\pi, V_1)$ nijesu definisane.

Pored ponašanja automata u lavirintu možemo posmatrati i ponašanje sistema automata u lavirintu. Neka je $L_{v_1,\ldots,v_n} \in \Theta(\Omega, \Sigma)$ i neka je zadat sistem dopustivih automata $S = \left(\mathbf{A}^1_{q_1}, \mathbf{A}^2_{q_2}, \ldots, \mathbf{A}^n_{q_n}\right)$. Ako pod ponašanjem tog sistema u $L_{v_1,\ldots,v_n}$ podrazumjevamo niz ponašanja $\left(\pi\left(\mathbf{A}^1_{q_1}; L_{v_1}\right), \pi\left(\mathbf{A}^2_{q_2}; L_{v_2}\right), \ldots, \pi\left(\mathbf{A}^n_{q_n}; L_{v_n}\right)\right)$, to takav sistem nazivamo *nezavisnim*, a samo ponašanje- *ponašanjem nezavisnog sistema*. Ako za neko i, $1 \leq i \leq n$, $\mathrm{Int}\left(\mathbf{A}^i_{q_i}, L_{v_i}\right) = V$, kažemo da S obilazi $L_{v_1,\ldots,v_n}$, a ako

$\bigcup_{i=1}^{n} \mathrm{Int}\left(\mathbf{A}_{q_i}^{i}, L_{v_i}\right) = V$, kažemo da S S-obilazi $L_{v_1,\ldots,v_n}$; u suprotnom kažemo da je $L_{v_1,\ldots,v_n}$ zamka odnosno S-zamka za nezavisan sistem S.

Posmatrajmo jednu drugu varijantu ponašanja sistema automata S u lavirintu $L_{v_1,\ldots,v_n} \in \Theta(\Omega, \Sigma)$. Zakodirajmo naše automate slovima $u_1, u_2, \ldots, u_n$, smatrajući da u_i uzima vrijednost stanja u kojem se nalazi automat $\mathbf{A}_{q_i}^{i}$ ili λ. Ako se ulazna azbuka automata $\mathbf{A}_{q_i}^{i}$, $1 \le i \le n$, sastoji od simbola a oblika $(w, \{u_1,\ldots,u_{i-1}, u_{i+1},\ldots, u_n), \{\sigma_1, \sigma_2,\ldots, \sigma_m\})$, gdje je $w \in \Omega$ i $\{\sigma_1, \sigma_2,\ldots, \sigma_m\} \subseteq \Sigma$, a izlazna azbuka je skup $\Sigma \cup \{k\}$, $k \notin \Sigma$, i pri tome uvijek $\psi_i(q, a) \in \Pi p_3(a) \cup \{k\}$, $q \in Q_{A_{q_i}^{i}}$, tada sistem S nazivamo *kolektivom*. Funkcionisanje kolektiva $S = \left(\mathbf{A}_{q_1}^{1}, \mathbf{A}_{q_2}^{2}, \ldots, \mathbf{A}_{q_n}^{n}\right)$ u lavirintu $L_{v_1,\ldots,v_n}$ možemo interpretirati njegovim ponašanjem u lavirintu $L_{v_1,\ldots,v_n}$ na sljedeći način. Automat $\mathbf{A}_{q_i}^{i}$ se u početnom trenutku nalazi u čvoru v_i, $1 \le i \le n$, lavirinta L. Pretpostavimo da se ~~u nekom momentu~~ t automat $\mathbf{A}_{q_i}^{i}$ nalazi u čvoru v_i^t i u stanju q_i^t. Njegovo ulazno slovo a_i^t u tom momentu jeste trojka, koju čine oznaka čvora, skup kodova svih automata koji se nalaze u čvoru v_i^t, osim samog automata $\mathbf{A}_{q_i}^{i}$, i skupa oznaka zvijezde (koju obrazuju sve orijentisane grane grafa L koje izlaze iz čvora v_i^t). U sljedećem trenutku, ako je $\psi_i(q_i^t, a_i^t) \neq k$, to automat prelazi u čvor u koji vodi orijentisana grana označena sa $\psi_i(q_i^t, a_i^t)$, a ako je $\psi_i(q_i^t, a_i^t) = k$, automat ostaje na mjestu, i automat prelazi u stanje $\varphi_i(q_i^t, a_i^t)$. Na ovaj način automat $\mathbf{A}_{q_i}^{i}$ ostvaruje kretanje po lavirintu, prelazeći neki put. Niz parova $(q_i^0, v_i^0), (q_i^1, v_i^1),\ldots$ nazivamo ponašanjem automata $\mathbf{A}_{q_i}^{i}$ iz kolektiva S u lavitintu $L_{v_1,\ldots,v_n}$, ako $(q_i^0, v_i^0) = (q_i, v_i)$, v_i^{j+1} je čvor u kojem automat $\mathbf{A}_{q_i}^{i}$ prelazi iz čvora v_i^j, nalazeći se u stanju q_i^j, a q_i^{j+1} je novo stanje u koje taj automat prelazi. Tada kažemo, automat $\mathbf{A}_{q_i}^{i}$ obilazi čvorove $v_i^0, v_i^1,\ldots$ i skup ovih čvorova označimo sa $\mathrm{Int}\left(S, L_{v_1,\ldots,v_n}; i\right)$. Niz $\pi\left(S, L_{v_1,\ldots,v_n}\right) = \left(q_1^0,\ldots,q_n^0, v_1^0,\ldots,v_n^0\right), \left(q_1^1,\ldots,q_n^1, v_1^1,\ldots,v_n^1\right),\ldots$, takav da je niz $(q_i^0, v_i^0), (q_i^1, v_i^1),\ldots$ ponašanje automata $\mathbf{A}_{q_i}^{i}$ kolektiva S u lavirintu $L_{v_1,\ldots,v_n}$, nazivamo *ponašanjem kolektiva S u lavirintu* $L_{v_1,\ldots,v_n}$. Neka je $\mathrm{Int}\left(S, L_{v_1,\ldots,v_n}\right) = \bigcup_{i=1}^{n} \mathrm{Int}\left(S, L_{v_1,\ldots,v_n}; i\right)$. Ako je $\mathrm{Int}(S, L_{v_1,\ldots,v_n}) = V$, tada kažemo da kolektiv S obilazi lavirint L; a inače, L je zamka za kolektiv S. Lavirint L je jaka zamka za kolektiv S ako je za sve $v_1,\ldots,v_n \in V(L)$ lavirint $L_{v_1,\ldots,v_n}$ zamka za S. Kolektiv S jako obilazi lavirint L ako za sve $v_1,\ldots,v_n \in V(L)$ kolektiv S obilazi lavirint $L_{v_1,\ldots,v_n}$.

Uočimo neke automate $\mathbf{A}_{q_{i_1}}^{i_1}, \ldots, \mathbf{A}_{q_{i_m}}^{i_m}$, $1 \le i_1 < \ldots < i_m \le n$, kolektiva $S=\left(\mathbf{A}_{q_1}^1, \mathbf{A}_{q_2}^2, \ldots, \mathbf{A}_{q_n}^n\right)$. Automate $\mathbf{A}_{q_{i_1}}^{i_1}, \ldots, \mathbf{A}_{q_{i_m}}^{i_m}$ nazivamo *kamenima u kolektivu S*, ako važe sljedeći uslovi:

a) automat $\mathbf{A}_{q_{i_j}}^{i_j}$, $1 \le j \le m$, ima samo jedno stanje q_{i_j};

b) ako za neki ulaz $a=\left(w,\left\{u_1,\ldots,u_{i_l-1},u_{i_l+1},\ldots,u_n\right\},\left\{\sigma_1,\ldots,\sigma_s\right\}\right)$ automata $\mathbf{A}_{q_{i_l}}^{i_l}$, $1 \le l \le m$, važi $\psi_{i_l}(q_{i_l}, a)=\sigma_k$, $1 \le k \le s$, to postoji $j \ne i_l$, $1 \le j \le n$, $1 \le l \le m$, takav da $u_j \ne \lambda$ i ako je u_j kod stanja q automata $\mathbf{A}_{q_j}^j$ tada je $\psi_j(q, a') = \sigma_k$, gdje je $a'=\left(w,\left\{u_1',\ldots,u_{j-1}',u_{j+1}',\ldots,u_n'\right\},\left\{\sigma_1,\ldots,\sigma_s\right\}\right)$, pri čemu $u_i' = u_i$ za sve $i \ne i_l$, j, $1 \le i \le n$, a u_{i_l}' je kod stanja q_{i_l}.

Kolektiv *S* sa m automata $\mathbf{A}_{q_{i_1}}^{i_1}, \ldots, \mathbf{A}_{q_{i_m}}^{i_m}$, koji su kameni, naziva se *kolektivom iz n-m automata s m kamenova* (*kolektiv tipa* (n-m, m)).

Osnovna problematika ponašanja automata u lavirintima može se grupisati u dvije vrste zadataka, zadatak analize i zadatak sinteze. Zadatak sinteze sastoji se u opisu automata ili kolektiva automata, koji obilaze lavirinte iz zadate klase. Zadatak analize sastoji se u opisu svih lavirinata, ili lavirinata odgovarajućeg tipa, koje obilaze zadati automati. Oba zadatka su izučavana u radovima velikog broja autora [19].

U okviru ovih zadataka razmatraju se i zadaci ispitivanja raznih svojstava lavirinata, a takođe i raspoznavanje svojstava geometrijskih figura.

Poznato je da za svaki automat postoji 2-dimenzionalni konačni lavirint, kojeg on ne može obići [3, 4, 17, 18]. U [14] je pokazano da postoji opšta 2-dimenzionalna zamka za sve automate iz proizvoljnog konačnog skupa automata.

Za n-dimenzionalne lavirinte L_1 i L_2 kažemo da su slabo izomorfni ako postoji bijekcija g: $V(L_1) \to V(L_2)$, takva da $(u, v) \in E(L_1)$ ako i samo ako $(g(u), g(v)) \in E(L_2)$, i pri tome ako je jedan od lavirinata inicijalni lavirint, to je i drugi lavirint inicijalan i pri tome $g(v_0^1) = v_0^2$, gdje je v_0^1 ulaz lavirinta L_1, a v_0^2 ulaz lavirinta L_2. Ako još $|(u, v)|_{L1} = |(u, v)|_{L2}$, za sve $(u, v) \in E(L_1)$, tada kažemo da su lavirinti L_1 i L_2 izomorfni. Mi nećemo razlikovati izomorfne lavirinte i pisaćemo $L_1 = L_2$.

Ukoliko je *v* čvor lavirinta L tada sa $[v]_L$ označimo skup $\{|u| \mid \Pi p_1(u)=v, u \in E(L)\}$. Ako je iz konteksta jasno o kom lavirintu se radi, koristićemo oznaku [*v*].

Pored početnog stanja nekog automata $A_q = (A, Q, B, \varphi, \psi, q)$, možemo izdvojiti i skup *zaključnih* odnosno *finalnih* stanja $Q_F \subseteq Q$. Neka je $Q_F = \{ q_{F_0}, q_{F_1} \}$. Kažemo da automat A_q (kolektiv $S = (A_q, K)$ tipa (1, 1)) *prepoznaje lavirint* L_v ako pri kretanju automata A_q u lavirintu L_v automat prelazi u finalno stanje q_{F_1}, a za lavirint $L'_v \ne L_v$ automat A_q prelazi u finalno stanje q_{F_0}. Neka je **C** klasa inicijalnih lavirinata. Kažemo da automat A_q (kolektiv $S = (A_q, K)$ tipa (1, 1)) *prepoznaje klasu* **C** ako za svaki lavirint

L_v pri kretanju automata A_q u tom lavirintu automat prelazi u finalno stanje q_{F_1} kada je $L_v \in \mathbf{C}$, a ako $L_v \notin \mathbf{C}$ tada automat prelazi u finalno stanje q_{F_0}.

Neka su $a=(a_1, a_2)$ i $b=(b_1, b_2)$ proizvoljni elementi iz $\mathbf{Z}^2$. Kažemo da su a i b (*slabo*) *susjedni*, ako je $(\|a - b\| < 2) \|a - b\| = 1$, $\|a - b\| = [(a_1 - b_1)^2 + (a_2 - b_2)^2]^{1/2}$. Niz tačaka $a = p_0, p_1, ..., p_m = b$ iz $\mathbf{Z}^2$ naziva se (*slab*) *lanac*, koji povezuje tačku a i tačku b, ako su tačke p_{i-1} i p_i (slabo) susjedne za svako $1 \le i \le m$. Skup $V \subseteq \mathbf{Z}^2$ je (*slabo*) *povezan* ako ako za sve a, b ∈ V postoji (slab) lanac iz V koji ih povezuje. *Komponenta* (*slabe*) *povezanosti* skupa V, je svaki maksimalno (slabo) povezan podskup skupa V.

π-lavirint je svako preslikavanje $c : \mathbf{Z}^2 \to E^2$, ($E^2 = \{1, 0\}$), takvo da je skup $P_c = c^{-1}(\{1\})$ povezan skup. Ako je p_0-proizvoljna tačka iz P_c, tada par (c, p_0) nazivamo π-lavirintom s početkom (ulazom) p_0. π-lavirint nazivamo konačnim (beskonačnim), ako je skup P_c konačan (beskonačan). Ubuduće ćemo pod π-lavirintom podrazumjevati konačni π-lavirint. *Rupa* π-lavirinta je proizvoljna komponenta slabe povezanosti skupa $\mathbf{Z}^2 \setminus P_c$.

Neka je c–proizvoljni π-lavirint. Posmatrajmo graf $G_c = (P_c, X_c)$, kod koga je P_c skup čvoriva, X_c skup grana i $\langle p_1, p_2 \rangle \in X_c$ ako i samo ako je čvor p_1 susjedan čvoru p_2, $p_1, p_2 \in P_c$.

Označimo sa $D = \{e, n, w, s\}$.

Neka je $\mathbf{V} = (p_1, p_2, ..., p_{k-1})$ uređen niz različitih nenultih elemenata iz $\mathbf{Z}^2$ i $\mathbf{A} = (A, Q, B, \varphi, \psi, q_0)$ inicijalni automat kod koga je $B = V' \subseteq \{\mathbf{0}, p_1, p_2, ..., p_{k-1}\}$ i $A = (E^2)^k$. Par (**A**, **V**) nazivamo pješakom, a **V**–vidokrugom tog pješaka. Pješak (**A**, **V**) je regularan pješak, ako je funkcija izlaza ψ takva da za proizvoljno $q \in Q$ i $a = (a_1, ..., a_k) = (1, a_2, ..., a_k) \in (E^2)^k$ iz toga što $\psi(q, a) = p_i$, za neko $0 \le i \le k-1$, slijedi da $a_{i+1} = 1$; $p_0 = \mathbf{0}$.

Neka su dati regularan pješak (**A**, **V**) i π-lavirint (c, p_0); $\mathbf{V} = (p_1, p_2, ..., p_{k-1})$, $\mathbf{A} = (A, Q, B, \varphi, \psi, q_0)$. Uređen niz **V** određuje niz $\mathbf{V}(z) = (z, z + p_1, z + p_2, ..., z + p_{k-1})$. Ponašanjem pješaka (**A**, **V**) u π-lavirintu (c, p_0) je niz $\pi(\mathbf{A}, \mathbf{V}; c, p_0)$:

$(z_0, q_0, a_0, b_0), (z_1, q_1, a_1, b_1), ...$

gdje $z_0 = p_0$, $z_{i+1} = z_i + b_i$, $q_{i+1} = \varphi(q_i, a_i)$, $a_i = c[\mathbf{V}(z_i)] = (c(z_i), c(z_i + p_1), ..., c(z + p_{k-1}))$ i $b_i = \psi(q_i, a_i)$. Jasno, ako je pješak (**A**, **V**) regularan, tada je $z_t \in P_c$ za svako t, $t = 0, 1, ...$

Pojmovi obilaska i prepoznavanja π-lavirinata su slični već uvedenim pojmovima. Mi ćemo razmatrati samo regularne pješake za koje je $\mathbf{V} = ((1, -1), (1, 0), (1, 1), (0, -1), (0, 1), (-1, -1), (-1, 0), (-1, 1))$ i $B = D \cup \{\mathbf{0}\}$.

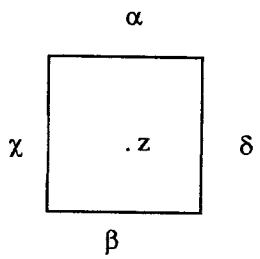
Naš zadatak je opis specijalnih klasa π-lavirinata i ispitivanje mogućnosti sinteze regularnih pješaka ili kolektiva automata, koji će prepoznavati te klase.

Pristupimo definiciji klasa mozaičnih lavirinata čije prepoznavanje jeste naš zadatak.

II Klase

Neka je $P = \{K \subseteq Z^2 | \ K$ povezan skup takav da je $Z^2 \setminus K$ povezan skup, K konačan skup$\}$.

Neka je granica skupa $K \in P$ skup $\partial K = \{z \in K \mid z$ je slabo susjedan bar jednoj tački iz $Z^2 \setminus K\}$. Oko svake tačke $z = (z_1, z_2) \in \partial K$ opišimo kvadrat kv_z čija je dužina stranice 1. Njegove stranice su (slika 1):



slika 1

$$\alpha = \{x = (x_1, x_2) \in \mathbf{R}^2 \mid z_1 - 1/2 \le x_1 \le z_1 + 1/2,\ x_2 = z_2 + 1/2\},$$
$$\beta = \{x = (x_1, x_2) \in \mathbf{R}^2 \mid z_1 - 1/2 \le x_1 \le z_1 + 1/2,\ x_2 = z_2 - 1/2\},$$
$$\chi = \{x = (x_1, x_2) \in \mathbf{R}^2 \mid x_1 = z_1 - 1/2,\ z_2 - 1/2 \le x_2 \le z_2 + 1/2\},$$
$$\delta = \{x = (x_1, x_2) \in \mathbf{R}^2 \mid x_1 = z_1 + 1/2,\ z_2 - 1/2 \le x_2 \le z_2 + 1/2\},$$

Stranica $\alpha, \beta, \chi, \delta$ kvadrata kv_z, $z \in K$, ima svojstvo "biti između tačaka skupa K i skupa $\mathbf{Z}^2 \setminus K$" ako tačke $(z_1, z_2 + 1)$, $(z_1, z_2 - 1)$, $(z_1 - 1, z_2)$, $(z_1 + 1, z_2)$, ne pripadaju skupu K, redom.

Neka je st_z skup stranica kvadrata kv_z koje imaju osoboinu " biti između tačaka skupa K i skupa $\mathbf{Z}^2 \setminus K$". Figura $F_K = \bigcup_{z \in \partial K} st_z$ je pravougli poligon.

Neka je $K \subset \mathbf{Z}^2$ konačan povezan skup. *Najniža najdesnija tačka* (ND) skupa K je tačka $z = (z_1, z_2) \in K$ takva da za sve $a = (a_1, a_2) \in K$, $z_2 < a_2$ ili ako je $z_2 = a_2$ tada je $z_1 > a_1$. *Najniža najlijevija tačka* (NL) skupa K je tačka $z = (z_1, z_2) \in K$ takva da za sve $a = (a_1, a_2) \in K$, $z_2 < a_2$ ili ako je $z_2 = a_2$ tada je $z_1 < a_1$. *Najviša najdesnija tačka* (VD) skupa K je tačka $z = (z_1, z_2) \in K$ takva da za sve $a = (a_1, a_2) \in K$, $z_2 > a_2$ ili ako je $z_2 = a_2$ tada je $z_1 > a_1$. *Najviša najljevija tačka* (VL) skupa K je tačka $z = (z_1, z_2) \in K$ takva da za sve $a = (a_1, a_2) \in K$, $z_2 > a_2$ ili ako je $z_2 = a_2$ tada je $z_1 < a_1$.

Najdesnija najniža tačka (DN) skupa K je tačka $z = (z_1, z_2) \in K$ takva da za sve $a = (a_1, a_2) \in K$, $z_1 > a_1$ ili ako je $z_1 = a_1$ tada je $z_2 < a_2$. *Najljevija najniža tačka* (LN) skupa K je tačka $z = (z_1, z_2) \in K$ takva da za sve $a = (a_1, a_2) \in K$, $z_1 < a_1$ ili ako je $z_1 = a_1$ tada je $z_2 < a_2$.

Neka je $(S)^*$ - skup svih riječi $\alpha = \alpha(1)\alpha(2)...\alpha(k)$, $k \ge 4$, nad azbukom $S = \{-1, 1\}$. Definišimo preslikavanje $f: P \to (S)^*$ na sljedeći način: Neka je $P \in P$. Polazeći od najniže najdesnije tačke poligona F_P i obilazeći ga u pozitivnom smjeru, svakom tjemenu poligona F_P pridružimo -1 ili 1 u zavisnosti od toga da li je ugao kod tog tejemena $-\pi/2$ ili $\pi/2$, redom.

Definišimo sljedeće familije skupova (slika 2):

$$\Phi_1 = \left\{P \in \mathbf{P} \mid \|P\| \geq 2, f(P) = \left(-1(-1,1)^n - 1 - 1(1,-1)^k - 1\right), k,n \geq 0\right\}$$

$$\Phi_2 = \left\{P \in \mathbf{P} \mid \|P\| \geq 2, f(P) = \left(-1(1,-1)^n - 1 - 1(1,-1)^k - 1\right), k,n \geq 0\right\}$$

$$\Phi_3 = \left\{P \in \mathbf{P} \mid \|P\| \geq 2, f(P) = \left(-1(-1,1)^n - 1 - 1(-1,1)^k - 1\right), k,n \geq 0\right\}$$

$$\Phi_4 = \left\{P \in \mathbf{P} \mid \|P\| \geq 2, f(P) = \left(-1(1,-1)^n - 1 - 1(-1,1)^k - 1\right), k,n \geq 0\right\}$$

$$\Phi_5 = \left\{P \in \mathbf{P} \mid \|P\| \geq 2, f(P) = \left(-1 - 1 - 1(1,-1)^k - 1\right), k \geq 0\right\}$$

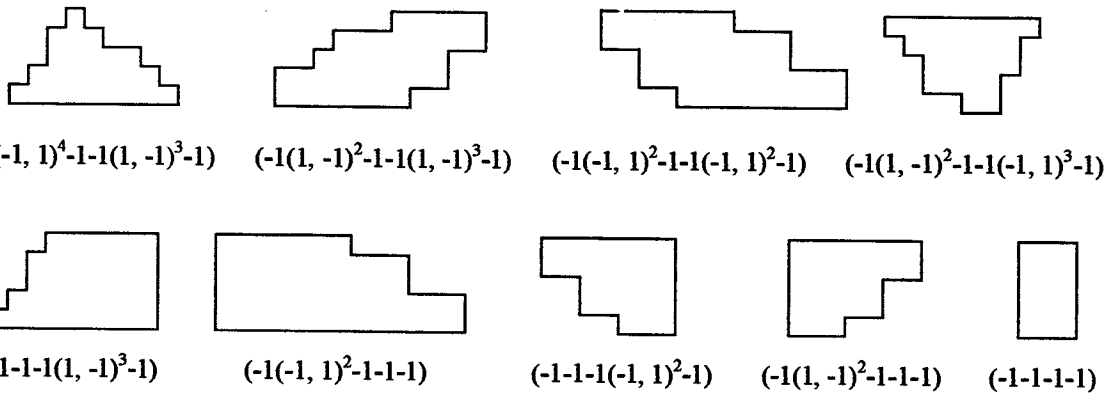
$$\Phi_6 = \left\{P \in \mathbf{P} \mid \|P\| \geq 2, f(P) = \left(-1(-1,1)^k - 1 - 1 - 1\right), k \geq 0\right\}$$

$$\Phi_7 = \left\{P \in \mathbf{P} \mid \|P\| \geq 2, f(P) = \left(-1 - 1 - 1(-1,1)^k - 1\right), k \geq 0\right\}$$

$$\Phi_8 = \left\{P \in \mathbf{P} \mid \|P\| \geq 2, f(P) = \left(-1(1,-1)^k - 1 - 1 - 1\right), k \geq 0\right\}$$

$$\Phi_9 = \left\{P \in \mathbf{P} \mid \|P\| \geq 2, f(P) = \left(-1 - 1 - 1 - 1\right)\right\}$$

gdje je $(a, b)^n = \underbrace{(ab)(ab)\ldots(ab)}_{n}$, $n \in N$.

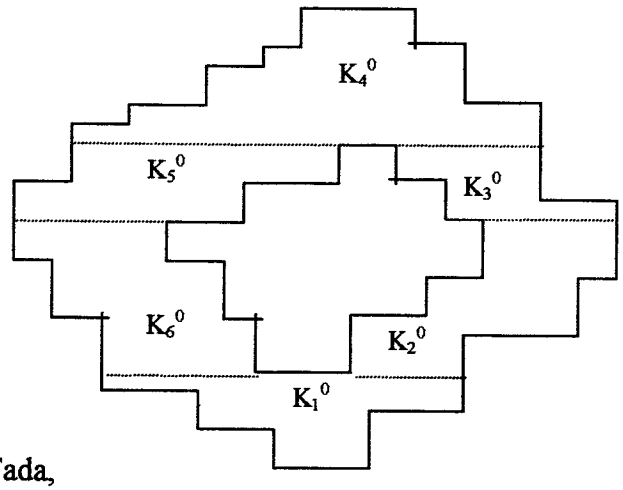


slika 2

Ukoliko su $z_j = (x_j, y_j) \in \mathbf{Z}^2$, $j = 1, 2, 3, 4$, takvi da $y_2 = y_3$ i $y_1 = y_4$ tada označimo sa $A_{\Phi_i}^{z_1,z_2,z_3,z_4} = \{K \in \Phi_i \mid z_1, z_2, z_3, z_4$ ND, VD, VL, NL tačka skupa K, redom$\}$, $i \in \{1, \ldots, 9\}$.

§1 *Klasa C_0*

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,16$ imaju svojstva



0) $\begin{cases} y_9 = y_{16} = y_{11} = y_2, \\ x_9 \le x_{16} < x_{11} - 1, \quad x_{11} \le x_2, \\ y_4 > y_3 > y_2, \\ y_7 = y_{14} = y_{13} = y_4, \\ x_7 \le x_{14} < x_{13} - 1, \quad x_{13} \le x_4, \\ y_7 > y_8 > y_9 \end{cases}$

Tada,

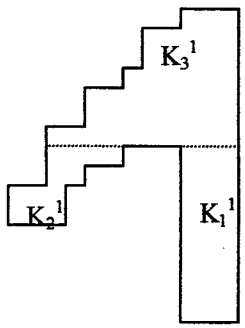
$$K_0^{\{z_i\}_{i=\overline{1,16}}} = \{K \in \mathbf{P} \mid K = K_1^7 \cup K_2^7 \cup K_3^7 \cup K_4^7 \cup K_5^7 \cup K_6^7, K_1^7 \in A_{\Phi_4}^{z_1,z_2,z_9,z_{10}},$$
$$K_2^7 \in A_{\Phi_2}^{z_2,z_3,z_{12},z_{11}}, K_3^7 \in A_{\Phi_3}^{z_3,z_4,z_{13},z_{12}}, K_4^7 \in A_{\Phi_1}^{z_4,z_5,z_6,z_7}, K_5^7 \in A_{\Phi_2}^{z_{15},z_{14},z_7,z_8},$$
$$K_6^7 \in A_{\Phi_3}^{z_{16},z_{15},z_8,z_9},$$
$$(x_1 = x_{10}) \Rightarrow (z_1 + (1,1) \in K_1^7 \wedge z_1 + (-1,1) \in K_1^7),$$
$$(z_3 + (0,1) \notin K_3^7 \wedge z_3 + (0,-1) \notin K_2^7) \Rightarrow (z_3 + (-1,1) \in K_3^7 \vee z_3 + (-1,-1) \in K_2^7),$$
$$(x_5 = x_6) \Rightarrow (z_5 + (1,-1) \in K_4^7 \wedge z_5 + (-1,-1) \in K_4^7),$$
$$(z_8 + (0,1) \notin K_5^7 \wedge z_8 + (0,-1) \notin K_6^7) \Rightarrow (z_8 + (1,1) \in K_5^7 \vee z_8 + (1,-1) \in K_6^7)\}$$

Klasu π - lavirinata $\mathbf{C_0}$ definišemo sa:

$$\mathbf{C_0} = \{c: Z^2 \to E^2 \mid c^{-1}(\{1\}) = K \in K_0^{\{z_i\}_{i=\overline{1,16}}}, z_i \in Z^2,\ i = \overline{1,16},\ \text{zadovoljavaju uslove 0)}\}$$

§2 *Klasa C_1*

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,10$ imaju svojstva



$$1)\begin{cases} y_5 = y_8 = y_9 = y_2, \\ x_5 \le x_8 < x_9 - 1, \\ x_9 \le x_2, \\ y_2 > y_1, \\ y_7 < y_8. \end{cases}$$

Tada,

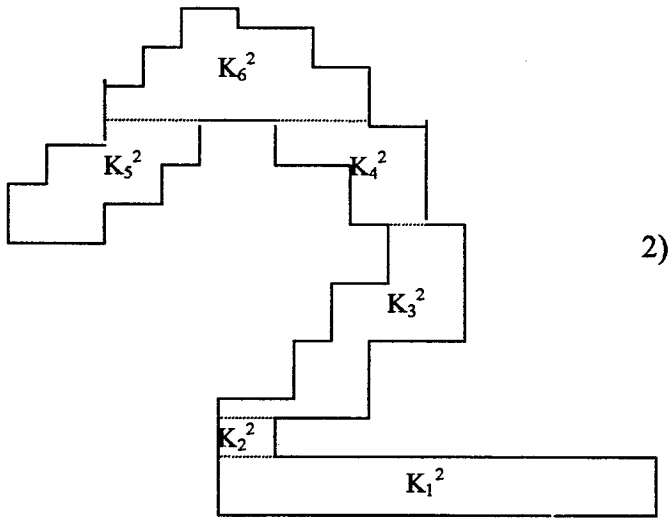
$$\mathbf{K}_1^{\{z_i\}_{i=\overline{1,10}}} = \{K \in \mathbf{P} | K = K_1^1 \cup K_2^1 \cup K_3^1,\quad K_1^1 \in A_{\Phi_9}^{z_1,z_2,z_9,z_{10}}, K_2^1 \in A_{\Phi_2}^{z_2,z_3,z_4,z_5},$$
$$K_3^1 \in A_{\Phi_5}^{z_7,z_8,z_5,z_6}, (x_3 = x_4) \Rightarrow (z = z_3 + (-1,-1) \in K_3^1) \quad \}$$

Klasu π - lavirinata $\mathbf{C}_1$ dafinišimo sa:

$$\mathbf{C}_1 = \left\{ c: Z^2 \to E^2 | c^{-1}(\{1\}) = K \in K_1^{\{z_i\}_{i=\overline{1,10}}}, \{z_i\} \in Z^2 \ i = \overline{1,10}, \text{zadovoljavaju uslove} \quad 1) \right\}$$

§3 *Klasa C_2*

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,17$ imaju svojstva



$$2)\quad \begin{cases} x_{16}\le x_3 < x_2, \quad x_9 \le x_{11} < x_{13}-1, \\ x_{13}\le x_6, \\ y_4 - 1 > y_3, \quad y_5 > y_4, \quad y_6 > y_5, \\ y_{16} = y_3 = y_2, \\ y_9 = y_{11} = y_{13} = y_6 \end{cases}$$

Tada,

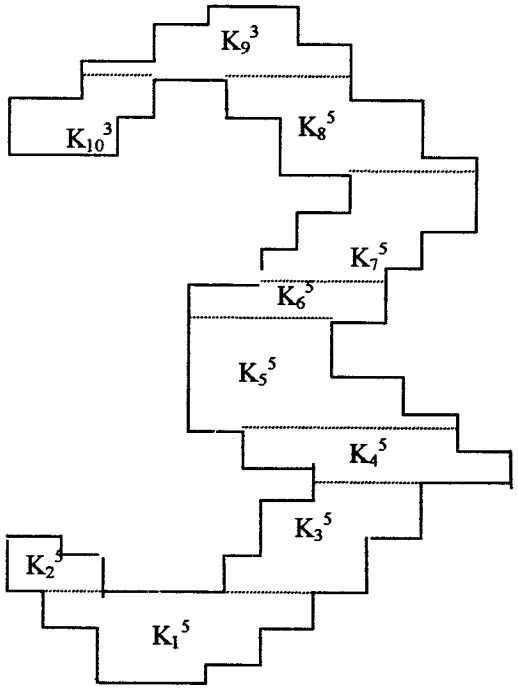
$$K_2^{\{z_i\}_{i=\overline{1,17}}} = \{K\in \mathbf{P} | K = K_1^2\cup K_2^2\cup K_3^2\cup K_4^2\cup K_5^2\cup K_6^2, K_1^2\in A_{\Phi_9}^{z_1,z_2,z_{16},z_{17}},$$
$$K_2^2\in A_{\Phi_9}^{z_3,z_4,z_{15},z_{16}}, K_3^2\in A_{\Phi_2}^{z_4,z_5,z_{14},z_{15}}, K_4^2\in A_{\Phi_3}^{z_5,z_6,z_{13},z_{14}}, K_5^2\in A_{\Phi_5}^{z_{11},z_{12},z_9,z_{10}},$$
$$K_6^2\in A_{\Phi_1}^{z_6,z_7,z_8,z_9},$$
$$\left(z_5+(0,1)\notin K_4^2\wedge z_5+(0,-1)\notin K_3^2\right)\Rightarrow\left(z_5+(-1,-1)\in K_3^2\vee z_5+(-1,1)\in K_4^2\right),$$
$$z_{15}+(0,1)\notin K_3^2,\quad (x_7=x_8)\Rightarrow\left(z_7+(1,-1)\in K_6^2\wedge z_7+(-1,-1)\in K_6^2\right)\quad \}$$

Klasu π - lavirinata C_2 definišimo sa

$$C_2 = \{c: Z^2\to E^2 | c^{-1}(\{1\}) = K\in K_2^{\{z_i\}_{i=\overline{1,17}}},\ z_i\in Z^2,\ i=\overline{1,17},\quad \text{zadovoljavaju uslove 2)}\}$$

§4 *Klasa C_3*

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,26$ imaju svojstva



$$3)\ \begin{cases} y_{22}=y_{22}=y_{21}=y_2, \\ x_{25}\le x_{22}<x_{21}-1,\ x_{21}\le x_2, \\ y_{23}>y_{22},\ \ y_4>y_3>y_2, \\ x_{17}=x_{18}=x_{19}, \\ y_8>y_7>y_6, \\ y_{11}=y_{14}=y_{15}=y_8, \\ x_{11}\le x_{14}<x_{15}-1, x_{15}\le x_8, \\ y_{14}>y_{13} \end{cases}$$

Tada,

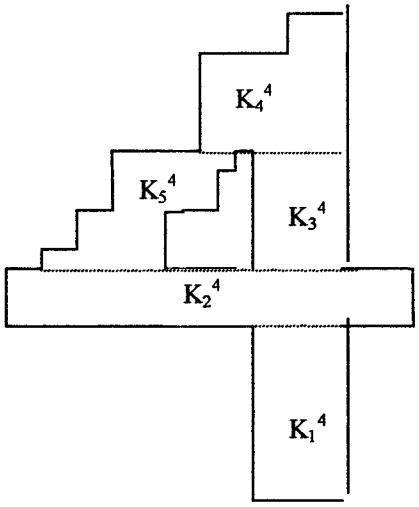
$$\begin{aligned} K_3^{\{z_i\}_{i=\overline{1,26}}} = \{K\in \mathbf{P}\,|\, & K=K_1^3\cup K_2^3\cup K_3^3\cup K_4^3\cup K_5^3\cup K_6^3\cup K_7^3\cup K_8^3\cup K_9^3\cup K_{10}^3, \\ & K_1^3\in A_{\Phi_4}^{z_1,z_2,z_{25},z_{26}}, K_2^3\in A_{\Phi_3}^{z_{22},z_{23},z_{24},z_{25}}, K_3^3\in A_{\Phi_2}^{z_2,z_3,z_{20},z_{21}}, K_4^3\in A_{\Phi_3}^{z_3,z_4,z_{19},z_{20}}, \\ & K_5^3\in A_{\Phi_6}^{z_4,z_5,z_{18},z_{19}}, K_6^3\in A_{\Phi_8}^{z_5,z_6,z_{17},z_{18}}, K_7^3\in A_{\Phi_2}^{z_6,z_7,z_{16},z_{17}}, K_8^3\in A_{\Phi_3}^{z_7,z_8,z_{15},z_{16}}, \\ & K_9^3\in A_{\Phi_1}^{z_8,z_9,z_{10},z_{11}}, K_{10}^3\in A_{\Phi_2}^{z_{11},z_{12},z_{13},z_{14}}, \\ & (x_1=x_{26})\Rightarrow(z_1+(1,1)\in K_1^3\wedge z_1+(-1,1)\in K_1^3), \\ & (x_9=x_{10})\Rightarrow(z_9+(1,-1)\in K_9^3\wedge z_9+(-1,-1)\in K_9^3), \\ & (z_3+(0,1)\notin K_4^3\wedge z_3+(0,-1)\notin K_3^5)\Rightarrow(z_3+(-1,1)\in K_4^5\vee z_3+(-1,-1)\in K_3^5), \\ & (z_3+(0,1)\notin K_4^3\wedge z_3+(0,-1)\notin K_3^3)\Rightarrow(z_3+(-1,1)\in K_4^3\vee z_3+(-1,-1)\in K_3^3), \\ & (z_7+(0,1)\notin K_8^3\wedge z_7+(0,-1)\notin K_7^3)\Rightarrow(z_7+(-1,1)\in K_8^3\vee z_7+(-1,-1)\in K_7^3)\} \end{aligned}$$

Klasu π - lavirinata $\mathbf{C_3}$ definišimo sa

$\mathbf{C_3}=\{c: Z^2\to E^2\,|\,c^{-1}(\{1\})=K\in K_3^{\{z_i\}_{i=\overline{1,26}}}, z_i\in Z^2,\ i=\overline{1,26}$, zadovoljavju uslove 3) $\}$

§5 *Klasa C_4*

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,\ldots,17$ imaju svojstva



4) $$\begin{cases} y_{11}=y_{12}=y_2=y_3, \\ y_{10}=y_{17}=y_{14}=y_5=y_4, \\ y_9=y_{16}=y_{15}=y_6, \\ x_2>x_1, \quad x_{11}<x_{12}-1, \quad x_{12}\le x_2<x_3, \\ x_{10}\le x_{17}<x_{14}-1, \quad x_{14}\le x_5<x_4, \\ x_9\le x_{16}<x_{15}-1, \quad x_{15}\le x_6, \\ y_2>y_1, \quad y_6>y_5+1, \quad y_{16}>y_{17}+1, \\ x_{12}=x_{14}, \quad x_2=x_5 \end{cases}$$

Tada,

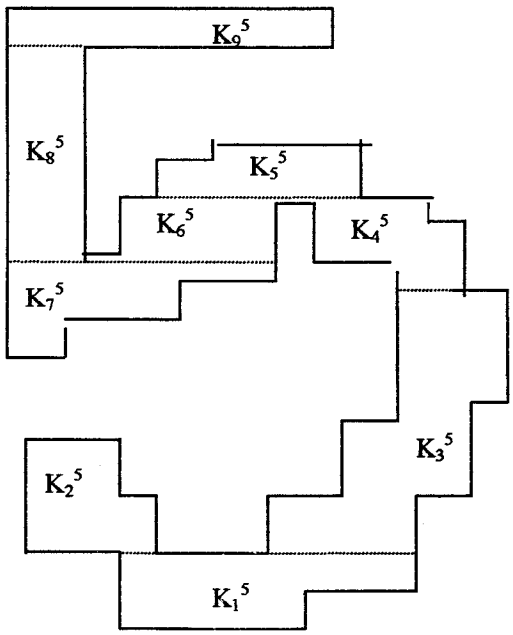
$$\mathbf{K}_4^{\{z_i\}_{i=\overline{1,17}}}=\{\mathbf{K}\in\mathbf{P}|\mathbf{K}=\mathbf{K}_1^4\cup\mathbf{K}_2^4\cup\mathbf{K}_3^4\cup\mathbf{K}_4^4\cup\mathbf{K}_5^4,\mathbf{K}_1^4\in\mathbf{A}_{\Phi_9}^{z_1,z_2,z_{12},z_{13}},\mathbf{K}_2^4\in\mathbf{A}_{\Phi_9}^{z_3,z_4,z_{10},z_{11}},$$
$$\mathbf{K}_3^4\in\mathbf{A}_{\Phi_9}^{z_5,z_6,z_{15},z_{14}},\mathbf{K}_4^4\in\mathbf{A}_{\Phi_5}^{z_6,z_7,z_8,z_9},\mathbf{K}_5^4\in\mathbf{A}_{\Phi_2}^{z_{17},z_{16},z_9,z_{10}},$$
$$(x_7=x_8)\Rightarrow(z_7+(1,-1)\in\mathbf{K}_4^4)\quad\}$$

Klasu π - lavirinata $\mathbf{C}_4$ definišimo sa

$$\mathbf{C}_4=\{c:Z^2\to E^2|c^{-1}(\{1\})=K\in\mathbf{K}_4^{\{z_i\}_{i=\overline{1,17}}},z_i\in Z^2,\ i=\overline{1,17},\text{ zadovoljavaju uslove 4)}\}$$

§6 *Klasa C_5*

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,27$ imaju svojstva



5) $$\begin{cases} y_{26}=y_{23}=y_{22}=y_2, \\ x_{26}\le x_{23}<x_{22}-1, x_{22}\le x_2, \\ y_2<y_3<y_4, \\ y_7=y_{19}=y_{20}=y_4, \\ x_7\le x_{19}<x_{20}-1, \quad x_{20}\le x_4, \\ y_{18}<y_{19}, \\ y_{15}=y_9=y_8=y_{18}, \\ x_{15}\le x_9<x_8-1, \\ x_8\le x_{18}, \quad y_8<y_{10}, \\ y_{14}=y_{10}=y_{11}, \quad x_{10}<x_{11} \end{cases}$$

Tada,

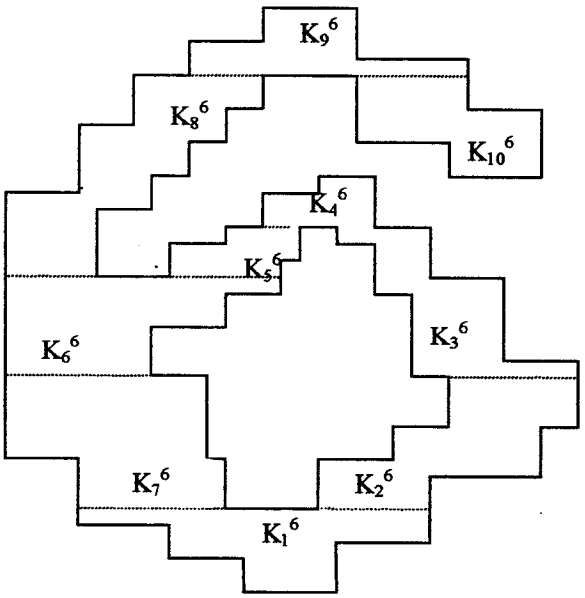
$$\begin{aligned} K_5^{\{z_i\}_{i=\overline{1,27}}} = \{K\in \mathbf{P} | K = & K_1^5\cup K_2^5\cup K_3^5\cup K_4^5\cup K_5^5\cup K_6^5\cup K_7^5\cup K_8^5\cup K_9^5, \\ & K_1^5\in A_{\Phi_4}^{z_1,z_2,z_{26},z_{27}}, K_2^5\in A_{\Phi_3}^{z_{23},z_{24},z_{25},z_{26}}, K_3^5\in A_{\Phi_2}^{z_2,z_3,z_{21},z_{22}}, K_4^5\in A_{\Phi_2}^{z_3,z_4,z_{20},z_{21}}, \\ & K_5^5\in A_{\Phi_1}^{z_4,z_5,z_6,z_7}, K_6^5\in A_{\Phi_2}^{z_{18},z_{19},z_7,z_8}, K_7^5\in A_{\Phi_8}^{z_{17},z_{18},z_{15},z_{16}}, K_8^5\in A_{\Phi_9}^{z_9,z_{10},z_{14},z_{15}}, \\ & K_9^5\in A_{\Phi_9}^{z_{11},z_{12},z_{13},z_{14}}, \\ & (x_1=x_{27})\Rightarrow(z_1+(1,1)\in K_1^5\wedge z_1+(-1,1)\in K_1^5), \\ & (z_3+(0,1)\notin K_4^5\wedge z_3+(0,-1)\notin K_3^5)\Rightarrow(z_3+(-1,1)\in K_4^5\vee z_3+(-1,-1)\in K_3^5), \\ & (x_5=x_6)\Rightarrow(z_5+(1,-1)\in K_5^5\wedge z_5+(-1,-1)\in K_5^5), \\ & (x_{16}=x_{17})\Rightarrow(z_{17}+(1,1)\in K_7^5)\ \} \end{aligned}$$

Klasu π - lavirinata C_5 definišimo sa

$$C_5=\{c: Z^2\to E^2 | c^{-1}(\{1\})=K\in K_5^{\{z_i\}_{i=\overline{1,27}}}, z_i\in Z^2,\ i=\overline{1,27}, \text{ zadovoljavaju uslove 5)}\}$$

§7 *Klasa C_6*

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,28$ imaju svojstva



$$6.1)\quad \begin{cases} y_{20}=y_{28}=y_{22}=y_2, \\ x_{20}\le x_{28}<x_{22}-1, x_{22}\le x_2, \\ y_4>y_3>y_2, \\ y_7=y_{25}=y_{24}=y_4, \\ x_7\le x_{25}<x_{24}-1, x_{24}\le x_4, \\ y_7>y_8, \\ y_{18}=y_9=y_8=y_{26}, \\ x_{18}\le x_9<x_8-1, x_8\le x_{26}, \\ y_{20}>y_{19}>x_{18}, x_{18}=x_{19}, \\ y_{17}>y_{18}-1, \\ y_{17}=y_{10}=y_{11}=y_{14}, \\ x_{17}\le x_{10}<x_{11}-1, x_{11}\le x_{14}, \\ y_{14}>y_{13} \end{cases}$$

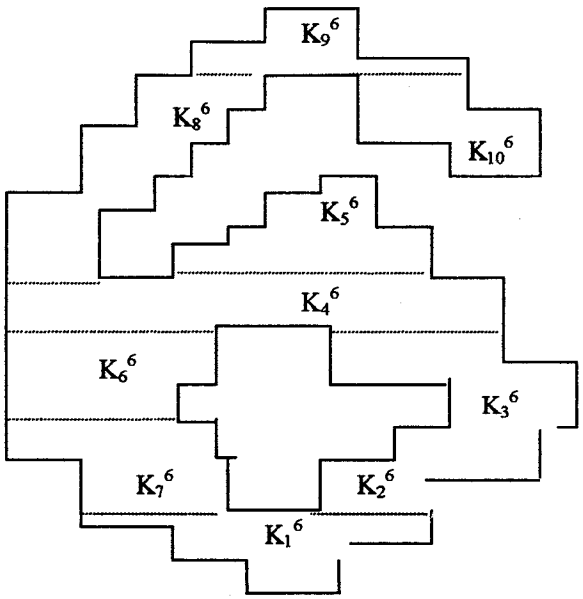
Tada,

$$\begin{aligned} K_{6.1}^{\{z_i\}_{i=\overline{1,28}}} = \{K\in \mathbf{P} \mid K = K_1^6\cup K_2^6\cup K_3^6\cup K_4^6\cup K_5^6\cup K_6^6\cup K_7^6\cup K_8^6\cup K_9^6\cup K_{10}^6, \\ K_1^6\in A_{\Phi_4}^{z_1,z_2,z_{20},z_{21}}, K_2^6\in A_{\Phi_2}^{z_2,z_3,z_{23},z_{22}}, K_3^6\in A_{\Phi_3}^{z_3,z_4,z_{24},z_{23}}, K_4^6\in A_{\Phi_1}^{z_4,z_5,z_6,z_7}, \\ K_5^6\in A_{\Phi_2}^{z_{26},z_{25},z_7,z_8}, K_6^6\in A_{\Phi_8}^{z_{27},z_{26},z_{18},z_{19}}, K_7^6\in A_{\Phi_3}^{z_{28},z_{27},z_{19},z_{20}}, K_8^6\in A_{\Phi_2}^{z_9,z_{10},z_{17},z_{18}}, \\ K_9^6\in A_{\Phi_1}^{z_{14},z_{15},z_{16},z_{17}}, K_{10}^6\in A_{\Phi_3}^{z_{13},z_{14},z_{11},z_{12}}, \\ (x_1=x_{21})\Rightarrow (z_1+(1,1)\in K_1^6\wedge z_1+(-1,1)\in K_1^6), \\ (x_5=x_6)\Rightarrow (z_5+(1,-1)\in K_4^6\wedge z_5+(-1,-1)\in K_4^6), \\ (z_3+(0,1)\notin K_3^6\wedge z_3+(0,-1)\notin K_2^6)\Rightarrow (z_3+(-1,1)\in K_3^6\vee z_3+(-1,-1)\in K_2^6), \\ (x_{15}=x_{16})\Rightarrow (z_{15}+(1,-1)\in K_9^6\wedge z_{15}+(-1,-1)\in K_9^6),\quad z_{18}+(0,-1)\in K_6^6\ \} \end{aligned}$$

Podklasu C_6^1 klase π - lavirinata C_6 definišemo sa:

$$C_6^1=\{c: Z^2\to E^2 \mid c^{-1}(\{1\})=K\in K_{6.1}^{\{z_i\}_{i=\overline{1,28}}}, z_i\in Z^2,\ i=\overline{1,28}, \text{zadovoljavaju uslove } 6.1)\ \}$$

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,28$ imaju svojstva



6.2)
$$\begin{cases} y_{21}=y_{28}=y_{23}=y_2, \\ x_{21}\le x_{28}<x_{23}-1, \quad x_{23}\le x_2, \\ y_4>y_3>y_2, \\ y_{19}=y_{26}=y_{25}=y_4, \\ x_{19}\le x_{26}<x_{25}-1, \quad x_{25}\le x_4, \\ y_{19}>y_{20}, \quad x_{18}=x_{19}=x_{20}, \\ y_{18}=y_9=y_8=y_5, \\ x_{18}\le x_9<x_8-1, \quad x_8\le x_5, \\ y_{17}=y_{10}=y_{11}=y_{14}, \\ x_{17}\le x_{10}<x_{11}-1, \quad x_{11}\le x_{14}, \\ y_{17}>y_{18}+1, \quad y_{13}>y_{14} \end{cases}$$

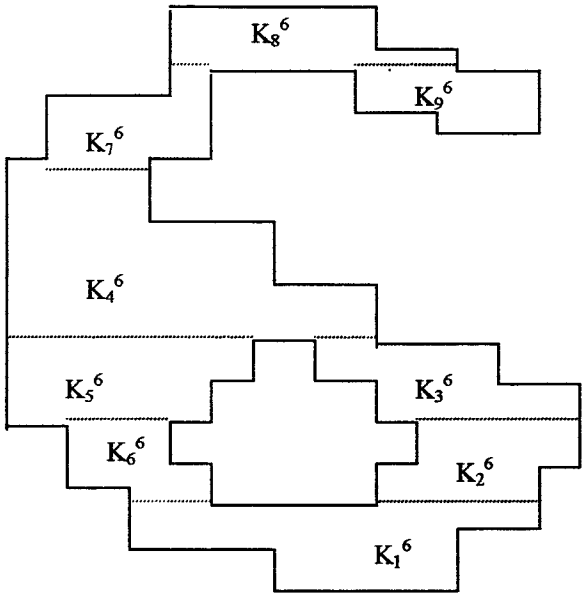
Tada,

$$K_{6.2}^{\{z_i\}_{i=\overline{1,28}}}=\{K\in\mathbf{P}\,|\,K=K_1^6\cup K_2^6\cup K_3^6\cup K_4^6\cup K_5^6\cup K_6^6\cup K_7^6\cup K_8^6\cup K_9^6\cup K_{10}^6,$$
$$K_1^6\in A_{\Phi_4}^{z_1,z_2,z_{21},z_{22}},\ K_2^6\in A_{\Phi_2}^{z_2,z_3,z_{24},z_{23}},\ K_3^6\in A_{\Phi_3}^{z_3,z_4,z_{25},z_{24}},\ K_4^6\in A_{\Phi_6}^{z_4,z_5,z_{18},z_{19}},$$
$$K_5^6\in A_{\Phi_1}^{z_5,z_6,z_7,z_8},\ K_6^6\in A_{\Phi_8}^{z_{27},z_{26},z_{19},z_{20}},\ K_7^6\in A_{\Phi_3}^{z_{28},z_{27},z_{20},z_{21}},\ K_8^6\in A_{\Phi_2}^{z_9,z_{10},z_{17},z_{18}},$$
$$K_9^6\in A_{\Phi_1}^{z_{14},z_{15},z_{16},z_{17}},\ K_{10}^6\in A_{\Phi_3}^{z_{13},z_{14},z_{11},z_{12}},$$
$$(x_1=x_{22})\Rightarrow(z_1+(1,1)\in K_1^6\wedge z_1+(-1,1)\in K_1^6),$$
$$(x_6=x_7)\Rightarrow(z_6+(1,-1)\in K_5^6\wedge z_6+(-1,-1)\in K_5^6),$$
$$(z_3+(0,1)\notin K_3^6\wedge z_3+(0,-1)\notin K_2^6)\Rightarrow(z_3+(-1,1)\in K_3^6\vee z_3+(-1,-1)\in K_2^6),$$
$$(x_{15}=x_{16})\Rightarrow(z_{15}+(1,-1)\in K_9^6\wedge z_{15}+(-1,-1)\in K_9^6),\quad z_{18}+(0,-1)\in K_4^6\ \}$$

Podklasu C_6^2 klase π - lavirinata C_6 definišemo sa:

$$C_6^2=\{c:Z^2\to E^2\,|\,c^{-1}(\{1\})=K\in K_{6.2}^{\{z_i\}_{i=\overline{1,28}}},z_i\in Z^2,\ i=\overline{1,28},\text{ zadovoljavaju uslove 6.2)}\}$$

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,24$ imaju svojstva



$$6.3)\quad \begin{cases} y_{17}=y_{24}=y_{19}=y_2, \\ x_{17}\le x_{24}<x_{19}-1, \quad x_{19}\le x_2, \\ y_4>y_3>y_2, \\ y_{15}=y_{22}=y_{21}=y_4, \\ x_{15}\le x_{22}<x_{21}-1, \quad x_{21}\le x_4, \\ y_{15}>y_{16}>y_{17}, \quad x_{14}=x_{15}=x_{16}, \\ y_{13}>y_{14}+1, \quad y_{10}>y_{19} \\ y_{13}=y_{16}=y_7=y_{10}, \\ x_{13}\le x_6<x_7-1, \quad x_7\le x_{10} \end{cases}$$

Tada,

$$K_{6.3}^{\{z_i\}_{i=\overline{1,24}}}=\{K\in\mathbf{P}|K=K_1^6\cup K_2^6\cup K_3^6\cup K_4^6\cup K_5^6\cup K_6^6\cup K_7^6\cup K_8^6\cup K_9^6,$$
$$K_1^6\in A_{\Phi_4}^{z_1,z_2,z_{17},z_{18}}, K_2^6\in A_{\Phi_2}^{z_2,z_3,z_{20},z_{19}}, K_3^6\in A_{\Phi_3}^{z_3,z_4,z_{21},z_{20}}, K_4^6\in A_{\Phi_6}^{z_4,z_5,z_{14},z_{15}},$$
$$K_5^6\in A_{\Phi_8}^{z_{23},z_{22},z_{15},z_{16}}, K_6^6\in A_{\Phi_3}^{z_{24},z_{23},z_{16},z_{17}}, K_7^6\in A_{\Phi_2}^{z_5,z_6,z_{13},z_{14}}, K_8^6\in A_{\Phi_1}^{z_{10},z_{11},z_{12},z_{13}},$$
$$K_9^6\in A_{\Phi_3}^{z_9,z_{10},z_7,z_8},$$
$$(x_1=x_{18})\Rightarrow(z_1+(1,1)\in K_1^6\wedge z_1+(-1,1)\in K_1^6),$$
$$(z_3+(0,1)\notin K_3^6\wedge z_3+(0,-1)\notin K_2^6)\Rightarrow(z_3+(-1,1)\in K_3^6\vee z_3+(-1,-1)\in K_2^6),$$
$$(x_{11}=x_{12})\Rightarrow(z_{11}+(1,-1)\in K_8^6\wedge z_{11}+(-1,-1)\in K_8^6)\ \}$$

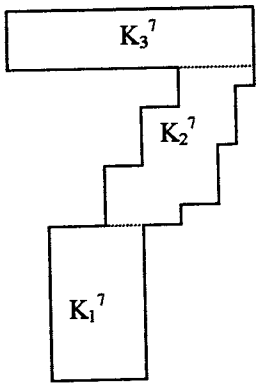
Podklasu C_6^3 klase π - lavirinata $\mathbf{C_6}$ definišemo sa:

$$C_6^3=\{c: Z^2\to E^2 | c^{-1}(\{1\})=K\in K_{6.3}^{\{z_i\}_{i=\overline{1,24}}}, z_i\in Z^2,\ i=\overline{1,24},\ \text{zadovoljavaju uslove 6.3)}\}$$

Klasu $\mathbf{C_6}$ definišemo sa:
$\mathbf{C_6}=C_6^1\cup C_6^2\cup C_6^3$

§8 *Klasa C_7*

Neka $z_i=(x_i,y_i)\in Z^2$, i=1,2,...,9 imaju svojstva



$$7)\quad \begin{cases} y_3 > y_2 > y_1, \\ x_6 < x_7 - 1 \end{cases}$$

Tada,

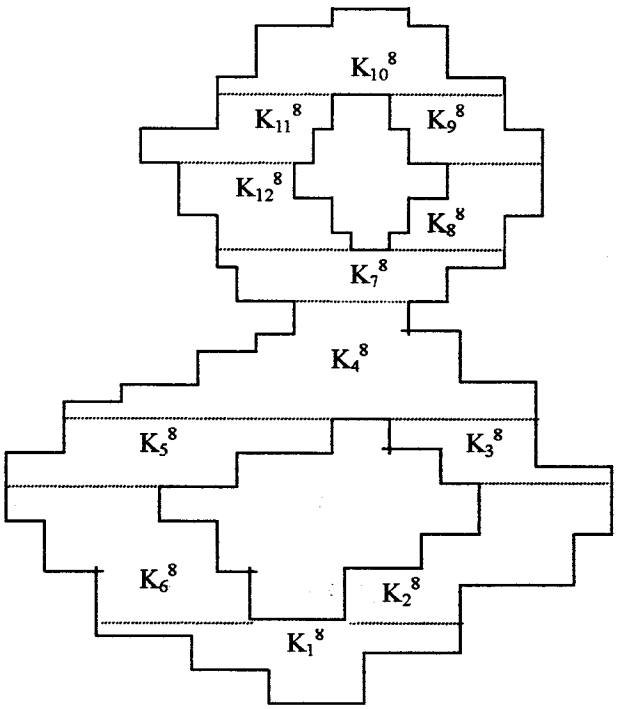
$$K_7^{\{z_i\}_{i=\overline{1,9}}} = \{K \in \mathbf{P} \mid K = K_1^1 \cup K_2^1 \cup K_3^1, K_1^1 \in A_{\Phi_1}^{z_1,z_2,z_8,z_9}, K_2^1 \in A_{\Phi_2}^{z_2,z_3,z_7,z_8},$$
$$K_3^1 \in A_{\Phi_9}^{z_3,z_4,z_5,z_6}, z_8 + (0,1) \notin K_2^7, z_3 + (0,-1) \in K_2^7\}$$

Klasu π - lavirinata $\mathbf{C_7}$ definišemo sa:

$$\mathbf{C_7} = \{c: Z^2 \to E^2 \mid c^{-1}(\{1\}) = K \in K_7^{\{z_1\}_{i=\overline{1,9}}}, z_i \in Z^2,\ i = \overline{1,9},\ \text{zadovoljavaju uslove 7)}\}$$

§9 *Klasa C_8*

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,30$ imaju svojstva:



8)
$$\begin{cases} y_{17}=y_{24}=y_{19}=y_2, \\ x_{17}\le x_{24}<x_{19}-1, \quad x_{19}\le x_2, \\ y_4>y_3>y_2, y_{15}>y_{16}>y_{17}, \\ y_{15}=y_{22}=y_{21}=y_4, \\ x_{15}\le x_{22}<x_{21}-1, \quad x_{21}\le x_4, \\ y_{13}=y_{30}=y_{25}=y_6, \\ x_{13}\le x_{30}<x_{25}-1, \quad x_{25}\le x_6, \\ y_8>y_7>y_6, \quad y_{11}>y_{12}>y_{13}, \\ y_{11}=y_{28}=y_{27}=y_8, \\ x_{11}\le x_{28}<x_{27}-1, \quad x_{27}\le x_8 \end{cases}$$

Tada,

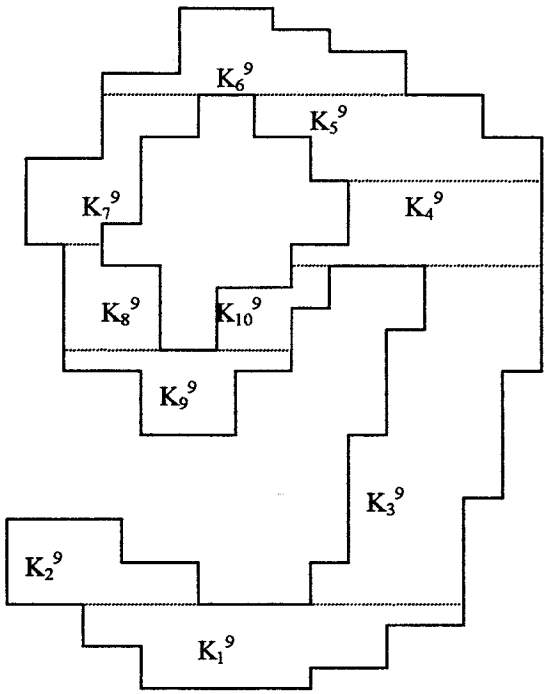
$$K_8^{\{z_i\}_{i=\overline{1,30}}}=\{K\in\mathbf{P}\mid K=K_1^8\cup K_2^8\cup K_3^8\cup K_4^8\cup K_5^8\cup K_6^8\cup K_7^8\cup K_8^8\cup K_9^8\cup K_{10}^8\cup K_{11}^8\cup K_{12}^8,$$
$$K_1^8\in A_{\Phi_4}^{z_1,z_2,z_{17},z_{18}}, K_2^8\in A_{\Phi_2}^{z_2,z_3,z_{20},z_{19}}, K_3^8\in A_{\Phi_3}^{z_3,z_4,z_{21},z_{20}}, K_4^8\in A_{\Phi_1}^{z_4,z_5,z_{14},z_{15}},$$
$$K_5^8\in A_{\Phi_2}^{z_{23},z_{22},z_{15},z_{16}}, K_6^8\in A_{\Phi_3}^{z_{24},z_{23},z_{16},z_{17}}, K_7^8\in A_{\Phi_4}^{z_5,z_6,z_{13},z_{14}}, K_8^8\in A_{\Phi_2}^{z_6,z_7,z_{26},z_{27}},$$
$$K_9^8\in A_{\Phi_3}^{z_7,z_8,z_{27},z_{25}}, K_{10}^8\in A_{\Phi_1}^{z_8,z_9,z_{10},z_{11}}, K_{11}^8\in A_{\Phi_2}^{z_{29},z_{28},z_{11},z_{12}}, K_{12}^8\in A_{\Phi_3}^{z_{30},z_{29},z_{12},z_{13}},$$
$$(x_1=x_{18})\Rightarrow(z_1+(1,1)\in K_1^8\wedge z_1+(-1,1)\in K_1^8),$$
$$(z_3+(0,1)\notin K_3^8\wedge z_3+(0,-1)\notin K_2^8)\Rightarrow(z_3+(-1,1)\in K_3^8\vee z_3+(-1,-1)\in K_2^8),$$
$$(x_5=x_{14})\Rightarrow(z_5+(1,-1)\in K_4^8\wedge z_5+(-1,-1)\in K_4^8),$$
$$(z_{16}+(0,1)\notin K_5^8\wedge z_{16}+(0,-1)\notin K_6^8)\Rightarrow(z_{16}+(1,1)\in K_5^8\vee z_{16}+(1,-1)\in K_6^8),$$
$$(z_7+(0,1)\notin K_9^8\wedge z_7+(0,-1)\notin K_8^8)\Rightarrow(z_7+(-1,1)\in K_9^8\vee z_7+(-1,-1)\in K_8^8),$$
$$(x_9=x_{10})\Rightarrow(z_9+(1,-1)\in K_{10}^8\wedge z_9+(-1,-1)\in K_{10}^8),$$
$$(z_{12}+(0,1)\notin K_{11}^8\wedge z_{12}+(0,-1)\notin K_{12}^8)\Rightarrow(z_{12}+(1,1)\in K_{11}^8\vee z_6+(1,-1)\in K_{12}^8)\}$$

Klasu π - lavirinata $\mathbf{C_8}$ definišemo sa:

$\mathbf{C_8}=\{c:Z^2\to E^2\mid c^{-1}(\{1\})=K\in K_8^{\{z_1\}_{i=\overline{1,30}}}, z_i\in Z^2,\ i=\overline{1,30}$, zadovoljavaju uslove 8) $\}$

§10 *Klasa C_9*

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,28$ imaju svojstva



9.1)
$$\begin{cases} y_{20}=y_{17}=y_{16}=y_2, \\ x_{20}\le x_{17}<x_{16}-1,\quad x_{16}\le x_2, \\ y_{19}>y_{20},\quad y_3>y_2+1, \\ y_5>y_4>y_3, \\ y_8=y_{26}=y_{25}=y_5, \\ x_8\le x_{26}<x_{25}-1,\quad x_{25}\le x_5, \\ y_8>y_9>y_{10}, \\ y_{10}=y_{28}=y_{22}=y_{13}, \\ x_{10}\le x_{28}<x_{22}-1,\quad x_{22}\le x_{13}, \\ y_{23}=y_{14}=y_{15}=y_3, \\ x_{23}\le x_{14}<x_{15}-1,\quad x_{15}\le x_3, \\ y_{14}>y_{13},\quad x_3=x_4 \end{cases}$$

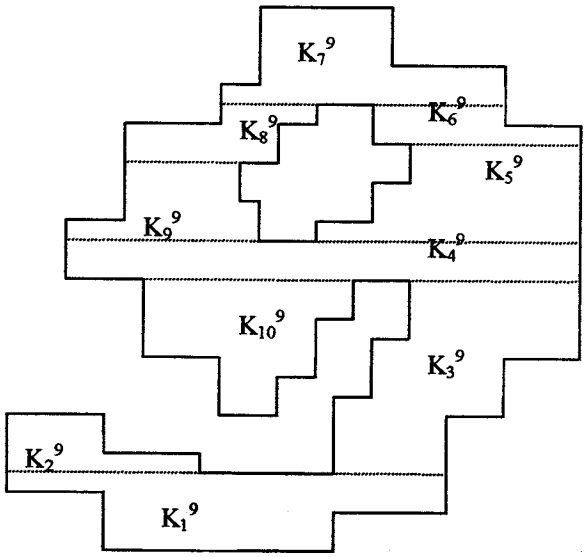
Tada,

$$K_{9.1}^{\{z_i\}_{i=\overline{1,28}}}=\{K\in\mathbf{P}\mid K=K_1^9\cup K_2^9\cup K_3^9\cup K_4^9\cup K_5^9\cup K_6^9\cup K_7^9\cup K_8^9\cup K_9^9\cup K_{10}^9,$$
$$K_1^9\in A_{\Phi_4}^{z_1,z_2,z_{20},z_{21}},K_2^9\in A_{\Phi_3}^{z_{17},z_{18},z_{19},z_{20}},K_3^9\in A_{\Phi_2}^{z_2,z_3,z_{15},z_{16}},K_4^9\in A_{\Phi_5}^{z_3,z_4,z_{24},z_{23}},$$
$$K_5^9\in A_{\Phi_3}^{z_4,z_5,z_{25},z_{24}},K_6^9\in A_{\Phi_1}^{z_5,z_6,z_7,z_8},K_7^9\in A_{\Phi_2}^{z_{27},z_{26},z_8,z_9},K_8^9\in A_{\Phi_3}^{z_{28},z_{27},z_9,z_{10}},$$
$$K_9^9\in A_{\Phi_2}^{z_{13},z_{14},z_{23},z_{22}},K_{10}^9\in A_{\Phi_4}^{z_{12},z_{13},z_{10},z_{11}},$$
$$(x_1=x_{21})\Rightarrow(z_1+(1,1)\in K_1^9\wedge z_1+(-1,1)\in K_1^9),$$
$$(x_6=x_7)\Rightarrow(z_6+(1,-1)\in K_6^9\wedge z_6+(-1,-1)\in K_6^9),$$
$$(z_9+(0,1)\notin K_7^9\wedge z_9+(0,-1)\notin K_8^9)\Rightarrow(z_9+(1,-1)\in K_8^9\vee z_9+(1,1)\in K_7^9),$$
$$(x_{11}=x_{12})\Rightarrow(z_{11}+(1,1)\in K_{10}^9\wedge z_{15}+(-1,1)\in K_{10}^9),z_3+(0,1)\in K_4^9\}$$

Podklasu C_9^1 klase π - lavirinata C_9 definišemo sa:

$$C_9^1=\{c:Z^2\to E^2\mid c^{-1}(\{1\})=K\in K_{9.1}^{\{z_i\}_{i=\overline{1,28}}},z_i\in Z^2,\ i=\overline{1,28},\text{ zadovoljavaju uslove 9.1)}\}$$

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,28$ imaju svojstva



9.2)
$$\begin{cases} y_{21}=y_{18}=y_{17}=y_2, \\ x_{21}\le x_{18}<x_{17}-1, \quad x_{17}\le x_2, \\ y_{20}>y_{21}, \quad y_3>y_2+1, \\ y_{12}=y_{15}=y_{16}=y_3, \\ x_{12}\le x_{15}<x_{16}-1, \quad x_{16}\le x_3, \\ y_{11}=y_{28}=y_{23}=y_4, \\ x_{11}\le x_{28}<x_{23}-1, \quad x_{23}\le x_4, \\ y_6>y_5>y_4, \\ y_9=y_{26}=y_{25}=y_6, \\ x_9\le x_{26}<x_{25}-1, \quad x_{25}\le x_6, \\ y_9>y_{10}>y_{11}, \quad x_3=x_4=x_5 \end{cases}$$

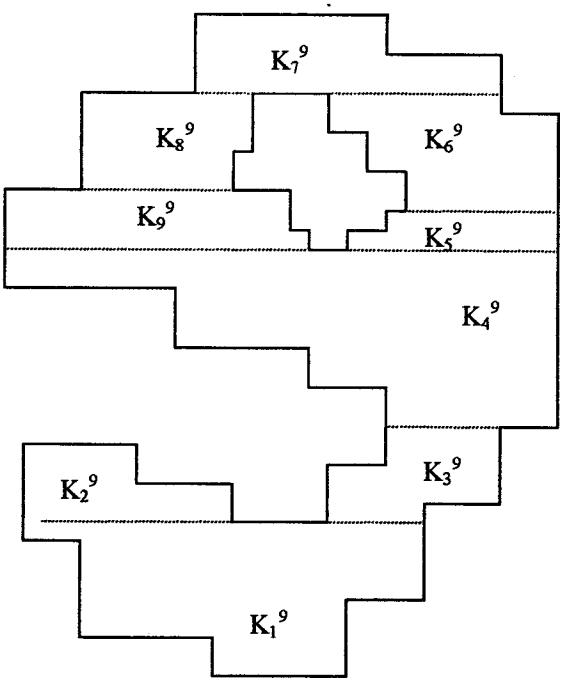
Tada,

$$K_{9.2}^{\{z_i\}_{i=\overline{1,28}}}=\{K\in\mathbf{P}\mid K=K_1^9\cup K_2^9\cup K_3^9\cup K_4^9\cup K_5^9\cup K_6^9\cup K_7^9\cup K_8^9\cup K_9^9\cup K_{10}^9,$$
$$K_1^9\in A_{\Phi_4}^{z_1,z_2,z_{21},z_{22}}, K_2^9\in A_{\Phi_3}^{z_{87},z_{88},z_{20},z_{21}}, K_3^9\in A_{\Phi_2}^{z_2,z_3,z_{16},z_{17}}, K_4^9\in A_{\Phi_7}^{z_3,z_4,z_{11},z_{12}},$$
$$K_5^9\in A_{\Phi_5}^{z_4,z_5,z_{24},z_{23}}, K_6^9\in A_{\Phi_3}^{z_5,z_6,z_{25},z_{24}}, K_7^9\in A_{\Phi_1}^{z_6,z_7,z_8,z_9}, K_8^9\in A_{\Phi_2}^{z_{27},z_{26},z_9,z_{10}},$$
$$K_9^9\in A_{\Phi_3}^{z_{28},z_{27},z_{10},z_{11}}, K_{10}^9\in A_{\Phi_4}^{z_{14},z_{15},z_{12},z_{13}},$$
$$(x_1=x_{22})\Rightarrow(z_1+(1,1)\in K_1^9\wedge z_1+(-1,1)\in K_1^9),$$
$$(x_7=x_8)\Rightarrow(z_7+(1,-1)\in K_7^9\wedge z_7+(-1,-1)\in K_7^9),$$
$$(z_{10}+(0,1)\notin K_8^9\wedge z_{10}+(0,-1)\notin K_9^9)\Rightarrow(z_{10}+(-1,1)\in K_8^9\vee z_{10}+(-1,-1)\in K_9^9),$$
$$(x_{13}=x_{14})\Rightarrow(z_{13}+(1,1)\in K_{10}^9\wedge z_{13}+(-1,1)\in K_{10}^9), z_3+(0,1)\in K_4^9\}$$

Podklasu C_9^2 klase π - lavirinata C_9 definišemo sa:

$$C_9^2=\{c: Z^2\to E^2 \mid c^{-1}(\{1\})=K\in K_{9.2}^{\{z_1\}_{i=\overline{1,28}}}, z_i\in Z^2,\ i=\overline{1,28},\ \text{zadovoljavaju uslove 9.2)}\}$$

Neka $z_i=(x_i,y_i)\in Z^2$, $i=1,2,...,28$ imaju svojstva



9.3)
$$\begin{cases} y_{17}=y_{14}=y_{13}=y_2, \\ x_{17}\le x_{14}<x_{13}-1, \quad x_{13}\le x_2, \\ y_{16}>y_{17}, \quad y_3>y_2+1, \\ x_5=x_4=x_3, \\ y_{11}=y_{24}=y_{19}=y_4, \\ x_{11}\le x_{24}<x_{19}-1, \quad x_{19}\le x_4, \\ y_6>y_5>y_4, \quad y_9>y_{10}>y_{11}, \\ y_9=y_{22}=y_{21}=y_6, \\ x_9\le x_{22}<x_{21}-1, \quad x_{21}\le x_6, \end{cases}$$

Tada,

$$K_{9.3}^{\{z_i\}_{i=\overline{1,28}}}=\{K\in\mathbf{P}\mid K=K_1^9\cup K_2^9\cup K_3^9\cup K_4^9\cup K_5^9\cup K_6^9\cup K_7^9\cup K_8^9\cup K_9^9,$$
$$K_1^9\in A_{\Phi_4}^{z_1,z_2,z_{18},z_{19}}, K_2^9\in A_{\Phi_3}^{z_{14},z_{15},z_{16},z_{17}}, K_3^9\in A_{\Phi_2}^{z_2,z_3,z_{12},z_{13}}, K_4^9\in A_{\Phi_7}^{z_3,z_4,z_{11},z_{12}},$$
$$K_5^9\in A_{\Phi_5}^{z_4,z_5,z_{20},z_{19}}, K_6^9\in A_{\Phi_3}^{z_5,z_6,z_{21},z_{20}}, K_7^9\in A_{\Phi_1}^{z_6,z_7,z_8,z_9}, K_8^9\in A_{\Phi_2}^{z_{23},z_{22},z_9,z_{10}},$$
$$K_9^9\in A_{\Phi_3}^{z_{24},z_{23},z_{10},z_{11}},$$
$$(x_1=x_{18})\Rightarrow(z_1+(1,1)\in K_1^9\wedge z_1+(-1,1)\in K_1^9),$$
$$(x_7=x_8)\Rightarrow(z_7+(1,-1)\in K_7^9\wedge z_7+(-1,-1)\in K_7^9),$$
$$(z_{10}+(0,1)\notin K_8^9\wedge z_{10}+(0,-1)\notin K_9^9)\Rightarrow(z_{10}+(-1,1)\in K_8^9\vee z_{10}+(-1,-1)\in K_9^9)\}$$

Podklasu C_9^3 klase π - lavirinata C_9 definišemo sa:

$C_9^3=\{c:Z^2\to E^2\mid c^{-1}(\{1\})=K\in K_{9.3}^{\{z_i\}_{i=\overline{1,28}}},\ z_i\in Z^2,\ i=\overline{1,24},$ zadovoljavaju uslove 6.3) $\}$

Klasu C_9 definišemo sa:

$C_9=C_9^1\cup C_9^2\cup C_9^3$

III Automati i metrika

U daljem tekstu ćemo raditi isključivo sa 2-dimenzionalnim lavirintima, tako da ćemo umjesto "2-dimenzionalni lavirint" pisati samo samo "lavirint".

Ovdje ćemo pokazati veliki uticaj metrike na prepoznavanje pojedinih klasa lavirinata konačnim automatima. Dokazuje se da postoji pravougaoni lavirint L takav da za proizvoljno $v \in V(L)$, ne postoji automat koji prepoznaje inicijalni lavirint L_v. Sa druge strane, ukoliko imamo proizvoljan mozaični lavirint L, to postoji automat koji za svako $v \in V(L)$ prepoznaje lavirint L_v.

Ako je L = (V, E) pravougaoni lavirint označimo sa diam(L) = max{d(u, v)| u, v $\in$ V}, gdje je $d(u, v) = ((\Pi p_1(u) - \Pi p_1(v))^2 + (\Pi p_2(u) - \Pi p_2(v))^2)^{1/2}$.

Neka je L = (V, E; v_0) lavirint. Ukoliko za neko uzajamno jednoznačno preslikavanje μ skupa V u skup R^2, postoji pravougaoni lavirint $L_1 = (\mu(V), E_1; \mu(v_0))$ takav da su lavirint L i L_1 izomorfni, gdje μ definiše taj izomorfizam, kažemo da je lavirint L *smjestiv ili postoji njegovo slaganje u ravni*. Ukoliko je lavirint L smjestiv, preslikavanje μ nazivamo smještač. Jasno da ako, pri fiksiranom μ postoji L_1 to je on jedinstven. Prema tome, pod smještanjem lavirinta L nekada ćemo podrazumjevati L_1, a nekada realizaciju $\overline{L_1}$. Jasno, ako je lavirint L drvo (graf (V, E) je drvo) tada je lavirint L smjestiv.

Neka je L = (V, E) lavirint takav da $V = V_x \cup V_y$, $V_x \cap V_y = \varnothing$, $|V_x| = |V_y| = k$, $k \geq 2$. Pretpostavimo da $V_x = \{x_1, x_2,...,x_k\}$ i $V_y = \{y_1, y_2,...,y_k\}$. Za lavirint L kažemo da je w-stepenica, $w \in \{e, n\}$ ako postoji takav smještač μ, tako da:

a) $\Pi p_m(\mu(x_i)) = \Pi p_m(\mu(x_j))$, $\Pi p_m(\mu(y_i)) = \Pi p_m(\mu(y_j))$ i $\Pi p_n(\mu(x_s)) = \Pi p_n(\mu(y_s))$, $i \neq j$, i, j, s $\in \{1,..,k\}$,

b) Ako je $\Pi p_n(\mu(x_{i_1})) < \Pi p_n(\mu(x_{i_2})) < ... < \Pi p_n(\mu(x_{i_k}))$, $i_j \in \{1,2,..,k\}$, tada je

$E = \{<x_{i_{j-1}}, x_{i_j}>, <x_{i_j}, x_{i_{j+1}}> | j \in \{2,...,k-1\}\} \cup \{<y_{i_{j-1}}, y_{i_j}>, <y_{i_j}, y_{i_{j+1}}> | j \in \{2,...,k-1\}\} \cup \{<x_i, y_i> | i \in \{1,...,k\}\}$,

gdje (m, n) = (1, 2) ako je w = *n* i (m, n) = (2, 1) ako je w = *e* (lavirint L ćemo zvati stepenica ukoliko je on *e*-stepenica ili *n*-stepenica).

Neka su $L_1 = (V_1, E_1)$ i $L_2 = (V_2, E_2)$ dva lavirinta takva da $V_1 \cap V_2 = \varnothing$, $x_1 \in V_1$, $x_2 \in V_2$ i $[x_1]_{L1} \cap [x_2]_{L2} = \varnothing$. Neka je $V_2' = V_2 \setminus \{x_2\}$. Neka je lavirint $L(x_1) = (V_2(x_1), E_2(x_1))$ takav da $V_2(x_1) = \{x_1\} \cup \{x_1\} \times V_2'$ i preslikavanje $i : V_2 \to V_2(x_1)$ definisano sa $i(x_2) = x_1$ i $i(x) = (x_1, x)$, $x \in V_2'$, je izomorfizam lavirinata L_2 i $L(x_1)$. Tada sa $L_1 \underset{x_1, x_2}{+} L_2$ označimo lavirint $(V_1 \cup V_2(x_1), E_1 \cup E_2(x_1))$, pri čemu, ako je $u \in E_1$ tada je $|u| = |u|_{L1}$, a ako je $u \in E_2(x_1)$ tada je $|u| = |u|_{L2}$. Ukoliko je u lavirintu izdvojen ulaz v_0, tada je to ulaz i za lavirint $L_1 \underset{x_1, x_2}{+} L_2$. Kažemo da je lavirint $L_1 \underset{x_1, x_2}{+} L_2$ dobijen spajanjem čvorova x_1 i x_2 lavirinata L_1 i L_2. U [17] je dokazano da ako su L_1, L_2 smjestivi lavirinti, takvi da L_2 je drvo, tada je i lavirint $L_1 \underset{x_1, x_2}{+} L_2$ smjestiv.

Neka je **Step** ={L = (V, E)| L je stepenica ili postoje $x_1,...,x_s \in V$, drveta lavirinti $L_1, ...,L_s$ i lavirint stepenica L' tako da $L = L' \underset{x_1, x^1}{+} L_1 \underset{x_2, x^2}{+} \ldots \underset{x_s, x^s}{+} L_s$, gdje $x_1,...,x_s \in V(L')$, $x^i \in V(L_i)$, $i \in \{1,2,...,s\}$}.

Za lavirint L kažemo da je ε-smjestiv ako postoji smještač μ lavirinta L takav da $diam(\mu(V(L))) < \varepsilon$. Jasno, ako je lavirint L drvo ili stepenica, tada je L ε-smjestiv za sve $\varepsilon > 0$.

Teorema 1. Ako je lavirint L = (V, E) ∈ **Step** tada za sve v∈ V ne postoji automat koji prepoznaje lavirint L_v.

Dokaz: Pretpostavimo da je L = (V, E) n-stepenica i $\|V\| = 2k$. Neka automat $Aq_0 = (A, Q, B, \varphi, \psi, q_0)$ prepoznaje lavirint L = (V, E; v_0) , za neko $v_0 \in V$. Ako je $v \in V$, označimo sa nm(v) broj pojavljivanja čvora v u nizu $\pi(\mathbf{A}_{q_0}; L_{v_0}; t)$, gdje je $t \geq 0$, takvo da $\psi(q_t, [v_t]) = 1$ i $\varphi(q_t, [v_t]) = q_t$. Neka je $n = \max \{ nm(v)| v \in V\}$. Neka su $u, v \in V$ takvi da $[u] = \{e, s\}$ i $[v] = \{w, s\}$ ($\langle u, v\rangle \in E$). Neka je L' = (V', E'), gdje je $V' = V \cup \{x, y\}$, $E' = \langle u, x\rangle \cup \langle v, y\rangle \cup E \setminus \langle u, v\rangle$, $|(u, x)| = e$, $|(v, y)| = w$. Neka je $L^x = L' \setminus \{y\}$, $L^y = L' \setminus \{x\}$.

Neka je

$$L_1 = \left(\left(\left(L' \underset{x, z^1}{+} L^{y_k^1}\right) \underset{y_k^1, z^2}{+} L^{y_k^2}\right) \underset{y_k^2, z^3}{+} \ldots \underset{y_k^n, z^{n+1}}{+} L^{y_k^{n+1}}\right),$$

gdje je $L^{y_k^i}$ lavirint izomorfan lavirintu L^x dobijen preoznačavanjem čvorova f_i : $V(L^x) \to V(L^{y_k^i})$ i pri tome $f_i(x) = y_k^i$ i $f_i(v) = z^i$, $1 \leq i \leq n+1$.

Neka je

$$\tilde{L} = \left(\left(\left(L_1 \underset{y, w^1}{+} L^{x_k^1}\right) \underset{x_k^1, w^2}{+} L^{x_k^2}\right) \underset{x_k^2, w^3}{+} \ldots \underset{x_k^n, w^{n+1}}{+} L^{x_k^{n+1}}\right),$$

gdje je $L^{x_k^i}$ lavirint izomorfan lavirintu L^y dobijen preoznačavanjem čvorova g_i : $V(L^y) \to V(L^{x_k^i})$ i pri tome $g_i(y) = x_k^i$ i $g_i(u) = w^i$, $1 \leq i \leq n+1$.

Treba dokazati da je lavirint $\tilde{L}$ smjestiv.

Neka je μ smještač lavirinta L takav da $\mu(V(L)) = \{x_1,...,x_k, y_1,..., y_k\}$, $\Pi p_1(x_i) = \Pi p_1(x_j)$, $\Pi p_1(y_i) = \Pi p_1(y_j)$, $\Pi p_2(x_s) = \Pi p_2(y_s)$, $i \neq j$, i, j, s ∈ {1,..,k} i $\Pi p_2(x_1) < \Pi p_2(x_2) < ... < \Pi p_2(x_k)$. Pretpostavimo i da je $\Pi p_1(y_1) > \Pi p_1(x_1)$ (slika 3 (a).

Neka su $x, y \in \mathbf{R}^2$ takvi da $\Pi p_2(y_k) = \Pi p_2(y) = \Pi p_2(x)$ ($=\Pi p_2(x_k)$) i $\Pi p_1(x_k) < \Pi p_1(x) < \Pi p_1(y) < \Pi p_1(y_k)$. Udaljimo duž $\overline{xy}$. Na ovaj način smo definisali smještanje lavirinta L' (slika 3 b)).

Neka je μ' smještač lavirinta L takav da $\mu'(V(L)) = \{x_1^1,...,x_k^1, y_1^1,...,y_k^1\}$, $\Pi p_1(x_i^1) = \Pi p_1(x_j^1)$, $\Pi p_1(y_i^1) = \Pi p_1(y_i^1)$, $\Pi p_2(x_s^1) = \Pi p_2(y_s^1)$, $i \neq j$, i, j, s ∈ {1,..,k} i $\Pi p_2(x_1^1) < \Pi p_2(x_2^1) < ... < \Pi p_2(x_k^1)$. Pretpostavimo da je $\Pi p_1(y_1^1) > \Pi p_1(x_1^1)$. Neka je $x \in \mathbf{R}^2$ takvo da $\Pi p_2(y_k^1) = \Pi p_2(x)$ ($=\Pi p_2(x_k^1)$) i $\Pi p_1(x_k^1) < \Pi p_1(x) < \Pi p_1(y_k^1)$. Udaljimo

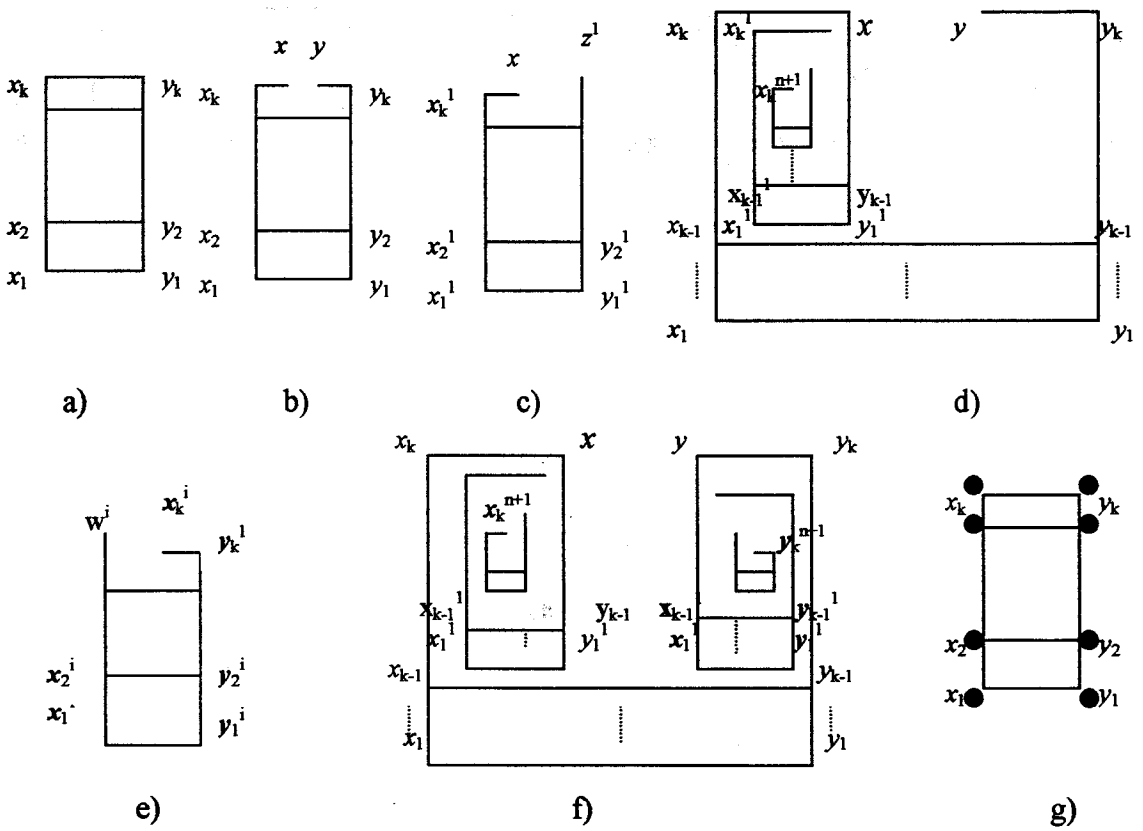
duž $\overline{xy_k^1}$. Neka je $z^1 \in \mathbf{R}^2$ takvo da $\Pi p_2(z^1) > \Pi p_2(y_k^1)$, $\Pi p_1(z^1) = \Pi p_1(y_k^1)$. Udaljimo duž $\overline{y_{k-1}^1 y_k^1}$ a dodajmo duž $\overline{y_{k-1}^1 z^1}$. Na ovaj način smo definisali smještač μ^1 lavirinta $L^{y_k^1}$ (slika 3 c)). i neka je on takav da je $\operatorname{diam}(\mu^1(V(L^{y_k^1}))) < \min\{d(u, v) | u, v \in \mu(V(L))\}$.

Translacijom τ_α, gdje je $\alpha = \overline{z^1, x}$, pravouglog lavirinta $L^{y_k^1}$ dobijamo smještanje lavirinta $L' \underset{x, z^1}{+} L^{y_k^1}$.

Lavirint $L^{y_k^i}$, $i \in \{2,...,n+1\}$, možemo smjestiti u ravan kao na slici 3 c), tako da je $\operatorname{diam}(V(\overline{L^{y_k^i}})) < \operatorname{diam}\left(V\left(\overline{\left(\left(\left(L' \underset{x, z^1}{+} L^{y_k^1}\right) \underset{y_k^1, z^2}{+} L^{y_k^2}\right) \underset{y_k^2, z^3}{+} \cdots \underset{y_k^{i-2}, z^{i-1}}{+} L^{y_k^{i-1}}\right)}\right)\right), (y_k^0 = x)$.

Na ovaj način smo dobili smještanje lavirinta L_1 (slika 3 d)).

Slično, lavirinte $L^{x_k^i}$, izomorfne lavirintu L^y, možemo smjestiti u ravan kao što je to prikazano na slici 3 e), s tim sto je $\operatorname{diam}(V(\overline{L^{x_k^i}}) \leq \operatorname{diam}(V(\overline{L^{y_k^i}})$.



slika 3

Smještanje lavirinta $\tilde{L}$ je dato na slici 3 f).

Za automat Aq_0 važi $Tr(Aq_0;(L;v_0)) = Tr\left(Aq_0;(\tilde{L};v_0)\right)$.

Primjetimo ukoliko je lavirint L *e*-stepenica i $\bar{L}$ jedna njegova realizacija u ravni, tada rotacijom figure $\bar{L}$ za ugao $\pi/2$ oko bilo kog tjemena $x \in V(\bar{L})$ dobijamo figuru $\bar{L}'$ koja je smještanje lavirinta koji je *n*-stepenica.

Ukoliko je $L = L' \underset{x_1, x^2}{+} L_1 \underset{x_2, x_2}{+} \ldots \underset{x_s, x^s}{+} L_s$, dokaz je sličan s tom razlikom što prilikom smještanja lavirinta $\tilde{L}$ drvo L_i i njemu izomorfna drveta treba smjestiti tako da je njihov dijametar dovoljno mali, $1 \le i \le s$. Slaganje lavirinta L u ravni može biti predstavljeno kao na slici 3 g) (lavirinti drveta L_i, $1 \le i \le s$, su ε-smjestivi, za sve $\varepsilon > 0$, što je predstavljeno sa ●). □

Teorema 2. Ako je L = (V, E) mozaični lavirint tada postoji automat $Aq_0 = (A, Q, B, \varphi, \psi, q_0, Q_F)$, $Q_F = \{q_{F_0}, q_{F_1}\} \subseteq Q$, koji prepoznaje klasu $\{L_v \mid v \in V\}$.

Dokaz: Neka je $V = \{v_1, v_2, \ldots, v_n\}$. Ako je $p = y_0(y_0y_1)y_1(y_1y_2)\ldots y_{m-1}(y_{m-1}y_m)y_m$ put u grafu (V, E), sa d(p) označimo dužinu puta p a sa $[p]_i$ ozanačimo i-tu granu tog puta. Neka su $p_1 = v_1(v_1 v^1_{i_1})v^1_{i_1} \ldots v^1_{i_{s_1-1}}(v^1_{i_{s_1-1}} v^1_{i_{s_1}})v^1_{i_{s_1}}, \ldots, p_n = v_n(v_n v^n_{i_1})v^n_{i_1} \ldots v^n_{i_{s_n-1}}(v^n_{i_{s_n-1}}, v^n_{i_{s_n}})v^n_{i_{s_n}}$ putevi u grafu (V,E) takvi da $\{v_p\} \bigcup_{j=1}^{s_p} v^p_{i_j} = V$, $p \in \{1,\ldots,n\}$. Neka su $x_i \subseteq D$, $i \in \{1,\ldots, l\}$ takvi da $x_i \neq x_j$ za $i \neq j$, $i, j \in \{1,\ldots, l\}$ i za sve $i \in \{1,\ldots, n\}$ postoji $j \in \{1,\ldots, l\}$ tako da $[v_i]_L = x_j$. Neka je $f: P \to X$, gdje je $P = \{p_1,\ldots, p_n\}$ i $X = \{x_1,\ldots, x_l\}$, definisano sa $f(p_i) = [v_i]$, $i \in \{1,\ldots, n\}$. Označimo sa $[f]x_i = \{p \in P \mid f(p) = x_i\}$. Neka je $|[f]x_i| = n_i$ i $[f]x_i = \{p^i_1, \ldots, p^i_{n_i}\}$, $i \in \{1,\ldots, l\}$.

Neka je $Ap_j = (A, Q_j, B, \varphi_j, \psi_j, q_1^j, Q_F)$ inicijalni automat, gdje je $Q_j = \{q^j_1,\ldots, q^j_{s_j+1}, q^{-j}_2,\ldots, q^{-j}_{s_j+1}\} \cup Q_F$, $j \in \{1,\ldots, n\}$, definisan sa:

$\varphi_j(q^j_k, [v^j_{i_{k-1}}]) = q^j_{k+1}$, $\psi_j(q^j_k, [v^j_{i_{k-1}}]) = |v^j_{i_{k-1}} v^j_{i_k}|$,

$\varphi_j(q^j_k, a) = q^{-j}_k$, $\psi_j(q^j_k, a) = |v^j_{i_{k-1}} v^j_{i_k}|^{-1}$, za $a \neq [v^j_{i_{k-1}}]$, $k \in \{2,\ldots, s_j\}$,

$\varphi_j(q^j_1, [v_j]) = q^j_2$, $\psi_j(q^j_1, [v_j]) = |v_j v^j_{i_1}|$,

$\varphi_j(q^j_1, a) = q_{F_0}$, $\psi_j(q^j_1, a) = 0$, za $a \neq [v_j]$,

$\varphi_j(q^j_{s_j+1}, [v^j_{i_{s_j}}]) = q_{F_1}$, $\psi_j(q^j_{s_j+1}, [v^j_{i_{s_j}}]) = 0$,

$\varphi_j(q^j_{s_j+1}, a) = q^{-j}_{s_j+1}$, $\psi_j(q^j_{s_j+1}, a) = |v^j_{s_{j-1}} v^j_{s_j}|^{-1}$, za $a \neq [v^j_{i_{s_j}}]$,

$\varphi_j(q^{-j}_k, [v^j_{i_{k-2}}]) = q^{-j}_{k-1}$, $\psi_j(q^{-j}_k, [v^j_{i_{k-2}}]) = |v^j_{i_{k-3}} v^j_{i_{k-2}}|^{-1}$, $k \in \{4,\ldots, s_j+1\}$,

$\varphi_j(q^{-j}_3, [v^j_{i_1}]) = q^{-j}_2$, $\psi_j(q^{-j}_3, [v^j_{i_1}]) = |v^j_{i_1} v_j|^{-1}$,

$\varphi_j(q^{-j}_2, a) = q_{F_0}$, $\psi_j(q^{-j}_2, a) = 0$.

Primjetimo da automat $\mathbf{A}p_j$ prepoznaje lavirint $L\nu_j = (V, E; \nu_j)$, i pri tome ako je mozaični lavirint L_ν takav da $L_\nu \neq L\nu_j$ tada u obilasku lavirinta L_ν automat $\mathbf{A}p_j$ se vraća u čvor ν, $j \in \{1,..., n\}$. Sa $q_i(\mathbf{A}p_j)$ označimo stanje $q_{|i|}^{\mathrm{sign}(i)j}$ automata $\mathbf{A}p_j$, $i \in \{1,..., s_j + 1, -2, ..., -(s_j + 1)\}$ (ovu oznaku koristimo i za oznaku isto označenog stanja automata $\mathbf{A}q_0$, čija definicija slijedi)

Konstruišimo automat $\mathbf{A}q_0 = (A, Q, B, \varphi, \psi, q_0, Q_F)$, gdje je $Q = \{q_0\} \bigcup_{j=1}^{k} Q_j \setminus \{q_1^j\}$, na sljedeći način:

Neka je $m \in \{1, ..., l\}$.

$\varphi(q_0, x_m) = q_2(\mathbf{A}\, p_1^m)$, $\psi(q_0, x_m) = |[p_1^m]_1|_L$,

$\varphi(q_0, a) = q_{F_0}$, $\psi(q_0, a) = \mathbf{0}$, za $a \notin X$,

$\varphi(q_{-2}(\mathbf{A}\, p_i^m), x_m) = q_2(\mathbf{A}\, p_{i+1}^m)$, $\psi(q_{-2}(\mathbf{A}\, p_i^m), x_m) = |[p_{i+1}^m]_1|_L$, $i \in \{1, ..., n_m - 1\}$,

$\varphi(q_{-2}(\mathbf{A}\, p_{n_m}^m), x_m) = \varphi_b(q_{-2}(\mathbf{A}\, p_{n_m}^m), x_m)$, $\psi(q_{-2}(\mathbf{A}\, p_{n_m}^m), x_m) = \psi_b(q_{-2}(\mathbf{A}\, p_{n_m}^m), x_m)$, gdje je b takvo da $p_b = p_{n_m}^m$,

$\varphi(q_j^i, a) = \varphi_i(q_j(\mathbf{A}p_i), a)$, $\psi(q_j^i, a) = \psi_i(q_j(\mathbf{A}p_i), a)$, za $j \in \{2,..., s_i + 1, -3, ..., -(s_i + 1)\}$, $i \in \{1,..., k\}$. □

IV Prepoznavanje klasa C_1, C_2, C_3, C_5, C_7

Definisali smo familije Φ_i, $1 \le i \le 9$:

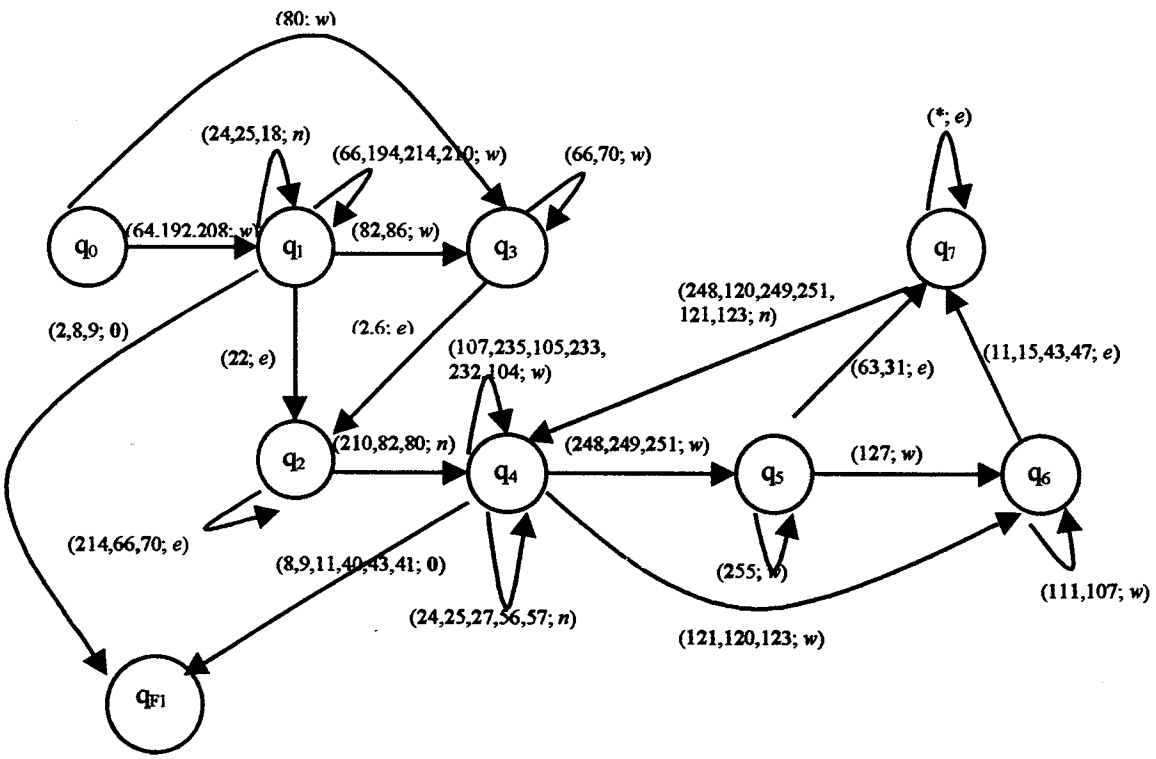
Kako ćemo raditi isključivo sa regularnim pješacima, zbog kraćeg zapisivanja, ulazna azbuka je skup A = {0,1, ..., 255}, umjesto $(E^2)^9$, dobijen kodiranjem $\sum_{i=1}^{8} a_i 2^{i-1}$ elemenata $(1, a_1,...,a_8) \in (E^2)^9$.

Lema 1. Postoji regularni pješak A_{Φ_i} = (A, Q_i, B, φ_i, ψ_i, q_0, Q_F), koji prepoznaje klasu inicijalnih π-lavirinata (Φ_i, v_{ND}) = $\{(c, v_k) | c^{-1}(\{1\}) = K \in \Phi_i$ i v_k ND-tačka skupa K$\}$, $1 \le i \le 9$.

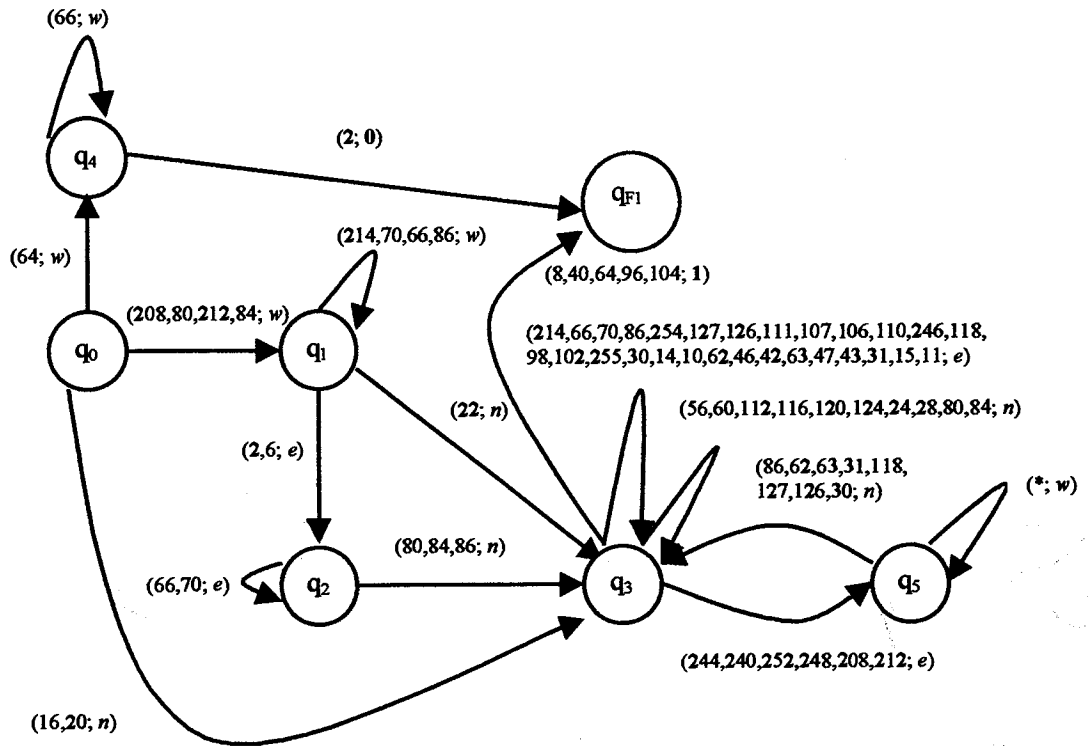
Dokaz : Konstruisaćemo automate A_{Φ_i}, $1 \le i \le 9$.

Izostavićemo sve prelaze u stanje q_{F_0}, smatrajući da to važi za sve $a \in$ A koji nisu naznačeni kao izlaz bilo kog stanja. Takođe ćemo koristiti oznaku (*, w), gdje w $\in$ D, smatrajući da to važi za sve $a \in$ A koji nisu već naznačeni (kao izlaz tog.stanja).

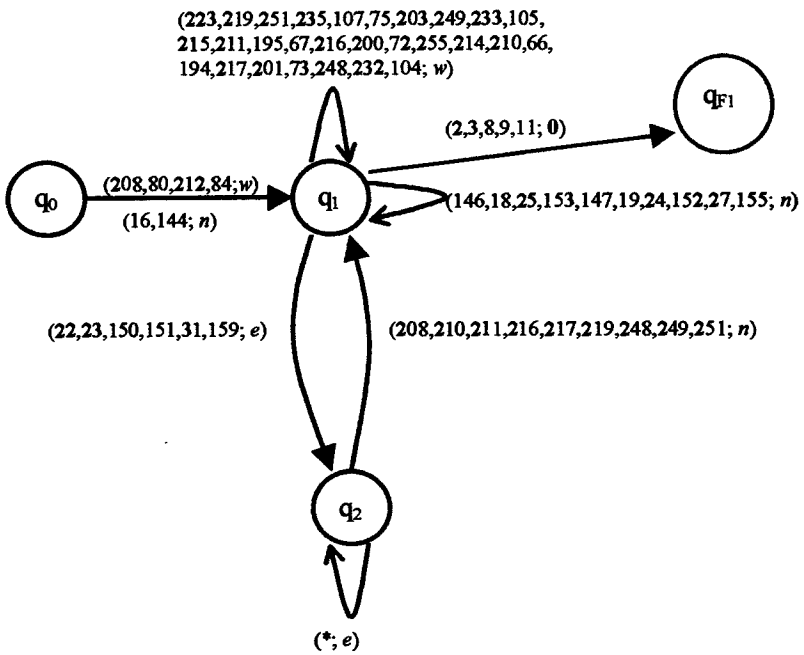
Automat A_{Φ_1}:



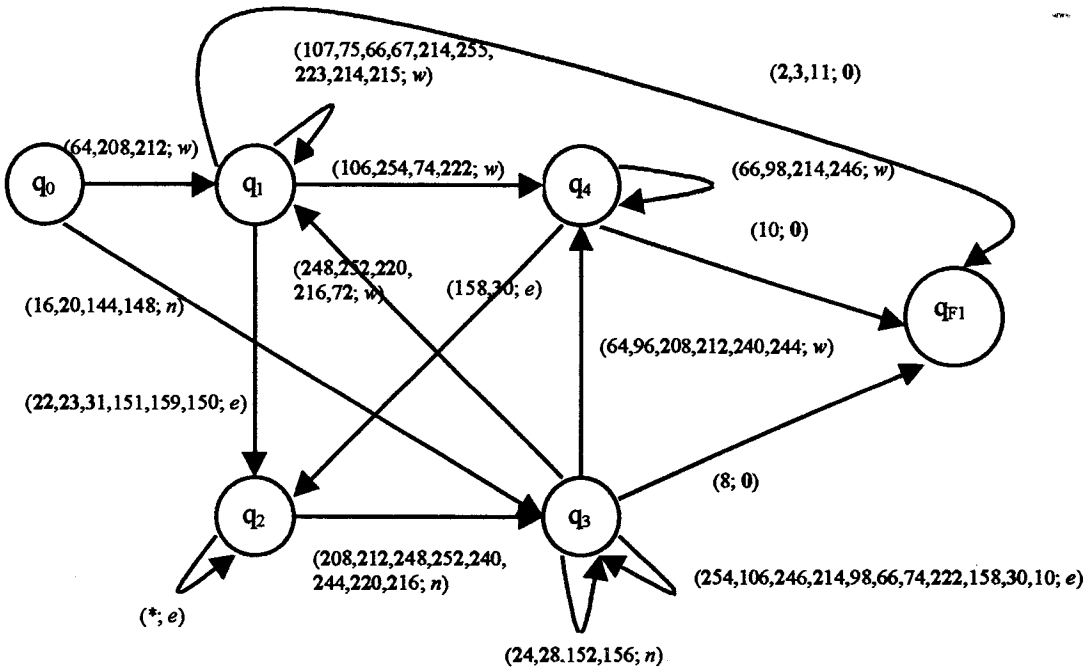
Automat $\mathbf{A}_{\Phi_2}$:



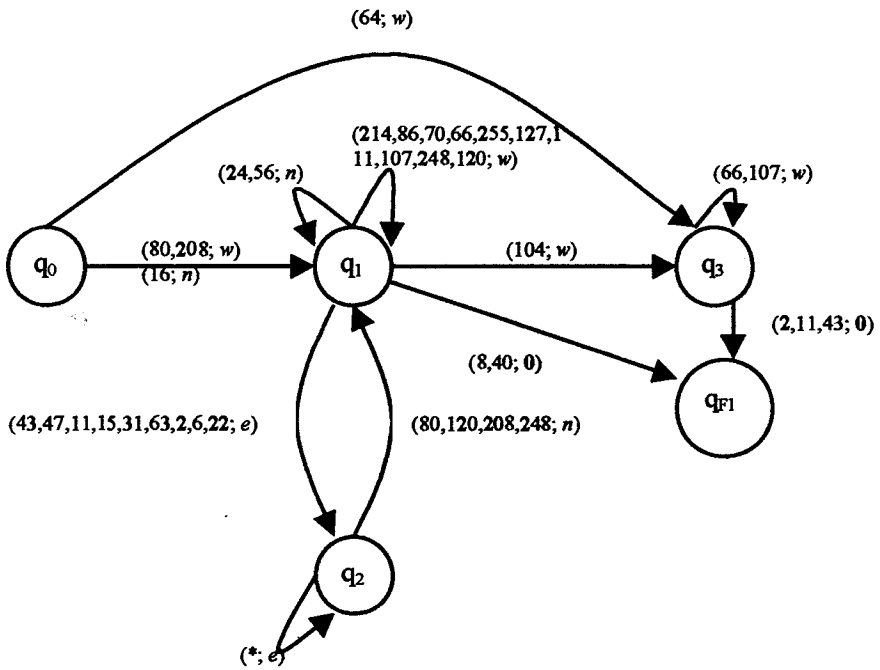
Automat $\mathbf{A}_{\Phi_3}$:



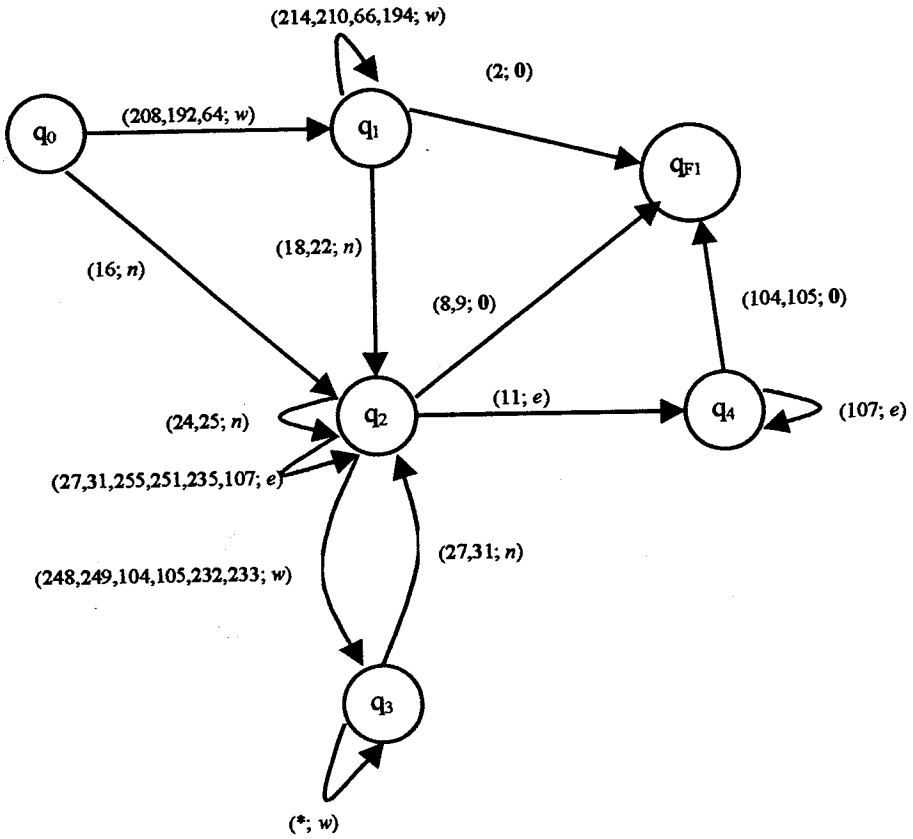
Automat $\mathbf{A}_{\Phi_4}$:



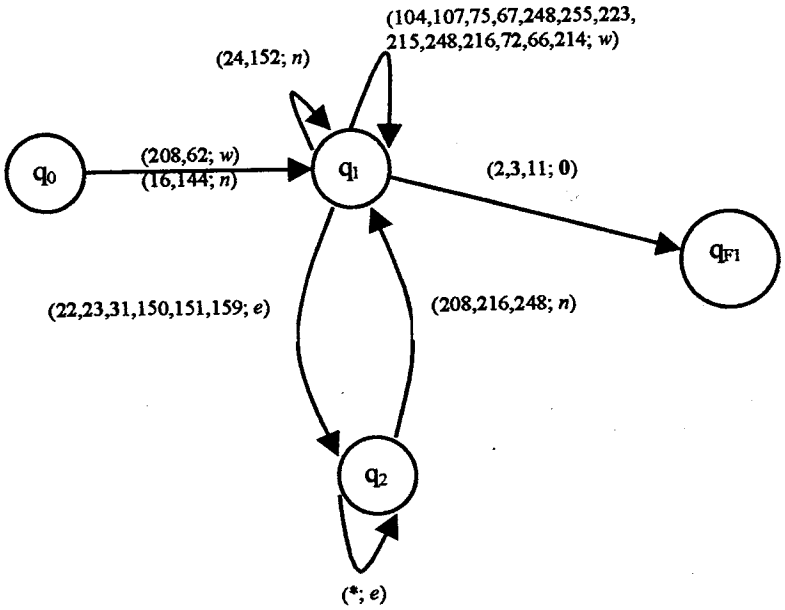
Automat $\mathbf{A}_{\Phi_5}$:



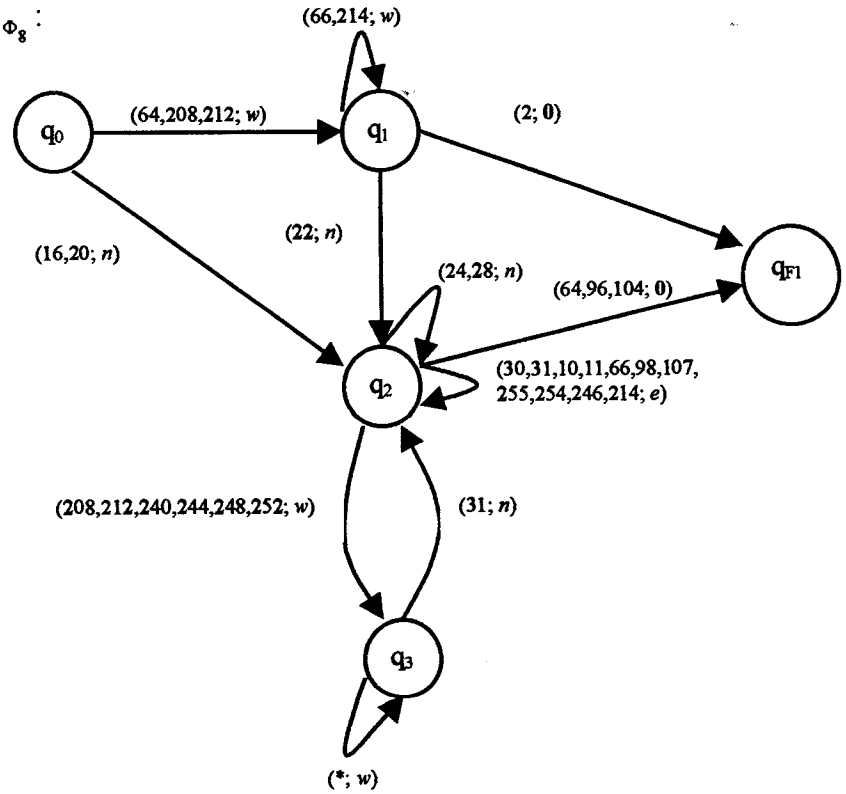
Automat A_{Φ_6}:



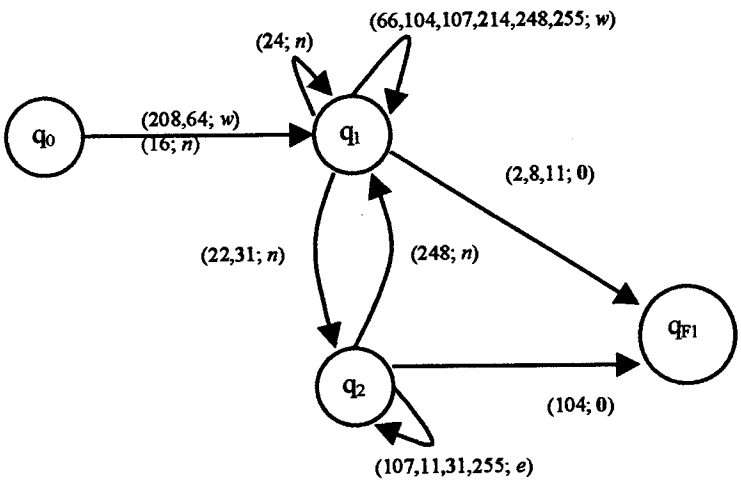
Automat A_{Φ_7}:



Automat $\mathbf{A}_{\Phi_8}$:



Automat $\mathbf{A}_{\Phi_9}$:



Teorema 3. Postoji regularni pješak $\mathbf{A}_i = (A, Q_i, B, \varphi_i, \psi_i, q_0, Q_F)$, koji prepoznaje klasu inicijalnih π-lavirinata $(\mathbf{C}_i, v_{DN}) = \{(c, v_k) \mid c \in \mathbf{C}_i$ i v_k DN-tačka skupa $c^{-1}(\{1\})\}$, $i \in \{1, 2, 3, 5\}$i postoji regularni pješak $\mathbf{A}_7 = (A, Q_7, B, \varphi_7, \psi_7, q_0, Q_F)$, koji prepoznaje klasu inicijalnih π-lavirinata $(\mathbf{C}_7, v_{ND}) = \{(c, v_k) \mid c \in \mathbf{C}_7$ i v_k ND-tačka skupa $c^{-1}(\{1\})\}$.
Dokaz: Neka je $i \in \{1,2,3,5,7\}$. Iz definicije klase $\mathbf{C}_i$ slijedi da ako je $c \in \mathbf{C}_i$, to skup $c^{-1}(\{1\})$ možemo horizontalnim dužima izdjeliti na podskupove C_j, $j \in (1,...,k_i)$, tako da za sve $j \in \{1,..., k_i\}$, postoji $l \in \{1,..., 9\}$ tako da $C_j \in \Phi_l$, gdje je

$$k_i = \begin{cases} 3, & \text{ako je } i = 1, \\ 6, & \text{ako je } i = 2, \\ 10, & \text{ako je } i = 3, \\ 9 & \text{ako je } i = 5, \\ 3 & \text{ako je } i = 7. \end{cases}$$

Konstruišimo automate $\mathbf{A}_i$, $i \in \{1, 2, 3, 5, 7\}$. U opisu ovih automata, smatraćemo da postoji "prioritet" među ulaznim simbolima nekog stanja, definisan sa "predhodno opisan".

Automat $A_1 = (A, Q_1, B, \varphi_1, \psi_1, q_1, Q_F)$ je definisan na sljedeći način:
$Q_1 = \{q_i \mid i \in \{1, ..., 12\}\} \cup Q_F$
$\varphi_1(q_1, a) = q_2$ $\psi_1(q_1, a) = w$ za $a = 208$,
$\varphi_1(q_1, a) = q_2$ $\psi_1(q_1, a) = n$ za $a \in \{16, 144\}$,
$\varphi_1(q_1, a) = q_{F_0}$ $\psi_1(q_1, a) = \mathbf{0}$ inače,

$\varphi_1(q_2, a) = q_2$ $\psi_1(q_2, a) = w$ za $a \in \{214, 248, 255\}$,
$\varphi_1(q_2, a) = q_5$ $\psi_1(q_2, a) = w$ za $a \in \{88, 72, 216\}$,
$\varphi_1(q_2, a) = q_3$ $\psi_1(q_2, a) = n$ za $a \in \{22, 31\}$,
$\varphi_1(q_2, a) = q_4$ $\psi_1(q_2, a) = e$ za $a \in \{150, 159\}$,
$\varphi_1(q_2, a) = q_2$ $\psi_1(q_2, a) = n$ za $a \in \{24, 152\}$,
$\varphi_1(q_2, a) = q_{F_0}$ $\psi_1(q_2, a) = \mathbf{0}$ inače,

$\varphi_1(q_3, a) = q_3$ $\psi_1(q_3, a) = e$ za $a \in \{31, 255\}$,
$\varphi_1(q_3, a) = q_2$ $\psi_1(q_3, a) = n$ za $a = 248$,
$\varphi_1(q_3, a) = q_2$ $\psi_1(q_3, a) = e$ za $a = 159$,
$\varphi_1(q_3, a) = q_{F_0}$ $\psi_1(q_3, a) = \mathbf{0}$ inače,

$\varphi_1(q_4, a) = q_4$ $\psi_1(q_4, a) = e$ za $a \in \{214, 255\}$,
$\varphi_1(q_4, a) = q_5$ $\psi_1(q_4, a) = n$ za $a \in \{208, 248\}$,
$\varphi_1(q_4, a) = q_{F_0}$ $\psi_1(q_4, a) = \mathbf{0}$inače,

$\varphi_1(q_5, a) = q_5$ $\psi_1(q_5, a) = w$ za $a \in \{66, 98, 246, 118, 214, 86, 70, 102, 67, 99, 215, 87, 119, 247, 71, 103, 104, 120, 248, 111, 79, 255, 223, 127, 95, 107, 75\}$,
$\varphi_1(q_5, a) = q_5$ $\psi_1(q_5, a) = s$ za $a \in \{10, 14, 42, 46, 62, 106, 110, 254, 126, 30\}$,
$\varphi_1(q_5, a) = q_{F_0}$ $\psi_1(q_5, a) = 0$ inače,

$\varphi_1(q_6, a) = q_6$ $\psi_1(q_6, a) = w$ za $a \in \{248, 240, 255, 127, 254, 126, 66, 98, 214, 86, 246, 252, 244, 212, 124, 116, 84, 111, 110, 102, 70, 120, 112, 80, 106, 107\}$,
$\varphi_1(q_6, a) = q_6$ $\psi_1(q_6, a) = s$ za $a \in \{30, 62, 10, 42, 28, 60, 46, 14, 24, 56\}$,
$\varphi_1(q_6, a) = q_7$ $\psi_1(q_6, a) = e$ za $a \in \{63, 31, 43, 11, 47, 15\}$,
$\varphi_1(q_6, a) = q_8$ $\psi_1(q_6, a) = e$ za $a \in \{2, 6, 22\}$,
$\varphi_1(q_6, a) = q_8$ $\psi_1(q_6, a) = n$ za $a \in \{16, 20\}$,
$\varphi_1(q_6, a) = q_{F_0}$ $\psi_1(q_6, a) = 0$ inače,

$\varphi_1(q_7, a) = q_6$ $\psi_1(q_7, a) = s$ za $a \in \{106, 110, 120, 124, 126, 248, 252, 254\}$,
$\varphi_1(q_7, a) = q_7$ $\psi_1(q_7, a) = e$ za $a \in \{b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1\}$,
$\varphi_1(q_7, a) = q_{F_0}$ $\psi_1(q_7, a) = 0$ inače,

$\varphi_1(q_8, a) = q_9$ $\psi_1(q_8, a) = w$ za $a \in \{67, 99, 215, 87, 119, 247, 71, 103\}$,
$\varphi_1(q_8, a) = q_8$ $\psi_1(q_8, a) = e$ za $a \in \{b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1,\ a_0 = 0\}$,
$\varphi_1(q_8, a) = q_8$ $\psi_1(q_8, a) = n$ za $a \in \{b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 0,\ a_4 = 1\}$,
$\varphi_1(q_8, a) = q_{F_0}$ $\psi_1(q_8, a) = 0$ inače,

$\varphi_1(q_9, a) = q_8$ $\psi_1(q_9, a) = w$ za $a \in \{86, 102, 70, 66, 98, 246, 118, 214\}$,
$\varphi_1(q_9, a) = q_{11}$ $\psi_1(q_9, a) = e$ za $a \in \{62, 30, 42, 10, 46, 14\}$,
$\varphi_1(q_9, a) = q_{10}$ $\psi_1(q_9, a) = w$ za $a \in \{106, 110, 254, 126\}$,
$\varphi_1(q_9, a) = q_{F_0}$ $\psi_1(q_9, a) = 0$ inače,

$\varphi_1(q_{10}, a) = q_{10}$ $\psi_1(q_{10}, a) = w$ za $a \in \{107, 111, 127, 255\}$,
$\varphi_1(q_{10}, a) = q_{11}$ $\psi_1(q_{10}, a) = e$ za $a \in \{11, 43, 63, 31, 47, 15\}$,
$\varphi_1(q_{10}, a) = q_{F_0}$ $\psi_1(q_{10}, a) = 0$ inače,

$\varphi_1(q_{11}, a) = q_{12}$ $\psi_1(q_{11}, a) = n$ za $a \in \{216, 88, 120, 248\}$,
$\varphi_1(q_{11}, a) = q_{11}$ $\psi_1(q_{11}, a) = e$ za $a \in \{b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1\}$,
$\varphi_1(q_{11}, a) = q_{F_1}$ $\psi_1(q_{11}, a) = 0$ za $a \in \{72, 104\}$,
$\varphi_1(q_{11}, a) = q_{F_0}$ $\psi_1(q_{11}, a) = 0$ inače,

$\varphi_1(q_{12}, a) = q_{12}$ $\psi_1(q_{12}, a) = w$ za $a \in \{107, 111, 120, 104, 127, 248, 255\}$,

$\varphi_1(q_{12}, a) = q_{11}$ $\psi_1(q_{12}, a) = e$ za $a \in \{11, 15, 31, 43, 47, 63\}$,
$\varphi_1(q_{12}, a) = q_{F_1}$ $\psi_1(q_{12}, a) = \mathbf{0}$ za $a = 40$,
$\varphi_1(q_{12}, a) = q_{F_0}$ $\psi_1(q_{12}, a) = \mathbf{0}$ inače,

Automat $A_2 = (A, Q_2, B, \varphi_2, \psi_2, q_1, Q_F)$ je definisan na sljedeći način:
$Q_2 = \{q_i \mid i \in \{1, 2, ..., 35\}\} \cup Q_F$
$\varphi_2(q_1, a) = q_2$ $\psi_2(q_1, a) = w$ za $a = 208$,
$\varphi_2(q_1, a) = q_4$ $\psi_2(q_1, a) = w$ za $a = 192$,
$\varphi_2(q_1, a) = q_3$ $\psi_2(q_1, a) = w$ za $a \in \{80, 96, 112, 224, 240\}$,
$\varphi_2(q_1, a) = q_{F_0}$ $\psi_2(q_1, a) = \mathbf{0}$ inače,

$\varphi_2(q_2, a) = q_2$ $\psi_2(q_2, a) = w$ za $a = 214$,
$\varphi_2(q_2, a) = q_3$ $\psi_2(q_2, a) = w$ za $a \in \{86, 118, 246\}$,
$\varphi_2(q_2, a) = q_{F_0}$ $\psi_2(q_2, a) = \mathbf{0}$ inače,

$\varphi_2(q_3, a) = q_3$ $\psi_2(q_3, a) = w$ za $a \in \{b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_3 = 0,\ a_6 = 1\}$,
$\varphi_2(q_3, a) = q_3$ $\psi_2(q_3, a) = s$ za $a \in \{b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_3 = 1,\ a_0 = 0\}$,
$\varphi_2(q_3, a) = q_5$ $\psi_2(q_3, a) = s$ za $a \in \{b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 0,\ a_0 = 1\}$,
$\varphi_2(q_3, a) = q_{F_0}$ $\psi_2(q_3, a) = \mathbf{0}$ inače,

$\varphi_2(q_4, a) = q_9$ $\psi_2(q_4, a) = n$ za $a = 22$,
$\varphi_2(q_4, a) = q_8$ $\psi_2(q_4, a) = n$ za $a = 18$,
$\varphi_2(q_4, a) = q_4$ $\psi_2(q_4, a) = w$ za $a \in \{210, 214\}$,
$\varphi_2(q_4, a) = q_3$ $\psi_2(q_4, a) = w$ za $a \in \{118, 246, 86, 242\}$,
$\varphi_2(q_4, a) = q_{F_0}$ $\psi_2(q_4, a) = \mathbf{0}$ inače,

$\varphi_2(q_5, a) = q_6$ $\psi_2(q_5, a) = w$ za $a = 208$,
$\varphi_2(q_5, a) = q_8$ $\psi_2(q_5, a) = w$ za $a \in \{64, 192\}$,
$\varphi_2(q_5, a) = q_5$ $\psi_2(q_5, a) = e$ za $a \in \{b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1,\ a_2 = 0\}$,
$\varphi_2(q_5, a) = q_5$ $\psi_2(q_5, a) = s$ za $a \in \{b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 0,\ a_3 = 1\}$,
$\varphi_2(q_5, a) = q_{F_0}$ $\psi_2(q_5, a) = \mathbf{0}$ inače,

$\varphi_2(q_6, a) = q_6$ $\psi_2(q_6, a) = w$ za $a \in \{214, 248, 255\}$,
$\varphi_2(q_6, a) = q_7$ $\psi_2(q_6, a) = n$ za $a \in \{22, 31\}$,
$\varphi_2(q_6, a) = q_8$ $\psi_2 q_6, a) = w$ za $a \in \{104, 232\}$,

$\varphi_2(q_6, a) = q_{F_0}$ $\psi_2(q_6, a) = \mathbf{0}$ inače,

$\varphi_2(q_7, a) = q_7$ $\psi_2(q_7, a) = e$ za $a \in \{27, 31, 107, 235, 251, 255\}$,
$\varphi_2(q_7, a) = q_6$ $\psi_2(q_7, a) = n$ za $a = 248$,
$\varphi_2(q_7, a) = q_8$ $\psi_2(q_7, a) = w$ za $a \in \{104, 232\}$,
$\varphi_2(q_7, a) = q_{F_0}$ $\psi_2(q_7, a) = \mathbf{0}$ inače,

$\varphi_2(q_8, a) = q_8$ $\psi_2(q_8, a) = w$ za $a \in \{66, 107, 194, 210, 235, 251, 255, 248, 214\}$,
$\varphi_2(q_8, a) = q_8$ $\psi_2(q_8, a) = n$ za $a \in \{18, 24, 25, 27, 28, 29\}$,
$\varphi_2(q_8, a) = q_9$ $\psi_2(q_8, a) = n$ za $a \in \{22, 31\}$,
$\varphi_2(q_8, a) = q_{11}$ $\psi_2(q_8, a) = e$ za $a \in \{10, 14\}$,
$\varphi_2(q_8, a) = q_{10}$ $\psi_2(q_8, a) = w$ za $a \in \{124, 252\}$,
$\varphi_2(q_8, a) = q_{F_0}$ $\psi_2(q_8, a) = \mathbf{0}$ inače,

$\varphi_2(q_9, a) = q_9$ $\psi_2(q_9, a) = e$ za $a \in \{31, 255\}$,
$\varphi_2(q_9, a) = q_8$ $\psi_2(q_9, a) = n$ za $a \in \{248, 249\}$,
$\varphi_2(q_9, a) = q_{10}$ $\psi_2(q_9, a) = w$ za $a \in \{252, 253\}$,
$\varphi_2(q_9, a) = q_{11}$ $\psi_2(q_9, a) = e$ za $a \in \{11, 15\}$,
$\varphi_2(q_9, a) = q_{F_0}$ $\psi_2(q_9, a) = \mathbf{0}$ inače,

$\varphi_2(q_{10}, a) = q_{11}$ $\psi_2(q_{10}, a) = e$ za $a \in \{11, 15\}$,
$\varphi_2(q_{10}, a) = q_{10}$ $\psi_2(q_{10}, a) = w$ za $a \in \{107, 111, 127, 255\}$,
$\varphi_2(q_{10}, a) = q_{11}$ $\psi_2(q_{10}, a) = n$ za $a = 31$,
$\varphi_2(q_{10}, a) = q_{F_0}$ $\psi_2(q_{10}, a) = \mathbf{0}$ inače,

$\varphi_2(q_{11}, a) = q_{11}$ $\psi_2(q_{11}, a) = e$ za $a \in \{66, 70, 86, 98, 106, 107, 102, 110, 111, 118, 126, 127, 214, 246, 254, 255, 11, 15\}$,
$\varphi_2(q_{11}, a) = q_{12}$ $\psi_2(q_{11}, a) = w$ za $a \in \{208, 212, 240, 244, 252, 253\}$,
$\varphi_2(q_{11}, a) = q_{13}$ $\psi_2(q_{11}, a) = n$ za $a \in \{80, 84, 112, 116, 124, 125\}$,
$\varphi_2(q_{11}, a) = q_{F_0}$ $\psi_2(q_{11}, a) = \mathbf{0}$ inače.

$\varphi_2(q_{12}, a) = q_{13}$ $\psi_2(q_{12}, a) = n$ za $a \in \{30, 31, 62, 63, 86, 118, 126, 127\}$,
$\varphi_2(q_{12}, a) = q_{12}$ $\psi_2(q_{12}, a) = w$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_2(q_{12}, a) = q_{F_0}$ $\psi_2(q_{12}, a) = \mathbf{0}$ inače

$\varphi_2(q_{13}, a) = q_{13}$ $\psi_2(q_{13}, a) = e$ za $a \in \{43, 47, 107, 111, 127, 255, 254, 126, 246, 214, 63, 31, 62, 46, 42, 11, 15, 30, 14, 10, 106, 110, 66, 70, 98, 102, 118, 86\}$,
$\varphi_2(q_{13}, a) = q_{13}$ $\psi_2(q_{13}, a) = n$ za $a \in \{56, 60, 184, 24, 28, 152, 120, 124, 112, 116, 80, 84\}$,

$\varphi_2(q_{13}, a) = q_{14}$ $\psi_2(q_{13}, a) = e$ za $a \in \{26, 27, 58, 59, 154, 155, 158, 159, 186, 187, 190, 191, 210, 242, 250, 251\}$,
$\varphi_2(q_{13}, a) = q_{12}$ $\psi_2(q_{13}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_2(q_{13}, a) = q_{16}$ $\psi_2(q_{13}, a) = w$ za $a \in \{72, 200, 216\}$,
$\varphi_2(q_{13}, a) = q_{F_0}$ $\psi_2(q_{13}, a) = \mathbf{0}$ inače,

$\varphi_2(q_{14}, a) = q_{14}$ $\psi_2(q_{14}, a) = e$ za $a \in \{106, 107, 210, 214, 234, 235, 242, 246, 250, 251, 254, 255\}$,
$\varphi_2(q_{14}, a) = q_{15}$ $\psi_2(q_{14}, a) = w$ za $a \in \{104, 105, 96, 208, 192, 224, 232, 233\}$,
$\varphi_2(q_{14}, a) = q_{16}$ $\psi_2(q_{14}, a) = n$ za $a \in \{240, 248, 249\}$,
$\varphi_2(q_{14}, a) = q_{F_0}$ $\psi_2(q_{14}, a) = \mathbf{0}$ inače,

$\varphi_2(q_{15}, a) = q_{16}$ $\psi_2(q_{15}, a) = n$ za $a \in \{26, 27, 58, 59, 154, 155, 186, 187, 210, 242, 250, 251\}$,
$\varphi_2(q_{15}, a) = q_{15}$ $\psi_2(q_{15}, a) = w$ za $a \in \{106, 107, 234, 235\}$,
$\varphi_2(q_{15}, a) = q_{F_0}$ $\psi_2(q_{15}, a) = \mathbf{0}$ inače,

$\varphi_2(q_{16}, a) = q_{16}$ $\psi_2(q_{16}, a) = w$ za $a \in \{214, 66, 194, 210, 216, 200, 72, 107, 235, 75, 203, 215, 255, 223, 251, 219, 217, 201, 73, 67, 195, 211, 248, 232, 104, 249, 233, 105\}$,
$\varphi_2(q_{16}, a) = q_{16}$ $\psi_2(q_{16}, a) = n$ za $a \in \{18, 19, 24, 25, 27, 146, 147, 152, 153, 155\}$,
$\varphi_2(q_{16}, a) = q_{17}$ $\psi_2(q_{16}, a) = e$ za $a \in \{22, 23, 31, 63, 150, 151, 159\}$,
$\varphi_2(q_{16}, a) = q_{18}$ $\psi_2(q_{16}, a) = w$ za $a \in \{99, 227, 95, 127, 83, 115, 242, 243, 87, 247, 119, 91, 123, 98, 226, 82, 114, 86, 118, 246\}$,
$\varphi_2(q_{16}, a) = q_{F_0}$ $\psi_2(q_{16}, a) = \mathbf{0}$ inače,

$\varphi_2(q_{17}, a) = q_{16}$ $\psi_2(q_{17}, a) = n$ za $a \in \{248, 249, 251, 210, 211, 216, 217, 219\}$,
$\varphi_2(q_{17}, a) = q_{17}$ $\psi_2(q_{17}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_2(q_{17}, a) = q_{F_0}$ $\psi_2(q_{17}, a) = \mathbf{0}$ inače,

$\varphi_2(q_{18}, a) = q_{18}$ $\psi_2(q_{18}, a) = w$ za $a \in \{66, 67, 75, 98, 99, 102, 107, 70, 71, 103, 79, 111\}$,
$\varphi_2(q_{18}, a) = q_{19}$ $\psi_2(q_{18}, a) = s$ za $a \in \{10, 14, 42, 46, 106, 110, 122, 126, 62, 30, 234, 250, 254\}$,
$\varphi_2(q_{18}, a) = q_{F_0}$ $\psi_2(q_{18}, a) = \mathbf{0}$ inače,

$\varphi_2(q_{19}, a) = q_{19}$ $\psi_2(q_{19}, a) = w$ za $a \in \{66, 98, 255, 127, 254, 126, 214, 86, 246, 252, 244, 212, 124, 84, 116, 111, 110, 102, 70, 120, 112, 80, 107, 106\}$,
$\varphi_2(q_{19}, a) = q_{19}$ $\psi_2(q_{19}, a) = s$ za $a \in \{30, 62, 10, 42, 28, 60, 46, 14, 24, 56\}$,
$\varphi_2(q_{19}, a) = q_{21}$ $\psi_2(q_{19}, a) = e$ za $a \in \{2, 6, 22\}$,
$\varphi_2(q_{19}, a) = q_{20}$ $\psi_2(q_{19}, a) = e$ za $a \in \{31, 63, 43, 47, 11, 15\}$,
$\varphi_2(q_{19}, a) = q_{21}$ $\psi_2(q_{19}, a) = n$ za $a \in \{16, 22\}$,

$\varphi_2(q_{19}, a) = q_{F_0}$ $\psi_2(q_{19}, a) = 0$ inače,

$\varphi_2(q_{20}, a) = q_{19}$ $\psi_2(q_{20}, a) = s$ za $a \in \{106, 110, 120, 124, 126, 248, 252, 254\}$,
$\varphi_2(q_{20}, a) = q_{20}$ $\psi_2(q_{20}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_2(q_{20}, a) = q_{F_0}$ $\psi_2(q_{20}, a) = 0$ inače,

$\varphi_2(q_{21}, a) = q_{22}$ $\psi_2(q_{21}, a) = e$ za $a \in \{215, 87, 71, 67, 83, 211, 195, 115, 243, 227, 247, 119, 103, 99\}$,
$\varphi_2(q_{21}, a) = q_{21} \psi_2(q_{21}, a) = n$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 0, a_4 = 1\}$,
$\varphi_2(q_{21}, a) = q_{21}$ $\psi_2(q_{21}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_2(q_{21}, a) = q_{F_0}$ $\psi_2(q_{21}, a) = 0$ inače,

$\varphi_2(q_{22}, a) = q_{23}$ $\psi_2(q_{22}, a) = w$ za $a \in \{200, 201, 232, 233, 216, 217, 248, 249\}$,
$\varphi_2(q_{22}, a) = q_{28}$ $\psi_2(q_{22}, a) = w$ za $a \in \{72, 73, 104, 105\}$,
$\varphi_2(q_{22}, a) = q_{22}$ $\psi_2(q_{22}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_2(q_{22}, a) = q_{F_0}$ $\psi_2(q_{22}, a) = 0$ inače,

$\varphi_2(q_{23}, a) = q_{23}$ $\psi_2(q_{23}, a) = w$ za $a \in \{210, 211, 242, 243, 219, 251, 214, 246, 255, 223, 247, 215\}$,
$\varphi_2(q_{23}, a) = q_{24}$ $\psi_2(q_{23}, a) = w$ za $a \in \{91, 95, 82, 83, 115, 86, 87, 119, 114, 118\}$,
$\varphi_2(q_{23}, a) = q_{30}$ $\psi_2(q_{23}, a) = e$ za $a \in \{30, 62\}$,
$\varphi_2(q_{23}, a) = q_{26}$ $\psi_2(q_{23}, a) = w$ za $a \in \{122, 126\}$,
$\varphi_2(q_{23}, a) = q_{25}$ $\psi_2(q_{23}, a) = w$ za $a \in \{123, 127\}$,
$\varphi_2(q_{23}, a) = q_{27}$ $\psi_2(q_{23}, a) = w$ za $a \in \{250, 254\}$,
$\varphi_2(q_{23}, a) = q_{F_0}$ $\psi_2(q_{23}, a) = 0$ inače,

$\varphi_2(q_{24}, a) = q_{24}$ $\psi_2(q_{24}, a) = w$ za $a \in \{66, 67, 70, 71, 98, 99, 102, 103\}$,
$\varphi_2(q_{24}, a) = q_{26}$ $\psi_2(q_{24}, a) = w$ za $a \in \{106, 110\}$,
$\varphi_2(q_{24}, a) = q_{30}$ $\psi_2(q_{24}, a) = e$ za $a \in \{10, 14, 42, 46\}$,
$\varphi_2(q_{24}, a) = q_{F_0}$ $\psi_2(q_{24}, a) = 0$ inače,

$\varphi_2(q_{25}, a) = q_{25}$ $\psi_2(q_{25}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_2(q_{25}, a) = q_{24}$ $\psi_2(q_{25}, a) = w$ za $a \in \{75, 79\}$,
$\varphi_2(q_{25}, a) = q_{F_0}$ $\psi_2(q_{25}, a) = 0$ inače,

$\varphi_2(q_{26}, a) = q_{26}$ $\psi_2(q_{26}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_2(q_{26}, a) = q_{30}$ $\psi_2(q_{26}, a) = e$ za $a \in \{11, 15, 43, 47\}$,

$\varphi_2(q_{26}, a) = q_{F_0}$ $\psi_2(q_{26}, a) = 0$ inače,

$\varphi_2(q_{27}, a) = q_{27}$ $\psi_2(q_{27}, a) = w$ za $a \in \{251, 255\}$,
$\varphi_2(q_{27}, a) = q_{26}$ $\psi_2(q_{27}, a) = w$ za $a \in \{123, 127\}$,
$\varphi_2(q_{27}, a) = q_{30}$ $\psi_2(q_{27}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_2(q_{27}, a) = q_{F_0}$ $\psi_2(q_{27}, a) = 0$ inače,

$\varphi_2(q_{28}, a) = q_{28}$ $\psi_2(q_{28}, a) = w$ za $a \in \{66, 67, 75, 98, 99, 107\}$,
$\varphi_2(q_{28}, a) = q_{23}$ $\psi_2(q_{28}, a) = w$ za $a \in \{194, 195, 203, 226, 227, 235\}$,
$\varphi_2(q_{28}, a) = q_{29}$ $\psi_2(q_{28}, a) = w$ za $a = 106$,
$\varphi_2(q_{28}, a) = q_{27}$ $\psi_2(q_{28}, a) = w$ za $a = 234$,
$\varphi_2(q_{28}, a) = q_{F_1}$ $\psi_2(q_{28}, a) = 0$ za $a \in \{10, 42\}$,
$\varphi_2(q_{28}, a) = q_{F_0}$ $\psi_2(q_{28}, a) = 0$ inače,

$\varphi_2(q_{29}, a) = q_{29}$ $\psi_2(q_{29}, a) = w$ za $a = 107$,
$\varphi_2(q_{29}, a) = q_{27}$ $\psi_2(q_{29}, a) = w$ za $a = 235$,
$\varphi_2(q_{29}, a) = q_{F_1}$ $\psi_2(q_{29}, a) = 0$ za $a \in \{11, 43\}$,
$\varphi_2(q_{29}, a) = q_{F_0}$ $\psi_2(q_{29}, a) = 0$ inače,

$\varphi_2(q_{30}, a) = q_{31}$ $\psi_2(q_{30}, a) = n$ za $a \in \{82, 83, 91, 114, 115, 122, 123, 210, 211, 216, 219, 217, 242, 248, 249, 250, 251, 243\}$,
$\varphi_2(q_{30}, a) = q_{30}$ $\psi_2(q_{30}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_2(q_{30}, a) = q_{F_0}$ $\psi_2(q_{30}, a) = 0$ inače,

$\varphi_2(q_{31}, a) = q_{31}$ $\psi_2(q_{31}, a) = w$ za $a \in \{104, 105, 107, 232, 233, 235\}$,
$\varphi_2(q_{31}, a) = q_{32}$ $\psi_2(q_{31}, a) = w$ za $a \in \{248, 249, 251\}$,
$\varphi_2(q_{31}, a) = q_{31}$ $\psi_2(q_{31}, a) = n$ za $a = 123$,
$\varphi_2(q_{31}, a) = q_{35}$ $\psi_2(q_{31}, a) = s$ za $a = 41$,
$\varphi_2(q_{31}, a) = q_{F_1}$ $\psi_2(q_{31}, a) = 0$ za $a \in \{11, 43\}$,
$\varphi_2(q_{31}, a) = q_{F_0}$ $\psi_2(q_{31}, a) = 0$ inače,

$\varphi_2(q_{32}, a) = q_{34}$ $\psi_2(q_{32}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_2(q_{32}, a) = q_{32}$ $\psi_2(q_{32}, a) = w$ za $a = 255$,
$\varphi_2(q_{32}, a) = q_{33}$ $\psi_2(q_{32}, a) = w$ za $a = 127$,
$\varphi_2(q_{32}, a) = q_{F_0}$ $\psi_2(q_{32}, a) = 0$ inače,

$\varphi_2(q_{33}, a) = q_{34}$ $\psi_2(q_{33}, a) = e$ za $a \in \{11, 15, 31, 43, 47\}$,
$\varphi_2(q_{33}, a) = q_{33}$ $\psi_2(q_{33}, a) = w$ za $a \in \{107, 111\}$,

$\varphi_2(q_{33}, a) = q_{F_0}$ $\psi_2(q_{33}, a) = 0$ inače,

$\varphi_2(q_{34}, a) = q_{31}$ $\psi_2(q_{34}, a) = n$ za $a \in \{248, 249, 251\}$,
$\varphi_2(q_{34}, a) = q_{34}$ $\psi_2(q_{34}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_2(q_{34}, a) = q_{F_0}$ $\psi_2(q_{34}, a) = 0$ inače,

$\varphi_2(q_{35}, a) = q_{35}$ $\psi_2(q_{35}, a) = w$ za $a \in \{66, 67, 75, 98, 99, 106, 107, 111, 110, 102, 103, 70, 71, 79, 82, 83, 122, 123, 114, 115, 91\}$,
$\varphi_2(q_{35}, a) = q_{F_1}$ $\psi_2(q_{35}, a) = 0$ za $a \in \{10, 11, 14, 15, 42, 43, 46, 47\}$,
$\varphi_2(q_{35}, a) = q_{F_0}$ $\psi_2(q_{35}, a) = 0$ inače.

Automat $A_3 = (A, Q_3, B, \varphi_3, \psi_3, q_1, Q_F)$ je definisan na sljedeći način:
$Q_3 = \{q_i \mid i \in \{1, 2, ..., 51\}\} \cup Q_F$

$\varphi_3(q_1, a) = q_2$ $\psi_3(q_1, a) = w$ za $a \in \{208, 240, 80, 224, 112, 96, 192\}$,
$\varphi_3(q_1, a) = q_{F_0}$ $\psi_3(q_1, a) = 0$ inače,

$\varphi_3(q_2, a) = q_7$ $\psi_3(q_2, a) = n$ za $a = 148$,
$\varphi_3(q_2, a) = q_4$ $\psi_3(q_2, a) = e$ za $a \in \{22, 18, 150, 146\}$,
$\varphi_3(q_2, a) = q_2$ $\psi_3(q_2, a) = s$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_3 = 1, a_0 = 0\}$,
$\varphi_3(q_2, a) = q_2$ $\psi_3(q_2, a) = w$ za $a \in \{b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_3 = 0, a_6 = 1\}$,
$\varphi_3(q_2, a) = q_3$ $\psi_3(q_2, a) = s$ za $a \in \{b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 0, a_0 = 1\}$,
$\varphi_3(q_2, a) = q_{F_0}$ $\psi_3(q_2, a) = 0$ inače,

$\varphi_3(q_3, a) = q_3$ $\psi_3(q_3, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1, a_2 = 0\}$,
$\varphi_3(q_3, a) = q_3$ $\psi_3(q_3, a) = s$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 0, a_3 = 1\}$,
$\varphi_3(q_3, a) = q_2$ $\psi_3(q_3, a) = w$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_3 = 0, a_6 = 1, a_1 = 0\}$,
$\varphi_3(q_3, a) = q_{F_0}$ $\psi_3(q_3, a) = 0$ inače,

$\varphi_3(q_4, a) = q_5$ $\psi_3(q_4, a) = w$ za $a \in \{208, 212\}$,
$\varphi_3(q_4, a) = q_{12}$ $\psi_3(q_4, a) = w$ za $a \in \{80, 84\}$,

$\varphi_3(q_4, a) = q_4\psi_3(q_4, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_0 = 0,\ a_1 = 1\}$,
$\varphi_3(q_4, a) = q_{F_0}\ \psi_3(q_4, a) = \mathbf{0}$ inače,

$\varphi_3(q_5, a) = q_5\ \psi_3(q_5, a) = w$ za $a \in \{255, 223, 214, 215, \}$,
$\varphi_3(q_5, a) = q_6\ \psi_3(q_5, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_3(q_5, a) = q_{12}\ \psi_3(q_5, a) = w$ za $a \in \{127, 95, 86, 87\}$,
$\varphi_3(q_5, a) = q_{F_0}\ \psi_3(q_5, a) = \mathbf{0}$ inače,

$\varphi_3(q_6, a) = q_7\ \psi_3(q_6, a) = n$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_3(q_6, a) = q_6\ \psi_3(q_6, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1\}$,
$\varphi_3(q_6, a) = q_{F_0}\ \psi_3(q_6, a) = \mathbf{0}$ inače,

$\varphi_3(q_7, a) = q_8\ \psi_3(q_7, a) = w$ za $a \in \{208, 212, 240, 244\}$,
$\varphi_3(q_7, a) = q_5\ \psi_3(q_7, a) = w$ za $a \in \{248, 252\}$,
$\varphi_3(q_7, a) = q_9\ \psi_3(q_7, a) = e$ za $a \in \{74, 78, 202, 94, 206, 218, 106, 110, 234, 126, 238, 250, 210, 242\}$,
$\varphi_3(q_7, a) = q_7\ \psi_3(q_7, a) = e$ za $a \in \{214, 246, 222, 254\}$,
$\varphi_3(q_7, a) = q_{12}\ \psi_3(q_7, a) = w$ za $a \in \{120, 124\}$,
$\varphi_3(q_7, a) = q_{F_0}\ \psi_3(q_7, a) = \mathbf{0}$ inače,

$\varphi_3(q_8, a) = q_8\ \psi_3(q_8, a) = w$ za $a \in \{214, 246\}$,
$\varphi_3(q_8, a) = q_5\ \psi_3(q_8, a) = w$ za $a \in \{222, 254\}$,
$\varphi_3(q_8, a) = q_{F_0}\ \psi_3(q_8, a) = \mathbf{0}$ inače,

$\varphi_3(q_9, a) = q_9\ \psi_3(q_9, a) = e$ za $a \in \{98, 102, 118, 246, 226, 230, 66, 70, 86, 214, 194, 198\}$,
$\varphi_3(q_9, a) = q_{10}\ \psi_3(q_9, a) = w$ za $a \in \{112, 116, 244, 240, 80, 84, 208, 212\}$,
$\varphi_3(q_9, a) = q_{F_0}\ \psi_3(q_9, a) = \mathbf{0}$ inače,

$\varphi_3(q_{10}, a) = q_{10}\ \psi_3(q_{10}, a) = w$ za $a \in \{98, 102, 118, 246, 66, 70, 86, 214, 242, 210, 226, 230, 194, 198, 146, 230\}$,
$\varphi_3(q_{10}, a) = q_{11}\ \psi_3(q_{10}, a) = w$ za $a \in \{ 74, 78, 94, 218, 106, 110, 126, 250, 254, 222, 202, 206, 234, 238\}$,
$\varphi_3(q_{10}, a) = q_{F_0}\ \psi_3(q_{10}, a) = \mathbf{0}$ inače,

$\varphi_3(q_{11}, a) = q_{11}\psi_3(q_{11}, a) = w$ za $a \in \{255, 223, 215, 251, 219, 211, 79, 71, 111, 107, 75, 67, 214, 66, 210, 203, 207, 194, 195, 235, 239, 198, 199\}$,
$\varphi_3(q_{11}, a) = q_{13}\ \psi_3(q_{11}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_3(q_{11}, a) = q_{14}\ \psi_3(q_{11}, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,

$\varphi_3(q_{11}, a) = q_{F_0}$ $\psi_3(q_{11}, a) = 0$ inače,

$\varphi_3(q_{12}, a) = q_{12}$ $\psi_3(q_{12}, a) = w$ za $a \in \{211, 67, 210, 66, 255, 223, 70, 71, 107, 75, 215, 111, 79, 219, 251, 214, 194, 195, 198, 199, 203, 207, 235, 239\}$,
$\varphi_3(q_{12}, a) = q_{13}$ $\psi_3(q_{12}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_3(q_{12}, a) = q_{14}$ $\psi_3(q_{12}, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_3(q_{12}, a) = q_{F_0}$ $\psi_3(q_{12}, a) = 0$ inače,

$\varphi_3(q_{13}, a) = q_{14}$ $\psi_3(q_{13}, a) = n$ za $a \in \{210, 211, 219, 218, 250, 251, 242\}$,
$\varphi_3(q_{13}, a) = q_{13}$ $\psi_3(q_{13}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_3(q_{13}, a) = q_{F_0}$ $\psi_3(q_{13}, a) = 0$ inače,

$\varphi_3(q_{14}, a) = q_{14}$ $\psi_3(q_{14}, a) = w$ za $a \in \{248, 232, 104, 105, 249, 233, 219, 217, 201, 73, 67, 195, 211, 214, 66, 194, 210, 216, 200, 72, 107, 235, 75, 203, 215, 255, 223, 251\}$,
$\varphi_3(q_{14}, a) = q_{14}$ $\psi_3(q_{14}, a) = n$ za $a \in \{18, 19, 24, 25, 27, 146, 147, 152, 153, 155\}$,
$\varphi_3(q_{14}, a) = q_{15}$ $\psi_3(q_{14}, a) = e$ za $a \in \{22, 23, 31, 151, 150, 159\}$,
$\varphi_3(q_{14}, a) = q_{16}$ $\psi_3(q_{14}, a) = e$ za $a \in \{2, 3, 11\}$,
$\varphi_3(q_{14}, a) = q_{16}$ $\psi_3(q_{14}, a) = s$ za $a \in \{8, 9\}$,
$\varphi_3(q_{14}, a) = q_{F_0}$ $\psi_3(q_{14}, a) = 0$ inače,

$\varphi_3(q_{15}, a) = q_{14}$ $\psi_3(q_{15}, a) = n$ za $a \in \{210, 211, 216, 217, 219, 248, 249, 251\}$,
$\varphi_3(q_{15}, a) = q_{15}$ $\psi_3(q_{15}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_3(q_{15}, a) = q_{F_0}$ $\psi_3(q_{15}, a) = 0$ inače,

$\varphi_3(q_{16}, a) = q_{17}$ $\psi_3(q_{16}, a) = n$ za $a \in \{80, 84, 86, 112, 116, 118, 120, 124, 126, 127\}$,
$\varphi_3(q_{16}, a) = q_{16}$ $\psi_3(q_{16}, a) = s$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 0\}$,
$\varphi_3(q_{16}, a) = q_{16}$ $\psi_3(q_{16}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_3(q_{16}, a) = q_{F_0}$ $\psi_3(q_{16}, a) = 0$ inače,

$\varphi_3(q_{17}, a) = q_{17}$ $\psi_3(q_8, a) = e$ za $a \in \{43, 47, 107, 111, 127, 255, 254, 126, 246, 214, 63, 31, 62, 46, 42, 11, 15, 30, 14, 10, 106, 110, 66, 70, 98, 102, 118, 86\}$,
$\varphi_3(q_{17}, a) = q_{17}$ $\psi_3(q_8, a) = n$ za $a \in \{56, 60, 184, 24, 28, 152, 120, 124, 112, 116, 80, 84\}$,
$\varphi_3(q_{17}, a) = q_{19}$ $\psi_3(q_8, a) = e$ za $a \in \{26, 27, 58, 59, 154, 155, 158, 159, 186, 187, 190, 191, 210, 242, 250, 251\}$,
$\varphi_3(q_{17}, a) = q_{18}$ $\psi_3(q_{17}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_3(q_{17}, a) = q_{21}$ $\psi_3(q_{17}, a) = w$ za $a \in \{72, 200, 216\}$,
$\varphi_3(q_{17}, a) = q_{23}$ $\psi_3(q_{17}, a) = w$ za $a \in \{88, 92, 220\}$,

$\varphi_3(q_{17}, a) = q_{F_0}$ $\psi_3(q_{17}, a) = 0$ inače,

$\varphi_3(q_{18}, a) = q_{17}$ $\psi_3(q_{18}, a) = n$ za $a \in \{30, 31, 62, 63, 86, 118, 126, 127\}$,
$\varphi_3(q_{18}, a) = q_{18}$ $\psi_3(q_{18}, a) = w$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_3(q_{18}, a) = q_{F_0}$ $\psi_3(q_{18}, a) = 0$ inače,

$\varphi_3(q_{19}, a) = q_{19}$ $\psi_3(q_{19}, a) = e$ za $a \in \{234, 235, 250, 251, 254, 255, 242, 246, 106, 107, 210, 214\}$,
$\varphi_3(q_{19}, a) = q_{21}$ $\psi_3(q_{19}, a) = n$ za $a \in \{240, 248, 249\}$,
$\varphi_3(q_{19}, a) = q_{20}$ $\psi_3(q_{19}, a) = w$ za $a \in \{104, 105, 96, 208, 192, 224, 232, 233\}$,
$\varphi_3(q_{19}, a) = q_{F_0}$ $\psi_3(q_{19}, a) = 0$ inače,

$\varphi_3(q_{20}, a) = q_{21}$ $\psi_3(q_{20}, a) = n$ za $a \in \{26, 27, 58, 59, 154, 155, 186, 187, 210, 242, 250, 251\}$,
$\varphi_3(q_{20}, a) = q_{20}$ $\psi_3(q_{20}, a) = w$ za $a \in \{106, 107, 234, 235\}$,
$\varphi_3(q_{20}, a) = q_{F_0}$ $\psi_3(q_{20}, a) = 0$ inače,

$\varphi_3(q_{21}, a) = q_{21}$ $\psi_3(q_{21}, a) = w$ za $a \in \{214, 66, 194, 210, 216, 200, 72, 107, 235, 75, 203, 215, 255, 223, 251, 219, 217, 201, 73, 67, 195, 211, 248, 232, 104, 249, 233, 105\}$,
$\varphi_3(q_{21}, a) = q_{21}$ $\psi_3(q_{21}, a) = n$ za $a \in \{18, 19, 24, 25, 27, 146, 147, 152, 153, 155\}$,
$\varphi_3(q_{21}, a) = q_{23}$ $\psi_3(q_{21}, a) = w$ za $a \in \{88, 89, 92, 93, 220, 221, 127, 86, 87, 120, 121, 95, 124, 125, 252, 253\}$,
$\varphi_3(q_{21}, a) = q_{22}$ $\psi_3(q_{21}, a) = e$ za $a \in \{22, 23, 31, 63, 150, 151, 159\}$,
$\varphi_3(q_{21}, a) = q_{F_0}$ $\psi_3(q_{21}, a) = 0$ inače,

$\varphi_3(q_{22}, a) = q_{21}$ $\psi_3(q_{22}, a) = n$ za $a \in \{210, 211, 216, 217, 219, 248, 249, 251\}$,
$\varphi_3(q_{22}, a) = q_{22}$ $\psi_3(q_{22}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_3(q_{22}, a) = q_{F_0}$ $\psi_3(q_{22}, a) = 0$ inače,

$\varphi_3(q_{23}, a) = q_{14}$ $\psi_3(q_{14}, a) = w$ za $a \in \{70, 71, 75, 79, 86, 107, 111, 214, 87, 215, 223, 255, 127, 95, 66, 67\}$,
$\varphi_3(q_{23}, a) = q_{24}$ $\psi_3(q_{23}, a) = e$ za $a \in \{2, 3, 6, 7\}$,
$\varphi_3(q_{23}, a) = q_{25}$ $\psi_3(q_{23}, a) = n$ za $a \in \{22, 23\}$,
$\varphi_3(q_{23}, a) = q_{23}$ $\psi_3(q_{23}, a) = s$ za $a = 31$,
$\varphi_3(q_{23}, a) = q_{24}$ $\psi_3(q_{23}, a) = s$ za $a \in \{11, 15\}$,
$\varphi_3(q_{23}, a) = q_{F_0}$ $\psi_3(q_{23}, a) = 0$ inače,

$\varphi_3(q_{24}, a) = q_{28}$ $\psi_3(q_{24}, a) = n$ za $a \in \{86, 87, 88, 89, 92, 93, 95, 120, 121, 124, 125, 127\}$,
$\varphi_3(q_{24}, a) = q_{24}$ $\psi_3(q_{24}, a) = e$ za $a \in \{66, 67, 70, 71, 75, 79, 107, 111\}$,

$\varphi_3(q_{24}, a) = q_{24}$ $\psi_3(q_{24}, a) = s$ za $a = 31$,
$\varphi_3(q_{24}, a) = q_{27}$ $\psi_3(q_{24}, a) = n$ za $a \in \{22, 23\}$,
$\varphi_3(q_{24}, a) = q_{F_0}$ $\psi_3(q_{24}, a) = 0$ inače,

$\varphi_3(q_{25}, a) = q_{26}$ $\psi_3(q_{25}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 249, 252, 251, 253\}$,
$\varphi_3(q_{25}, a) = q_{25}$ $\psi_3(q_{25}, a) = e$ za $a \in \{31, 214, 246, 254, 255\}$,
$\varphi_3(q_{25}, a) = q_{27}$ $\psi_3(q_{25}, a) = e$ za $a \in \{11, 15\}$,
$\varphi_3(q_{25}, a) = q_{F_0}$ $\psi_3(q_{25}, a) = 0$ inače,

$\varphi_3(q_{26}, a) = q_{26}$ $\psi_3(q_{26}, a) = w$ za $a \in \{214, 246, 254, 255\}$,
$\varphi_3(q_{26}, a) = q_{25}$ $\psi_3(q_{26}, a) = n$ za $a = 31$,
$\varphi_3(q_{26}, a) = q_{F_0}$ $\psi_3(q_{26}, a) = 0$ inače,

$\varphi_3(q_{27}, a) = q_{27}$ $\psi_3(q_{27}, a) = e$ za $a \in \{107, 111, 127, 214, 246, 254, 255, 11, 15\}$,
$\varphi_3(q_{27}, a) = q_{29}$ $\psi_3(q_{27}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 249, 252, 253\}$,
$\varphi_3(q_{27}, a) = q_{28}$ $\psi_3(q_{27}, a) = n$ za $a \in \{120, 121, 124, 125\}$,
$\varphi_3(q_{27}, a) = q_{27}$ $\psi_3(q_{27}, a) = n$ za $a = 31$,
$\varphi_3(q_{27}, a) = q_{28}$ $\psi_3(q_{27}, a) = e$ za $a \in \{106, 110, 126\}$,
$\varphi_3(q_{27}, a) = q_{F_0}$ $\psi_3(q_{27}, a) = 0$ inače,

$\varphi_3(q_{28}, a) = q_{28}$ $\psi_3(q_{28}, a) = e$ za $a \in \{43, 47, 107, 111, 127, 255, 254, 126, 246, 214, 63, 31, 62, 46, 42, 11, 15, 30, 14, 10, 106, 110, 66, 70, 98, 102, 118, 86\}$,
$\varphi_3(q_{28}, a) = q_{28}$ $\psi_3(q_{28}, a) = n$ za $a \in \{56, 60, 184, 24, 28, 152, 120, 124, 112, 116, 80, 84\}$,
$\varphi_3(q_{28}, a) = q_{30}$ $\psi_3(q_{28}, a) = e$ za $a \in \{26, 27, 58, 59, 154, 155, 158, 159, 186, 187, 190, 191, 210, 242, 250, 251\}$,
$\varphi_3(q_{28}, a) = q_{29}$ $\psi_3(q_{28}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_3(q_{28}, a) = q_{32}$ $\psi_3(q_{28}, a) = w$ za $a \in \{72, 200, 216\}$,
$\varphi_3(q_{28}, a) = q_{F_0}$ $\psi_3(q_{28}, a) = 0$ inače,

$\varphi_3(q_{29}, a) = q_{28}$ $\psi_3(q_{29}, a) = n$ za $a \in \{30, 31, 62, 63, 86, 118, 126, 127\}$,
$\varphi_3(q_{29}, a) = q_{29}$ $\psi_3(q_{29}, a) = w$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_3(q_{29}, a) = q_{F_0}$ $\psi_3(q_{29}, a) = 0$ inače,

$\varphi_3(q_{30}, a) = q_{30}$ $\psi_3(q_{30}, a) = e$ za $a \in \{234, 235, 250, 251, 254, 255, 242, 246, 106, 107, 210, 214\}$,
$\varphi_3(q_{30}, a) = q_{31}$ $\psi_3(q_{30}, a) = w$ za $a \in \{104, 105, 96, 208, 192, 224, 232, 233\}$,
$\varphi_3(q_{30}, a) = q_{32}$ $\psi_3(q_{30}, a) = n$ za $a \in \{240, 248, 249\}$,
$\varphi_3(q_{30}, a) = q_{F_0}$ $\psi_3(q_{30}, a) = 0$ inače,

$\varphi_3(q_{31}, a) = q_{32}$ $\psi_3(q_{31}, a) = n$ za $a \in \{26, 27, 58, 59, 154, 155, 186, 187, 210, 242, 250, 251\}$,
$\varphi_3(q_{31}, a) = q_{31}$ $\psi_3(q_{31}, a) = w$ za $a \in \{106, 107, 234, 235\}$,
$\varphi_3(q_{31}, a) = q_{F_0}$ $\psi_3(q_{31}, a) = 0$ inače,

$\varphi_3(q_{32}, a) = q_{32}$ $\psi_3(q_{32}, a) = w$ za $a \in \{214, 66, 194, 210, 216, 200, 72, 107, 235, 75, 203, 215, 255, 223, 251, 219, 217, 201, 73, 67, 195, 211, 248, 232, 104, 249, 233, 105\}$,
$\varphi_3(q_{32}, a) = q_{32}$ $\psi_3(q_{32}, a) = n$ za $a \in \{18, 19, 24, 25, 27, 146, 147, 152, 153, 155\}$,
$\varphi_3(q_{32}, a) = q_{34}$ $\psi_3(q_{32}, a) = w$ za $a \in \{99, 227, 95, 127, 83, 115, 242, 243, 87, 247, 119, 91, 123, 98, 226, 82, 114, 86, 118, 246\}$,
$\varphi_3(q_{32}, a) = q_{33}$ $\psi_3(q_{32}, a) = e$ za $a \in \{22, 23, 31, 63, 150, 151, 159\}$,
$\varphi_3(q_{32}, a) = q_{F_0}$ $\psi_3(q_{32}, a) = 0$ inače,

$\varphi_3(q_{33}, a) = q_{32}$ $\psi_3(q_{33}, a) = n$ za $a \in \{248, 249, 251, 210, 211, 216, 217, 219\}$,
$\varphi_3(q_{33}, a) = q_{33}$ $\psi_3(q_{33}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_3(q_{33}, a) = q_{F_0}$ $\psi_3(q_{33}, a) = 0$ inače,

$\varphi_3(q_{34}, a) = q_{34}$ $\psi_3(q_{34}, a) = w$ za $a \in \{66, 67, 98, 75, 99, 107, 102, 70, 71, 103, 79, 111\}$,
$\varphi_3(q_{34}, a) = q_{35}$ $\psi_3(q_{34}, a) = s$ za $a \in \{106, 42, 10, 234, 110, 46, 14, 250, 122, 126, 254, 62, 30\}$,
$\varphi_3(q_{34}, a) = q_{F_0}$ $\psi_3(q_{34}, a) = 0$ inače,

$\varphi_3(q_{35}, a) = q_{35}$ $\psi_3(q_{35}, a) = w$ za $a \in \{66, 98, 255, 127, 254, 126, 214, 86, 246, 252, 244, 212, 124, 116, 84, 111, 110, 102, 70, 120, 112, 80, 107, 106\}$,
$\varphi_3(q_{35}, a) = q_{35}$ $\psi_3(q_{35}, a) = s$ za $a \in \{30, 62, 10, 42, 28, 60, 46, 14, 24, 56\}$,
$\varphi_3(q_{35}, a) = q_{36}$ $\psi_3(q_{35}, a) = e$ za $a \in \{11, 15, 43, 47, 31, 63\}$,
$\varphi_3(q_{35}, a) = q_{37}$ $\psi_3(q_{35}, a) = e$ za $a \in \{2, 6, 22\}$,
$\varphi_3(q_{35}, a) = q_{37}$ $\psi_3(q_{35}, a) = n$ za $a \in \{16, 20\}$,
$\varphi_3(q_{35}, a) = q_{F_0}$ $\psi_3(q_{35}, a) = 0$ inače,

$\varphi_3(q_{36}, a) = q_{35}$ $\psi_3(q_{36}, a) = s$ za $a \in \{106, 110, 120, 124, 126, 248, 252, 254\}$,
$\varphi_3(q_{36}, a) = q_{36}$ $\psi_3(q_{36}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_3(q_{36}, a) = q_{F_0}$ $\psi_3(q_{36}, a) = 0$ inače,

$\varphi_3(q_{37}, a) = q_{38}$ $\psi_3(q_{37}, a) = e$ za $a \in \{215, 87, 71, 67, 83, 211, 195, 115, 243, 227, 247, 119, 103, 99\}$,
$\varphi_3(q_{37}, a) = q_{37}$ $\psi_3(q_{37}, a) = n$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 0, a_4 = 1\}$,
$\varphi_3(q_{37}, a) = q_{37}$ $\psi_3(q_{37}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1, a_3 = 0\}$,

$\varphi_3(q_{37}, a) = q_{F_0}$ $\psi_3(q_{37}, a) = 0$ inače,

$\varphi_3(q_{38}, a) = q_{39}$ $\psi_3(q_{38}, a) = w$ za $a \in \{200, 201, 232, 233, 216, 217, 248, 249\}$,
$\varphi_3(q_{38}, a) = q_{44}$ $\psi_3(q_{38}, a) = w$ za $a \in \{104, 105, 72, 73\}$,
$\varphi_3(q_{38}, a) = q_{38}$ $\psi_3(q_{38}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_3(q_{38}, a) = q_{38}$ $\psi_3(q_{38}, a) = 0$ inače,

$\varphi_3(q_{39}, a) = q_{39}$ $\psi_3(q_{39}, a) = w$ za $a \in \{210, 211, 242, 243, 219, 251, 214, 246, 255, 223, 247, 215\}$,
$\varphi_3(q_{39}, a) = q_{40}$ $\psi_3(q_{39}, a) = w$ za $a \in \{91, 95, 83, 115, 82, 87, 86, 119, 114, 118\}$,
$\varphi_3(q_{39}, a) = q_{46}$ $\psi_3(q_{39}, a) = e$ za $a \in \{30, 62\}$,
$\varphi_3(q_{39}, a) = q_{42}$ $\psi_3(q_{39}, a) = w$ za $a \in \{122, 126\}$,
$\varphi_3(q_{39}, a) = q_{41}$ $\psi_3(q_{39}, a) = w$ za $a \in \{123, 127\}$,
$\varphi_3(q_{39}, a) = q_{43}$ $\psi_3(q_{39}, a) = w$ za $a \in \{250, 254\}$,
$\varphi_3(q_{39}, a) = q_{F_0}$ $\psi_3(q_{39}, a) = 0$ inače,

$\varphi_3(q_{40}, a) = q_{40}$ $\psi_3(q_{40}, a) = w$ za $a \in \{66, 67, 70, 71, 98, 99, 102, 103\}$,
$\varphi_3(q_{40}, a) = q_{42}$ $\psi_3(q_{40}, a) = w$ za $a \in \{106, 110\}$,
$\varphi_3(q_{40}, a) = q_{46}$ $\psi_3(q_{40}, a) = e$ za $a \in \{10, 14, 42, 46\}$,
$\varphi_3(q_{40}, a) = q_{F_0}$ $\psi_3(q_{40}, a) = 0$ inače,

$\varphi_3(q_{41}, a) = q_{41}$ $\psi_3(q_{41}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_3(q_{41}, a) = q_{40}$ $\psi_3(q_{41}, a) = w$ za $a \in \{75, 79\}$,
$\varphi_3(q_{41}, a) = q_{F_0}$ $\psi_3(q_{41}, a) = 0$ inače,

$\varphi_3(q_{42}, a) = q_{42}$ $\psi_3(q_{42}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_3(q_{42}, a) = q_{46}$ $\psi_3(q_{42}, a) = e$ za $a \in \{11, 15, 43, 47\}$,
$\varphi_3(q_{42}, a) = q_{F_0}$ $\psi_3(q_{42}, a) = 0$ inače,

$\varphi_3(q_{43}, a) = q_{43}$ $\psi_3(q_{43}, a) = w$ za $a \in \{251, 255\}$,
$\varphi_3(q_{43}, a) = q_{42}$ $\psi_3(q_{43}, a) = w$ za $a \in \{123, 127\}$,
$\varphi_3(q_{43}, a) = q_{46}$ $\psi_3(q_{43}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_3(q_{43}, a) = q_{F_0}$ $\psi_3(q_{43}, a) = 0$ inače,

$\varphi_3(q_{44}, a) = q_{44}$ $\psi_3(q_{44}, a) = w$ za $a \in \{66, 67, 75, 98, 99, 107\}$,
$\varphi_3(q_{44}, a) = q_{39}$ $\psi_3(q_{44}, a) = w$ za $a \in \{194, 195, 203, 226, 227, 235\}$,
$\varphi_3(q_{44}, a) = q_{45}$ $\psi_3(q_{44}, a) = w$ za $a = 106$,
$\varphi_3(q_{44}, a) = q_{43}$ $\psi_3(q_{44}, a) = w$ za $a = 234$,
$\varphi_3(q_{44}, a) = q_{F_1}$ $\psi_3(q_{44}, a) = 0$ za $a \in \{10, 42\}$,
$\varphi_3(q_{44}, a) = q_{F_0}$ $\psi_3(q_{44}, a) = 0$ inače,

$\varphi_3(q_{45}, a) = q_{45}$ $\psi_3(q_{45}, a) = w$ za $a = 107$,
$\varphi_3(q_{45}, a) = q_{43}$ $\psi_3(q_{45}, a) = w$ za $a = 235$,
$\varphi_3(q_{45}, a) = q_{F_1}$ $\psi_3(q_{45}, a) = \mathbf{0}$ za $a \in \{11, 43\}$,
$\varphi_3(q_{45}, a) = q_{F_0}$ $\psi_3(q_{45}, a) = \mathbf{0}$ inače,

$\varphi_3(q_{46}, a) = q_{47}$ $\psi_3(q_{46}, a) = n$ za $a \in \{82, 83, 91, 114, 115, 122, 123, 210, 211, 216, 219, 217, 242, 248, 249, 250, 251, 243\}$,
$\varphi_3(q_{46}, a) = q_{46}$ $\psi_3(q_{46}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_3(q_{46}, a) = q_{F_0}$ $\psi_3(q_{46}, a) = \mathbf{0}$ inače,

$\varphi_3(q_{47}, a) = q_{47}$ $\psi_3(q_{47}, a) = w$ za $a \in \{104, 105, 107, 232, 233, 235\}$,
$\varphi_3(q_{47}, a) = q_{48}$ $\psi_3(q_{47}, a) = w$ za $a \in \{248, 249, 251\}$,
$\varphi_3(q_{47}, a) = q_{47}$ $\psi_3(q_{47}, a) = n$ za $a = 123$,
$\varphi_3(q_{47}, a) = q_{51}$ $\psi_3(q_{47}, a) = s$ za $a = 41$,
$\varphi_3(q_{47}, a) = q_{F_1}$ $\psi_3(q_{47}, a) = \mathbf{0}$ za $a \in \{11, 43\}$,
$\varphi_3(q_{47}, a) = q_{F_0}$ $\psi_3(q_{47}, a) = \mathbf{0}$ inače,

$\varphi_3(q_{48}, a) = q_{50}$ $\psi_3(q_{48}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_3(q_{48}, a) = q_{48}$ $\psi_3(q_{48}, a) = w$ za $a = 255$,
$\varphi_3(q_{48}, a) = q_{49}$ $\psi_3(q_{48}, a) = w$ za $a = 127$,
$\varphi_3(q_{48}, a) = q_{F_0}$ $\psi_3(q_{48}, a) = \mathbf{0}$ inače,

$\varphi_3(q_{49}, a) = q_{50}$ $\psi_3(q_{49}, a) = e$ za $a \in \{11, 15, 43, 47, 31\}$,
$\varphi_3(q_{49}, a) = q_{49}$ $\psi_3(q_{49}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_3(q_{49}, a) = q_{F_0}$ $\psi_3(q_{49}, a) = \mathbf{0}$ inače,

$\varphi_3(q_{50}, a) = q_{47}$ $\psi_3(q_{50}, a) = n$ za $a \in \{248, 249, 251\}$,
$\varphi_3(q_{50}, a) = q_{50}$ $\psi_3(q_{50}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_3(q_{50}, a) = q_{F_0}$ $\psi_3(q_{50}, a) = \mathbf{0}$ inače,

$\varphi_3(q_{51}, a) = q_{51}$ $\psi_3(q_{51}, a) = w$ za $a \in \{66, 67, 75, 98, 99, 106, 107, 111, 110, 102, 103, 70, 71, 79, 82, 83, 122, 123, 114, 115, 91\}$,
$\varphi_3(q_{51}, a) = q_{F_1}$ $\psi_3(q_{51}, a) = \mathbf{0}$ za $a \in \{10, 11, 14, 15, 46, 42, 43, 47\}$,
$\varphi_3(q_{51}, a) = q_{F_0}$ $\psi_3(q_{51}, a) = \mathbf{0}$ inače.

Automat $A_5 = (A, Q_5, B, \varphi_5, \psi_5, q_1, Q_F)$ je definisan na sljedeći način:
$Q_5 = \{q_i \mid i \in \{1, 2, ..., 49\}\} \cup Q_F$,

$\varphi_5(q_1, a) = q_2$ $\psi_5(q_1, a) = w$ za $a \in \{80, 208, 224, 240, 64, 96, 112, 192\}$,
$\varphi_5(q_1, a) = q_{F_0}$ $\psi_5(q_1, a) = \mathbf{0}$ inače,

$\varphi_5(q_2, a) = q_5$ $\psi_5(q_2, a) = e$ za $a \in \{18, 22, 146, 150\}$,
$\varphi_5(q_2, a) = q_8$ $\psi_5(q_2, a) = n$ za $a = 148$,
$\varphi_5(q_2, a) = q_3$ $\psi_5(q_2, a) = s$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 0,\ a_0 = 1,\ a_3 = 1\}$,
$\varphi_5(q_2, a) = q_2$ $\psi_5(q_2, a) = s$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_0 = 0,\ a_3 = 1\}$,
$\varphi_5(q_2, a) = q_2$ $\psi_5(q_2, a) = w$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_3 = 0,\ a_6 = 1\}$,
$\varphi_5(q_2, a) = q_{F_0}$ $\psi_5(q_2, a) = \mathbf{0}$ inače,

$\varphi_5(q_3, a) = q_3$ $\psi_5(q_3, a) = n$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_4 = 1,\ a_7 = 0\}$,
$\varphi_5(q_3, a) = q_3$ $\psi_5(q_3, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1\}$,
$\varphi_5(q_3, a) = q_4$ $\psi_5(q_3, a) = s$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 0,\ a_3 = 1,\ a_4 = 0\}$,
$\varphi_5(q_3, a) = q_{F_0}$ $\psi_5(q_3, a) = \mathbf{0}$ inače,

$\varphi_5(q_4, a) = q_4$ $\psi_5(q_4, a) = s$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1,\ a_3 = 1\}$,
$\varphi_5(q_4, a) = q_4$ $\psi_5(q_4, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1,\ a_2 = 0\}$,
$\varphi_5(q_4, a) = q_2$ $\psi_5(q_4, a) = w$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 0,\ a_3 = 0,\ a_6 = 1\}$,
$\varphi_5(q_4, a) = q_{F_0}$ $\psi_5(q_4, a) = \mathbf{0}$ inače,

$\varphi_5(q_5, a) = q_6$ $\psi_5(q_5, a) = w$ za $a \in \{208, 212\}$,
$\varphi_5(q_5, a) = q_{13}$ $\psi_5(q_5, a) = w$ za $a \in \{80, 84\}$,
$\varphi_5(q_5, a) = q_5$ $\psi_5(q_5, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1,\ a_0 = 0\}$,
$\varphi_5(q_5, a) = q_{F_0}$ $\psi_5(q_5, a) = \mathbf{0}$ inače,

$\varphi_5(q_6, a) = q_6$ $\psi_5(q_6, a) = w$ za $a \in \{255, 223, 214, 215, \}$,
$\varphi_5(q_6, a) = q_7$ $\psi_5(q_6, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_5(q_6, a) = q_{13}$ $\psi_5(q_6, a) = w$ za $a \in \{127, 95, 86, 87\}$,
$\varphi_5(q_6, a) = q_{F_0}$ $\psi_5(q_6, a) = \mathbf{0}$ inače,

$\varphi_5(q_7, a) = q_8$ $\psi_5(q_7, a) = n$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_5(q_7, a) = q_7$ $\psi_5(q_7, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1\}$,
$\varphi_5(q_7, a) = q_{F_0}$ $\psi_5(q_7, a) = 0$ inače,

$\varphi_5(q_8, a) = q_9$ $\psi_5(q_8, a) = w$ za $a \in \{208, 212, 240, 244\}$,
$\varphi_5(q_8, a) = q_6$ $\psi_5(q_8, a) = w$ za $a \in \{248, 252\}$,
$\varphi_5(q_8, a) = q_{10}$ $\psi_5(q_8, a) = e$ za $a \in \{74, 78, 202, 94, 206, 218, 106, 110, 234, 126, 238, 250, 210, 242\}$,
$\varphi_5(q_8, a) = q_8$ $\psi_5(q_8, a) = e$ za $a \in \{214, 246, 222, 254\}$,
$\varphi_5(q_8, a) = q_{F_0}$ $\psi_5(q_8, a) = 0$ inače,

$\varphi_5(q_9, a) = q_9$ $\psi_5(q_9, a) = w$ za $a \in \{214, 246\}$,
$\varphi_5(q_9, a) = q_6$ $\psi_5(q_9, a) = w$ za $a \in \{222, 254\}$,
$\varphi_5(q_9, a) = q_{F_0}$ $\psi_5(q_9, a) = 0$ inače,

$\varphi_5(q_{10}, a) = q_{10}$ $\psi_5(q_{10}, a) = e$ za $a \in \{98, 102, 118, 246, 226, 230, 66, 70, 86, 214, 194, 198\}$,
$\varphi_5(q_{10}, a) = q_{11}$ $\psi_5(q_{10}, a) = w$ za $a \in \{112, 116, 244, 240, 80, 84, 208, 212\}$,
$\varphi_5(q_{10}, a) = q_{F_0}$ $\psi_5(q_{10}, a) = 0$ inače,

$\varphi_5(q_{11}, a) = q_{11}$ $\psi_5(q_{11}, a) = w$ za $a \in \{98, 102, 118, 246, 66, 70, 86, 214, 242, 210, 226, 230, 194, 198, 146\}$,
$\varphi_5(q_{11}, a) = q_{12}$ $\psi_5(q_{11}, a) = w$ za $a \in \{ 74, 78, 94, 218, 106, 110, 126, 250, 254, 222, 202, 206, 234, 238\}$,
$\varphi_5(q_{11}, a) = q_{F_0}$ $\psi_5(q_{11}, a) = 0$ inače,

$\varphi_5(q_{12}, a) = q_{12}$ $\psi_5(q_{12}, a) = w$ za $a \in \{255, 223, 215, 251, 219, 211, 79, 71, 111, 107, 75, 67, 214, 66, 210, 203, 207, 194, 195, 235, 239, 198, 199\}$,
$\varphi_5(q_{12}, a) = q_{14}$ $\psi_5(q_{12}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_5(q_{12}, a) = q_{15}$ $\psi_5(q_{12}, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_5(q_{12}, a) = q_{F_0}$ $\psi_5(q_{12}, a) = 0$ inače,

$\varphi_5(q_{13}, a) = q_{13}$ $\psi_5(q_{13}, a) = w$ za $a \in \{211, 67, 210, 66, 255, 223, 70, 71, 107, 75, 215, 111, 79, 219, 251, 214, 194, 195, 198, 199, 203, 207, 235, 239\}$,
$\varphi_5(q_{13}, a) = q_{14}$ $\psi_5(q_{13}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_5(q_{13}, a) = q_{15}$ $\psi_5(q_{13}, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_5(q_{13}, a) = q_{F_0}$ $\psi_5(q_{13}, a) = 0$ inače,

$\varphi_5(q_{14}, a) = q_{15}$ $\psi_5(q_{14}, a) = n$ za $a \in \{210, 211, 219, 218, 250, 251, 242\}$,

$\varphi_5(q_{14}, a) = q_{14}$ $\psi_5(q_{14}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_5(q_{14}, a) = q_{14}$ $\psi_5(q_{14}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{15}, a) = q_{15}$ $\psi_5(q_{15}, a) = w$ za $a \in \{248, 232, 104, 105, 249, 233, 219, 217, 201, 73, 67, 195, 211, 214, 66, 194, 210, 216, 200, 72, 107, 235, 75, 203, 215, 255, 223, 251\}$,
$\varphi_5(q_{15}, a) = q_{15}$ $\psi_5(q_{15}, a) = n$ za $a \in \{18, 19, 24, 25, 27, 146, 147, 152, 153, 155\}$,
$\varphi_5(q_{15}, a) = q_{16}$ $\psi_5(q_{15}, a) = e$ za $a \in \{22, 23, 31, 151, 150, 159\}$,
$\varphi_5(q_{15}, a) = q_{17}$ $\psi_5(q_{15}, a) = e$ za $a \in \{2, 3, 11\}$,
$\varphi_5(q_{15}, a) = q_{17}$ $\psi_5(q_{15}, a) = s$ za $a \in \{8, 9\}$,
$\varphi_5(q_{15}, a) = q_{F_0}$ $\psi_5(q_{15}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{16}, a) = q_{15}$ $\psi_5(q_{16}, a) = n$ za $a \in \{210, 211, 216, 217, 219, 248, 249, 251\}$,
$\varphi_5(q_{16}, a) = q_{16}$ $\psi_5(q_{16}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_5(q_{16}, a) = q_{F_0}$ $\psi_5(q_{16}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{17}, a) = q_{18}$ $\psi_5(q_{17}, a) = n$ za $a \in \{80, 84, 86, 112, 116, 118, 120, 124, 126, 127\}$,
$\varphi_5(q_{17}, a) = q_{17}$ $\psi_5(q_{17}, a) = s$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 0\}$,
$\varphi_5(q_{17}, a) = q_{17}$ $\psi_5(q_{17}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_5(q_{17}, a) = q_{F_0}$ $\psi_5(q_{17}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{18}, a) = q_{18}$ $\psi_5(q_{18}, a) = e$ za $a \in \{43, 47, 107, 111, 127, 255, 254, 126, 246, 214, 63, 31, 62, 46, 42, 11, 15, 30, 14, 10, 106, 110, 66, 70, 98, 102, 118, 86\}$,
$\varphi_5(q_{18}, a) = q_{18}$ $\psi_5(q_{18}, a) = n$ za $a \in \{56, 60, 184, 24, 28, 152, 120, 124, 112, 116, 80, 84\}$,
$\varphi_5(q_{18}, a) = q_{20}$ $\psi_5(q_{18}, a) = e$ za $a \in \{26, 27, 58, 59, 154, 155, 158, 159, 186, 187, 190, 191, 210, 242, 250, 251\}$,
$\varphi_5(q_{18}, a) = q_{19}$ $\psi_5(q_{18}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_5(q_{18}, a) = q_{22}$ $\psi_5(q_{18}, a) = w$ za $a \in \{72, 200, 216\}$,
$\varphi_5(q_{18}, a) = q_{F_0}$ $\psi_5(q_{18}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{19}, a) = q_{18}$ $\psi_5(q_{19}, a) = n$ za $a \in \{30, 31, 62, 63, 86, 118, 126, 127\}$,
$\varphi_5(q_{19}, a) = q_{19}$ $\psi_5(q_{19}, a) = w$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_5(q_{19}, a) = q_{F_0}$ $\psi_5(q_{19}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{20}, a) = q_{20}$ $\psi_5(q_{20}, a) = e$ za $a \in \{234, 235, 250, 251, 254, 255, 242, 246, 106, 107, 210, 214\}$,
$\varphi_5(q_{20}, a) = q_{22}$ $\psi_5(q_{20}, a) = n$ za $a \in \{240, 248, 249\}$,

$\varphi_5(q_{20}, a) = q_{21}$ $\psi_5(q_{20}, a) = w$ za $a \in \{104, 105, 96, 208, 192, 224, 232, 233\}$,
$\varphi_5(q_{20}, a) = q_{F_0}$ $\psi_5(q_{20}, a) = 0$ inače,

$\varphi_5(q_{21}, a) = q_{22}$ $\psi_5(q_{21}, a) = n$ za $a \in \{26, 27, 58, 59, 154, 155, 186, 187, 210, 242, 250, 251\}$,
$\varphi_5(q_{21}, a) = q_{21}$ $\psi_5(q_{21}, a) = w$ za $a \in \{106, 107, 234, 235\}$,
$\varphi_5(q_{21}, a) = q_{F_0}$ $\psi_5(q_{21}, a) = 0$ inače,

$\varphi_5(q_{22}, a) = q_{22}$ $\psi_5(q_{22}, a) = w$ za $a \in \{214, 66, 194, 210, 216, 200, 72, 107, 235, 75, 203, 215, 255, 223, 251, 219, 217, 201, 73, 67, 195, 211, 248, 232, 104, 249, 233, 105\}$,
$\varphi_5(q_{22}, a) = q_{22}$ $\psi_5(q_{22}, a) = n$ za $a \in \{18, 19, 24, 25, 27, 146, 147, 152, 153, 155\}$,
$\varphi_5(q_{22}, a) = q_{24}$ $\psi_5(q_{22}, a) = w$ za $a \in \{99, 227, 95, 127, 83, 115, 242, 243, 87, 247, 119, 91, 123, 98, 226, 82, 114, 86, 118, 246\}$,
$\varphi_5(q_{22}, a) = q_{23}$ $\psi_5(q_{22}, a) = e$ za $a \in \{22, 23, 31, 63, 150, 151, 159\}$,
$\varphi_5(q_{22}, a) = q_{F_0}$ $\psi_5(q_{22}, a) = 0$ inače,

$\varphi_5(q_{23}, a) = q_{22}$ $\psi_5(q_{23}, a) = n$ za $a \in \{210, 211, 216, 217, 219, 248, 249, 251\}$,
$\varphi_5(q_{23}, a) = q_{23}$ $\psi_5(q_{23}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_5(q_{23}, a) = q_{F_0}$ $\psi_5(q_{23}, a) = 0$ inače,

$\varphi_5(q_{24}, a) = q_{24}$ $\psi_5(q_{24}, a) = w$ za $a \in \{66, 67, 98, 99, 75, 107, 102, 70, 71, 103, 79, 111\}$,
$\varphi_5(q_{24}, a) = q_{25}$ $\psi_5(q_{24}, a) = s$ za $a \in \{106, 42, 10, 234, 110, 46, 14, 250, 122, 126, 254, 62, 30\}$,
$\varphi_5(q_{24}, a) = q_{F_0}$ $\psi_5(q_{24}, a) = 0$ inače,

$\varphi_5(q_{25}, a) = q_{25}$ $\psi_5(q_{25}, a) = w$ za $a \in \{66, 98, 255, 127, 254, 126, 214, 86, 246, 252, 244, 212, 124, 116, 84, 111, 110, 102, 70, 120, 112, 80, 107, 106, 118\}$,
$\varphi_5(q_{25}, a) = q_{25}$ $\psi_5(q_{25}, a) = s$ za $a \in \{30, 62, 10, 42, 28, 60, 46, 14, 24, 56\}$,
$\varphi_5(q_{25}, a) = q_{26}$ $\psi_5(q_{25}, a) = e$ za $a \in \{63, 31, 43, 47, 11, 15\}$,
$\varphi_5(q_{25}, a) = q_{27}$ $\psi_5(q_{25}, a) = w$ za $a \in \{194, 198, 226, 230, 234, 235, 238, 239\}$,
$\varphi_5(q_{25}, a) = q_{F_0}$ $\psi_5(q_{25}, a) = 0$ inače ,

$\varphi_5(q_{26}, a) = q_{25}$ $\psi_5(q_{26}, a) = s$ za $a \in \{106, 110, 120, 124, 126, 248, 252, 254\}$,
$\varphi_5(q_{26}, a) = q_{26}$ $\psi_5(q_{26}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_5(q_{26}, a) = q_{F_0}$ $\psi_5(q_{26}, a) = 0$ inače,

$\varphi_5(q_{27}, a) = q_{27}$ $\psi_5(q_{27}, a) = w$ za $a \in \{250, 251, 210, 242, 255, 214, 246, 254\}$,
$\varphi_5(q_{27}, a) = q_{27}$ $\psi_5(q_{27}, a) = s$ za $a \in \{30, 26\}$,
$\varphi_5(q_{27}, a) = q_{28}$ $\psi_5(q_{27}, a) = s$ za $a \in \{31, 27\}$,

$\varphi_5(q_{27}, a) = q_{30}$ $\psi_5(q_{27}, a) = e$ za $a \in \{18, 22\}$,
$\varphi_5(q_{27}, a) = q_{30}$ $\psi_5(q_{27}, a) = n$ za $a = 20$,
$\varphi_5(q_{27}, a) = q_{F_0}$ $\psi_5(q_{27}, a) = 0$ inače,

$\varphi_5(q_{28}, a) = q_{28}$ $\psi_5(q_{28}, a) = e$ za $a \in \{30, 31, 214, 246, 254, 255\}$,
$\varphi_5(q_{28}, a) = q_{27}$ $\psi_5(q_{28}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_5(q_{28}, a) = q_{29}$ $\psi_5(q_{28}, a) = e$ za $a = 22$,
$\varphi_5(q_{28}, a) = q_{F_0}$ $\psi_5(q_{28}, a) = 0$ inače,

$\varphi_5(q_{29}, a) = q_{30}$ $\psi_5(q_{29}, a) = n$ za $a \in \{208, 212\}$,
$\varphi_5(q_{29}, a) = q_{29}$ $\psi_5(q_{29}, a) = e$ za $a = 214$,
$\varphi_5(q_{29}, a) = q_{F_0}$ $\psi_5(q_{29}, a) = 0$ inače,

$\varphi_5(q_{30}, a) = q_{31}$ $\psi_5(q_{30}, a) = e$ za $a \in \{215, 87, 71, 67, 83, 211, 195, 115, 243, 227, 247, 119, 103, 99\}$,
$\varphi_5(q_{30}, a) = q_{30}$ $\psi_5(q_{30}, a) = n$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 0\}$,
$\varphi_5(q_{30}, a) = q_{30}$ $\psi_5(q_{30}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1, a_0 = 0\}$,
$\varphi_5(q_{30}, a) = q_{F_0}$ $\psi_5(q_{30}, a) = 0$ inače,

$\varphi_5(q_{31}, a) = q_{32}$ $\psi_5(q_{31}, a) = w$ za $a \in \{200, 201, 232, 233, 216, 217, 248, 249\}$,
$\varphi_5(q_{31}, a) = q_{37}$ $\psi_5(q_{31}, a) = w$ za $a \in \{72, 73, 104, 105\}$,
$\varphi_5(q_{31}, a) = q_{31}$ $\psi_5(q_{31}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_5(q_{31}, a) = q_{F_0}$ $\psi_5(q_{31}, a) = 0$ inače,

$\varphi_5(q_{32}, a) = q_{32}$ $\psi_5(q_{32}, a) = w$ za $a \in \{210, 211, 242, 243, 219, 251, 214, 246, 255, 223, 247, 215\}$,
$\varphi_5(q_{32}, a) = q_{33}$ $\psi_5(q_{32}, a) = w$ za $a \in \{91, 95, 82, 83, 115, 86, 87, 119, 114, 118\}$,
$\varphi_5(q_{32}, a) = q_{39}$ $\psi_5(q_{32}, a) = e$ za $a \in \{30, 62\}$,
$\varphi_5(q_{32}, a) = q_{35}$ $\psi_5(q_{32}, a) = w$ za $a \in \{122, 126\}$,
$\varphi_5(q_{32}, a) = q_{34}$ $\psi_5(q_{32}, a) = w$ za $a \in \{123, 127\}$,
$\varphi_5(q_{32}, a) = q_{36}$ $\psi_5(q_{32}, a) = w$ za $a \in \{250, 254\}$,
$\varphi_5(q_{32}, a) = q_{F_0}$ $\psi_5(q_{32}, a) = 0$ inače,

$\varphi_5(q_{33}, a) = q_{33}$ $\psi_5(q_{33}, a) = w$ za $a \in \{66, 67, 70, 71, 98, 99, 102, 103\}$,
$\varphi_5(q_{33}, a) = q_{35}$ $\psi_5(q_{33}, a) = w$ za $a \in \{106, 110\}$,
$\varphi_5(q_{33}, a) = q_{39}$ $\psi_5(q_{33}, a) = e$ za $a \in \{10, 14, 42, 46\}$,
$\varphi_5(q_{33}, a) = q_{F_0}$ $\psi_5(q_{33}, a) = 0$ inače,

$\varphi_5(q_{34}, a) = q_{34}$ $\psi_5(q_{34}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_5(q_{34}, a) = q_{33}$ $\psi_5(q_{34}, a) = w$ za $a \in \{75, 79\}$,
$\varphi_5(q_{34}, a) = q_{F_0}$ $\psi_5(q_{34}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{35}, a) = q_{35}$ $\psi_5(q_{35}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_5(q_{35}, a) = q_{39}$ $\psi_5(q_{35}, a) = e$ za $a \in \{11, 15, 43, 47\}$,
$\varphi_5(q_{35}, a) = q_{F_0}$ $\psi_5(q_{35}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{36}, a) = q_{36}$ $\psi_5(q_{36}, a) = w$ za $a \in \{251, 255\}$,
$\varphi_5(q_{36}, a) = q_{35}$ $\psi_5(q_{36}, a) = w$ za $a \in \{123, 127\}$,
$\varphi_5(q_{36}, a) = q_{39}$ $\psi_5(q_{36}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_5(q_{36}, a) = q_{F_0}$ $\psi_5(q_{36}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{37}, a) = q_{37}$ $\psi_5(q_{37}, a) = w$ za $a \in \{66, 67, 75, 98, 99, 107\}$,
$\varphi_5(q_{37}, a) = q_{32}$ $\psi_5(q_{37}, a) = w$ za $a \in \{194, 195, 203, 226, 227, 235\}$,
$\varphi_5(q_{37}, a) = q_{38}$ $\psi_5(q_{37}, a) = w$ za $a = 106$,
$\varphi_5(q_{37}, a) = q_{36}$ $\psi_5(q_{37}, a) = w$ za $a = 234$,
$\varphi_5(q_{37}, a) = q_{45}$ $\psi_5(q_{37}, a) = s$ za $a \in \{10, 42\}$,
$\varphi_5(q_{37}, a) = q_{F_0}$ $\psi_5(q_{37}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{38}, a) = q_{38}$ $\psi_5(q_{38}, a) = w$ za $a = 107$,
$\varphi_5(q_{38}, a) = q_{36}$ $\psi_5(q_{38}, a) = w$ za $a = 235$,
$\varphi_5(q_{38}, a) = q_{45}$ $\psi_5(q_{38}, a) = s$ za $a \in \{11, 43\}$,
$\varphi_5(q_{38}, a) = q_{F_0}$ $\psi_5(q_{38}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{39}, a) = q_{40}$ $\psi_5(q_{39}, a) = n$ za $a \in \{82, 83, 91, 114, 115, 122, 123, 210, 211, 216, 219, 217, 242, 248, 249, 250, 251, 243\}$,
$\varphi_5(q_{39}, a) = q_{39}$ $\psi_5(q_{39}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_5(q_{39}, a) = q_{F_0}$ $\psi_5(q_{39}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{40}, a) = q_{40}$ $\psi_5(q_{40}, a) = w$ za $a \in \{104, 105, 107, 232, 233, 235\}$,
$\varphi_5(q_{40}, a) = q_{41}$ $\psi_5(q_{40}, a) = w$ za $a \in \{248, 249, 251\}$,
$\varphi_5(q_{40}, a) = q_{40}$ $\psi_5(q_{40}, a) = n$ za $a = 123$,
$\varphi_5(q_{40}, a) = q_{44}$ $\psi_5(q_{40}, a) = s$ za $a = 41$,
$\varphi_5(q_{40}, a) = q_{45}$ $\psi_5(q_{40}, a) = s$ za $a \in \{11, 43\}$,
$\varphi_5(q_{40}, a) = q_{F_0}$ $\psi_5(q_{40}, a) = \mathbf{0}$ inače,

$\varphi_5(q_{41}, a) = q_{43}$ $\psi_5(q_{41}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_5(q_{41}, a) = q_{41}$ $\psi_5(q_{41}, a) = w$ za $a = 255$,
$\varphi_5(q_{41}, a) = q_{42}$ $\psi_5(q_{41}, a) = w$ za $a = 127$,

$\varphi_5(q_{41}, a) = q_{F_0}$ $\psi_5(q_{41}, a) = 0$ inače,

$\varphi_5(q_{42}, a) = q_{43}$ $\psi_5(q_{42}, a) = e$ za $a \in \{11, 15, 31, 43, 47\}$,
$\varphi_5(q_{42}, a) = q_{42}$ $\psi_5(q_{42}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_5(q_{42}, a) = q_{F_0}$ $\psi_5(q_{42}, a) = 0$ inače,

$\varphi_5(q_{43}, a) = q_{40}$ $\psi_5(q_{43}, a) = n$ za $a \in \{248, 249, 251\}$,
$\varphi_5(q_{43}, a) = q_{43}$ $\psi_5(q_{43}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_5(q_{43}, a) = q_{F_0}$ $\psi_5(q_{43}, a) = 0$ inače,

$\varphi_5(q_{44}, a) = q_{44}$ $\psi_5(q_{44}, a) = w$ za $a \in \{66, 67, 75, 98, 99, 106, 107, 111, 110, 102, 103, 70, 71, 79, 82, 83, 122, 123, 114, 115, 91\}$,
$\varphi_5(q_{44}, a) = q_{45}$ $\psi_5(q_{44}, a) = s$ za $a \in \{10, 11, 14, 15, 42, 43, 46, 47\}$,
$\varphi_5(q_{44}, a) = q_{F_0}$ $\psi_5(q_{44}, a) = 0$ inače.

$\varphi_5(q_{45}, a) = q_{46}$ $\psi_5(q_{45}, a) = n$ za $a \in \{26, 27, 31, 18\}$,
$\varphi_5(q_{45}, a) = q_{45}$ $\psi_5(q_{45}, a) = s$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 0\}$,
$\varphi_5(q_{45}, a) = q_{45}$ $\psi_5(q_{45}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_5(q_{45}, a) = q_{F_0}$ $\psi_5(q_{45}, a) = 0$ inače,

$\varphi_5(q_{46}, a) = q_{46}$ $\psi_5(q_{46}, a) = e$ za $a \in \{11, 31, 255, 107\}$,
$\varphi_5(q_{46}, a) = q_{46}$ $\psi_5(q_{46}, a) = n$ za $a \in \{24, 25, 28, 29\}$,
$\varphi_5(q_{46}, a) = q_{48}$ $\psi_5(q_{46}, a) = e$ za $a \in \{10, 30, 106, 254\}$,
$\varphi_5(q_{46}, a) = q_{47}$ $\psi_5(q_{46}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_5(q_{46}, a) = q_{47}$ $\psi_5(q_{46}, a) = w$ za $a \in \{252, 253\}$,
$\varphi_5(q_{46}, a) = q_{F_0}$ $\psi_5(q_{46}, a) = 0$ inače,

$\varphi_5(q_{47}, a) = q_{47}$ $\psi_5(q_{47}, a) = w$ za $a \in \{248, 255, 252\}$,
$\varphi_5(q_{47}, a) = q_{46}$ $\psi_5(q_{47}, a) = n$ za $a = 31$,
$\varphi_5(q_{47}, a) = q_{F_0}$ $\psi_5(q_{47}, a) = 0$ inače,

$\varphi_5(q_{48}, a) = q_{48}$ $\psi_5(q_{48}, a) = e$ za $a \in \{11, 31, 107, 255, 214, 246, 66, 98\}$,
$\varphi_5(q_{48}, a) = q_{49}$ $\psi_5(q_{48}, a) = n$ za $a \in \{208, 248, 240\}$,
$\varphi_5(q_{48}, a) = q_{F_1}$ $\psi_5(q_{48}, a) = 0$ za $a \in \{104, 64, 96\}$,
$\varphi_5(q_{48}, a) = q_{F_0}$ $\psi_5(q_{48}, a) = 0$ inače,

$\varphi_5(q_{49}, a) = q_{49}$ $\psi_5(q_{49}, a) = w$ za $a \in \{104, 248, 107, 255\}$,
$\varphi_5(q_{49}, a) = q_{48}$ $\psi_5(q_{49}, a) = n$ za $a = 31$,

$\varphi_5(q_{49}, a) = q_{F_1}$ $\psi_5(q_{49}, a) = \mathbf{0}$ za $a = 11$,

$\varphi_5(q_{49}, a) = q_{F_0}$ $\psi_5(q_{49}, a) = \mathbf{0}$ inače.

Automat $A_7 = (A, Q_7, B, \varphi_7, \psi_7, q_7, Q_F)$ je definisan na sljedeći način:
$Q_7 = \{q_i \mid i \in \{1, ..., 10\}\} \cup Q_F$
$\varphi_7(q_1, a) = q_2$ $\psi_7(q_1, a) = w$ za $a = 208$,
$\varphi_7(q_1, a) = q_2$ $\psi_7(q_1, a) = n$ za $a \in \{16, 20\}$,
$\varphi_7(q_1, a) = q_4$ $\psi_7(q_1, a) = w$ za $a = 212$,
$\varphi_7(q_1, a) = q_{F_0}$ $\psi_7(q_1, a) = \mathbf{0}$ inače,

$\varphi_7(q_2, a) = q_2$ $\psi_7(q_2, a) = w$ za $a \in \{214, 248, 255\}$,
$\varphi_7(q_2, a) = q_4$ $\psi_7(q_2, a) = w$ za $a \in \{124, 252\}$,
$\varphi_7(q_2, a) = q_3$ $\psi_7(q_2, a) = n$ za $a \in \{22, 31\}$,
$\varphi_7(q_2, a) = q_5$ $\psi_7(q_2, a) = e$ za $a \in \{10, 14\}$,
$\varphi_7(q_2, a) = q_2$ $\psi_7(q_2, a) = n$ za $a \in \{24, 28\}$,
$\varphi_7(q_2, a) = q_{F_0}$ $\psi_7(q_2, a) = \mathbf{0}$ inače,

$\varphi_7(q_3, a) = q_3$ $\psi_7(q_3, a) = e$ za $a \in \{31, 255\}$,
$\varphi_7(q_3, a) = q_2$ $\psi_7(q_3, a) = n$ za $a = 248$,
$\varphi_7(q_3, a) = q_5$ $\psi_7(q_3, a) = e$ za $a \in \{11, 15\}$,
$\varphi_7(q_3, a) = q_4$ $\psi_7(q_3, a) = w$ za $a = 252$,
$\varphi_7(q_3, a) = q_{F_0}$ $\psi_7(q_3, a) = \mathbf{0}$ inače,

$\varphi_7(q_4, a) = q_4$ $\psi_7(q_4, a) = w$ za $a \in \{107, 111, 127, 214, 255\}$,
$\varphi_7(q_4, a) = q_5$ $\psi_7(q_4, a) = e$ za $a \in \{11, 15\}$,
$\varphi_7(q_4, a) = q_5$ $\psi_7(q_4, a) = n$ za $a \in \{22, 31\}$,
$\varphi_7(q_4, a) = q_{F_0}$ $\psi_7(q_4, a) = \mathbf{0}$ inače,

$\varphi_7(q_5, a) = q_5$ $\psi_7(q_5, a) = e$ za $a \in \{11, 15, 86, 106, 107, 111, 110, 127, 126, 254, 255, 214, 246, 66, 70, 98, 102, 118\}$,
$\varphi_7(q_5, a) = q_6$ $\psi_7(q_5, a) = n$ za $a \in \{80, 84, 112, 116, 124\}$,
$\varphi_7(q_5, a) = q_7$ $\psi_7(q_5, a) = w$ za $a \in \{208, 212, 240, 244, 252\}$,
$\varphi_7(q_5, a) = q_{F_0}$ $\psi_7(q_5, a) = \mathbf{0}$ inače,

$\varphi_7(q_6, a) = q_6$ $\psi_7(q_6, a) = e$ za $a \in \{43, 47, 107, 111, 126, 127, 254, 255, 246, 214, 63, 31, 62, 42, 46, 11, 15, 10, 14, 66, 30, 70, 106, 110, 98, 102, 86, 118\}$,
$\varphi_7(q_6, a) = q_6$ $\psi_7(q_6, a) = n$ za $a \in \{56, 60, 24, 28, 80, 84, 112, 116, 120, 124, 152, 184\}$,
$\varphi_7(q_6, a) = q_7$ $\psi_7(q_6, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_7(q_6, a) = q_8$ $\psi_7(q_6, a) = e$ za $a \in \{158, 159, 190, 191\}$,
$\varphi_7(q_6, a) = q_9$ $\psi_7(q_6, a) = w$ za $a \in \{72, 216\}$,

$\varphi_7(q_6, a) = q_{F_0}$ $\psi_7(q_6, a) = 0$ inače,

$\varphi_7(q_7, a) = q_6$ $\psi_7(q_7, a) = n$ za $a \in \{62, 63, 30, 31, 126, 127, 86, 118\}$,
$\varphi_7(q_7, a) = q_7$ $\psi_7(q_7, a) = w$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_6 = 1\}$,
$\varphi_7(q_7, a) = q_{F_0}$ $\psi_7(q_7, a) = 0$ inače,

$\varphi_7(q_8, a) = q_8$ $\psi_7(q_8, a) = e$ za $a \in \{214, 246, 254, 255\}$,
$\varphi_7(q_8, a) = q_9$ $\psi_7(q_8, a) = n$ za $a \in \{208, 240, 248\}$,
$\varphi_7(q_8, a) = q_{F_0}$ $\psi_7(q_8, a) = 0$ inače,

$\varphi_7(q_9, a) = q_9$ $\psi_7(q_9, a) = w$ za $a \in \{66, 67, 104, 75, 107, 255, 214, 215, 223, 248\}$,
$\varphi_7(q_9, a) = q_{10}$ $\psi_7(q_9, a) = n$ za $a \in \{22, 23, 31\}$,
$\varphi_7(q_9, a) = q_{F_1}$ $\psi_7(q_9, a) = 0$ za $a \in \{2, 3, 11\}$,
$\varphi_7(q_9, a) = q_{F_0}$ $\psi_7(q_9, a) = 0$ inače,

$\varphi_7(q_{10}, a) = q_{10}$ $\psi_7(q_{10}, a) = e$ za $a \in \{11, 31, 107, 255\}$,
$\varphi_7(q_{10}, a) = q_9$ $\psi_7(q_{10}, a) = n$ za $a = 248$,
$\varphi_7(q_{10}, a) = q_{F_1}$ $\psi_7(q_{10}, a) = 0$ za $a = 104$,
$\varphi_7(q_{10}, a) = q_{F_0}$ $\psi_7(q_{10}, a) = 0$ inače.

□

V Prepoznavanje klasa C_0, C_4, C_6, C_8, C_9

Neka je $z \in K \subseteq \mathbf{Z}^2$. Označimo sa $z_{(i,j)} = \begin{cases} 1, & z+(i,j) \in K, \\ 0, & z+(i,j) \notin K \end{cases}$, $i, j \in \{0,1,-1\}$.

Jasno da $z_{(0,0)} = 1$. Neka je $O(z) = (z_{(1,-1)}, z_{(1,0)}, z_{(1,1)}, z_{(0,-1)}, z_{(0,1)}, z_{(-1,-1)}, z_{(-1,0)}, z_{(-1,1)}) \in \{0,1\}^8$ okolina tačke $z \in K$, i $O(z) = \{z+(i,j) \mid z_{(i,j)} = 1, i, j \in \{0,1,-1\}\}$.

Neka su $a = \{w_1, ..., w_p\} \subseteq D$, $1 \le p \le 4$, i $\lambda \in \mathbf{N}$, $\lambda > 2$. Sa $L(a, x_0, \lambda)$ označimo sljedeću familiju inicijalnih π-lavirinta (c, x_0), gdje je

$c^{-1}(\{1\}) = [x_0, x_0 + \lambda w_1] \cup ... \cup [x_0, x_0 + \lambda w_p] \cup O(x_0 + \lambda w_1) \cup ... \cup O(x_0 + \lambda w_p)$,

i $O(x_0 + \lambda w_i)$ takvi da važi:

ako je $w_i = e$, tada $O(x_0 + \lambda w_i) = (*, *, *, *, *, 0, 1, 0)$,
ako je $w_i = n$, tada $O(x_0 + \lambda w_i) = (0, *, *, 1, *, 0, *, *)$,
ako je $w_i = w$, tada $O(x_0 + \lambda w_i) = (0, 1, 0, *, *, *, *, *)$,
ako je $w_i = s$, tada $O(x_0 + \lambda w_i) = (*, *, 0, *, 1, *, *, 0)$,
gdje je $* \in \{0, 1\}$.

Tačke $x_0 + jw_i$ označimo sa w_i^j, $j \in \{1,..., \lambda\}$, $i \in \{1, ..., p\}$.

Sa $L(a, x_0, \lambda, O_1, ..., O_p)$ označimo inicijalni π-lavirint iz familije $L(a, x_0, \lambda)$, kod koga su zadate odgovarajuće okoline "krajnjih" tačaka $O_i = O(w_i^{\lambda})$, $i \in \{1, ..., p\}$.

Sa $V(a)$ označimo skup $\{x_0, w_1^{\lambda}, ..., w_p^{\lambda}\}$.

Lema 2. Neka je $\mathbf{A} = (A, Q, B, \varphi, \psi)$ pješak, takav da $\|Q\| \ge 3$ i neka $\lambda = \|Q\|!$. Tada za sve $q \in Q$, $a = \{w_1, ..., w_p\} \subseteq D$, $n, m \in \mathbf{N}$, ako je $st(\pi', V(a))$ definisano tada $st(\pi, V(a)) = st(\pi', V(a))$, $pl(\pi', V(a)) = pl(\pi, V(a))$, gdje je $\pi = \pi(\mathbf{A}_q, L(a, x_0, n\lambda, O_1, ..., O_p)$, $\pi' = \pi(\mathbf{A}_q, L(a, x_0, m\lambda, O_1, ..., O_p)$.

Dokaz: Dovoljno je dokazati da tvrđenje leme važi za $m = 1$.

Ako je $pl(\pi', V(a)) = x_0$, tada razmortimo dva slučaja:

1) Automat **A** nije posjetio tačku $w_s^{\lambda-1}$,
2) Automat **A** je posjetio tačku $w_s^{\lambda-1}$,

za neko $s \in \{1, ..., p\}$.

Ako važi 1) tada je jasno da $pl(\pi, V(a)) = x_0$ i $st(\pi, V(a)) = st(\pi', V(a))$. Razmotrimo slučaj 2).

Neka je

$q_1^{k'} = st(\pi', w_s^{k'})$, $0 \le k' \le \lambda-1$,
$q_2^{k''} = st(\pi, w_s^{k''})$, $0 \le k'' \le n\lambda-1$

(za sada ne možemo tvrditi da vrijednosti $q_2^{k''}$, $1 \le k'' \le n\lambda-1$, postoje, ali to će biti jasno iz onoga što slijedi).

Primjetimo da je $q_1^k = q_2^k$, za sve $0 \le k \le \lambda - 1$.

Kako je $\lambda - 2 > \|Q\|$, to je $q_1^{\lambda-1} = q_1^k$, za neko $k \in \{2, ..., \lambda - 2\}$.

Od tuda $q_2^{k''}$ je definisano (i određeno), $\lambda - 1 < k'' < n\lambda$. Neka je $k_{max} = \max\{ k \in \{2, ..., \lambda - 2\} \mid q_1^{\lambda-1} = q_1^k \}$. Tada je $\lambda - 1 - k_{max} \le \|Q\|$ i pri tome

$q_2^{\lambda-1} = q_2^{\lambda-1+j(\lambda-1-k_{max})}$, za sve $j \in \mathbf{Z}^+$, takve da $\lambda - 1 + j(\lambda - 1 - k_{max}) < n\lambda$.

Ovo posljednje važi i za $j = \lambda(n-1)/(\lambda - 1 - k_{max})$, tj. $q_1^{\lambda-1} = q_2^{\lambda-1} = q_2^{n\lambda-1}$.

Prema tome automat **A** će se naći u istom stanju $q = q_1^{\lambda - 1}$ i u čvoru $w_s^{n\lambda - 1}$. Kako je $O(w_s^{\lambda - 1}) = O(w_s^{\lambda n - 1})$, automat **A** će imati i isti ulazni simbol. Kako je $pl(\pi', V(a)) = x_0$, to se automat **A** "vraća" ka tački x_0. U ovom "vraćanju" ka tački x_0, u jednom momentu automat **A** mora posjetiti tačku w_s^1. Slično predhodnom razmatranju, dokazujemo da će se automat **A** u oba lavirinta naći u odgovarajućim tačkama (w_s^1) u istom stanju.
Ako je $pl(\pi', V(a)) = w_s^{\lambda}$, tada je automat morao posjetiti tačku $w_s^{\lambda - 1}$. Iz prethodnog razmatranja dobijamo $pl(\pi, V(a)) = w_s^{\lambda n}$ i $st(\pi, V(a)) = st(\pi', V(a))$. □

Neka je s: $\{0,4,6,8,9\} \to \{ND, DN, LN\}$ definisana sa $s(i) = ND$ ako je $i \in \{0, 4, 8\}$, $s(6) = LN$ i $s(9) = DN$.
Neka je $i \in \{0, 4, 6, 8, 9\}$
Teorema 4. Ne postoji pješak koji prepoznaje klasu $(\mathbf{C}_i, v_{s(i)}) = \{(c, v_{s(i)}) | c \in \mathbf{C}_i, v_{s(i)}$, s(i)-tačka skupa $c^{-1}(\{1\})\}$.
Dokaz: Pretpostavimo da postoji pješak $\mathbf{A}_i = (A, Q_i, B, \varphi_i, \psi_i, q_0)$ koji prepoznaje klasu $(\mathbf{C}_i, v_{s(i)})$, $i \in \{0, 4, 6, 8, 9\}$. Jasno, $\|Q_i\| > 2$.
Posmatrajmo podklasu $\mathbf{C}_i'$ klase $\mathbf{C}_i$, $i \in \{0, 4, 6, 8, 9\}$, definisanu na sljedeći način:

Ako je **i = 0**, tada:
Neka su $z_i = (x_i, y_i) \in \mathbf{Z}^2$, $i \in \{1, 2\}$, takvi da važi: $00)\{x_2 < x_1 - 1, \quad y_2 > y_1 + 1$
Tada
$K_0^{\{z_i\}_{i=\overline{1,2}}} = \{x_1\} \times [y_1, y_2] \cup \{x_2\} \times [y_1, y_2] \cup [x_2, x_1] \times \{y_1\} \cup [x_2, x_1] \times \{y_2\}$

Klasu $\mathbf{C}_0'$ definišemo sa

$\mathbf{C}_0' = \{c: Z^2 \to E^2 | c^{-1}(\{1\}) = K_0^{\{z_i\}_{i=\overline{1,2}}}$ z_1, z_2 zadovoljavaju uslov 00) $\}$.

Definišimo lavirint $L_0 = (V_0, E_0)$ sa: $V_0 = \{v_0, v_1, v_2, v_3\}$, $E_0 = \{< v_0, v_1>, < v_1, v_2>, < v_2, v_3>, < v_3, v_0>\}$ i $|(v_0, v_1)| = w$, $|(v_1, v_2)| = n$, $|(v_2, v_3)| = e$, $|(v_3, v_0)| = s$.
Primjetimo da je L_0 *n*-stepenica (odnosno *e*-stepenica).

Ako je **i = 4**, tada:

Neka su $z_i = (x_i, y_i) \in \mathbf{Z}^2$, $i \in \{1, ..., 4\}$, takvi da važi: $04)\begin{cases} x_2 < x_1 - 1, & y_2 > y_1 + 1, \\ x_3 > x_1, & y_3 = y_1, \\ x_4 = x_1, & y_4 < y_1. \end{cases}$

Tada
$K_4^{\{z_i\}_{i=\overline{1,4}}} = \{x_1\} \times [y_1, y_2] \cup \{x_2\} \times [y_1, y_2] \cup [x_2, x_1] \times \{y_1\} \cup [x_2, x_1] \times \{y_2\} \cup [x_1, x_3] \times \{y_2\} \quad \cup \{x_1\} \times [y_4, y_1]$

Klasu $\mathbf{C}_4'$ definišemo sa

$\mathbf{C}_4' = \{ c: Z^2 \to E^2 | c^{-1}(\{1\}) = K_4^{\{z_i\}_{i=\overline{1,4}}}$ $z_1, z_2, z_3, z_4,$ zadovoljavaju uslove 04) $\}$.

Definišimo lavirint $L_4 = (V_4, E_4)$ sa: $V_4 = \{v_0, v_1, v_2, v_3, v_4, v_5\}$, $E_4 = \{< v_0, v_1>, < v_1, v_2>, < v_2, v_3>, < v_3, v_0>, < v_0, v_4>, < v_0, v_5>\}$ i $|(v_0, v_1)| = w$, $|(v_1, v_2)| = n$, $|(v_2, v_3)| = e$, $|(v_3, v_0)| = s$, $|(v_0, v_4)| = e$, $|(v_0, v_5)| = s$.
Primjetimo da je $L_4 \in$ **Step**, gdje je **Step** ranije definisana familija lavirinata.

Ako je **i = 6**, tada:

Neka su $z_i = (x_i, y_i) \in \mathbf{Z}^2$, $i \in \{1, ..., 5\}$ takvi da važi: 06) $\begin{cases} x_2 < x_1 - 1, & y_2 > y_1 + 1, \\ x_3 = x_2, & y_3 > y_2 + 2, \\ x_4 > x_3 + 1, & y_4 = y_3, \\ x_5 = x_4, & y_2 < y_5 + 1 < y_4. \end{cases}$

Tada

$K_6^{\{z_i\}_{i=\overline{1,5}}} = \{x_1\}\times[y_1, y_2] \cup \{x_2\}\times[y_1, y_2] \cup [x_2, x_1] \times\{y_1\} \cup [x_2, x_1] \times\{y_2\} \cup \{x_2\}\times[y_2, y_3] \cup [x_3, x_4] \times\{y_3\} \cup \{x_4\}\times[y_5, y_4]$

Klasu C_6' definišemo sa

$C_6' = \{ c:Z^2 \to E^2 \mid c^{-1}(\{1\}) = K_6^{\{z_i\}_{i=\overline{1,5}}}$ z_1, z_2, z_3, z_4, z_5 zadovoljavaju uslove 06) $\}$.

Definišimo lavirint $L_6 = (V_6, E_6)$ sa: $V_6 = \{v_0, v_1, v_2, v_3, v_4, v_5, v_6\}$, $E_6 = \{< v_0, v_1>, < v_1, v_2>, < v_2, v_3>, < v_3, v_0>, < v_2, v_4>, < v_4, v_5>, < v_5, v_6>\}$ i $|(v_0, v_1)| = w$, $|(v_1, v_2)| = n$, $|(v_2, v_3)| = e$, $|(v_3, v_0)| = s$, $|(v_2, v_4)| = n$, $|(v_4, v_5)| = e$, $|(v_5, v_6)| = s$.
Primjetimo da je $L_6 \in$ **Step.**

Ako je **i = 9**, tada:
Neka su $z_i = (x_i, y_i) \in \mathbf{Z}^2$, $i \in \{1, ..., 5\}$ takvi da važi:
09) $\begin{cases} x_2 < x_1 - 1, & y_2 > y_1 + 1, \\ x_3 = x_1, & y_3 < y_1 - 2, \\ x_4 < x_1 - 2, & y_4 = y_3, \\ x_5 = x_4, & y_1 > y_5 + 1 > y_4 + 1. \end{cases}$

Tada

$K_9^{\{z_i\}_{i=\overline{1,5}}} = \{x_1\}\times[y_1, y_2] \cup \{x_2\}\times[y_1, y_2] \cup [x_2, x_1] \times\{y_1\} \cup [x_2, x_1] \times\{y_2\} \cup \{x_1\}\times[y_3, y_1] \cup [x_4, x_3] \times\{y_3\} \cup \{x_4\}\times[y_4, y_5]$

Klasu C_9' definišemo sa
$C_9' = \{ c:Z^2 \to E^2 \mid c^{-1}(\{1\}) = K_9^{\{z_i\}_{i=\overline{1,5}}}$ z_1, z_2, z_3, z_4, z_5 zadovoljavaju uslov 09) $\}$.

Definišimo lavirint $L_9 = (V_9, E_9)$ sa: $V_9 = \{v_0, v_1, v_2, v_3, v_4, v_5, v_6\}$, $E_9 = \{< v_0, v_1>, < v_1, v_2>, < v_2, v_3>, < v_3, v_0>, < v_0, v_4>, < v_4, v_5>, < v_5, v_6>\}$ i $|(v_0, v_1)| = w$, $|(v_1, v_2)| = n$, $|(v_2, v_3)| = e$, $|(v_3, v_0)| = s$, $|(v_0, v_4)| = s$, $|(v_4, v_5)| = w$, $|(v_5, v_6)| = n$.
Primjetimo da je $L_9 \in$ **Step**.

Ako je **i = 8**, tada:

Neka su $z_i = (x_i, y_i) \in \mathbf{Z}^2$, $i \in \{1, ..., 3\}$ takvi da važi: 08) $\begin{cases} x_2 < x_1 - 1, & y_2 > y_1 + 1, \\ x_3 = x_1, & y_3 > y_2 + 1. \end{cases}$

Tada

$$K_8^{\{z_i\}_{i=\overline{1,3}}} = \{x_1\}\times[y_1, y_2] \cup \{x_2\}\times[y_1, y_2] \cup [x_2, x_1] \times\{y_1\} \cup [x_2, x_1] \times\{y_2\} \cup \{x_1\}\times[y_2, y_3] \cup [x_2, x_3] \times\{y_2\} \cup \{x_2\}\times[y_2, y_3]$$

Klasu $\mathbf{C}_8'$ definišemo sa

$\mathbf{C}_8' = \{ c:Z^2 \to E^2 |\ c^{-1}(\{1\}) = K_8^{\{z_i\}_{i=\overline{1,3}}}$ z_1, z_2, z_3 zadovoljavaju uslov 08) $\}$.

Definišimo lavirint $L_8 = (V_8, E_8)$ sa: $V_8 = \{v_0, v_1, v_2, v_3, v_4, v_5\}$, $E_9 = \{< v_0, v_1>, < v_1, v_2>, < v_2, v_3>, < v_3, v_0>, < v_3, v_4>, < v_4, v_5>, < v_5, v_2>\}$ i $|(v_0, v_1)| = w$, $|(v_1, v_2)| = n$, $|(v_2, v_3)| = e$, $|(v_3, v_0)| = s$, $|(v_3, v_4)| = n$, $|(v_4, v_5)| = w$, $|(v_5, v_2)| = s$.
Primjetimo da je $L_8 \in$ **Step**.

Neka je $\tilde{L}_i$ lavirint dobijen iz lavirinta L_i kao u **Teoremi 2**, gdje je $n = \|Q_i\|$. Neka je on smješten u ravni $\mathbf{R}^2$ kako je to opisano u ovoj teoremi. Iz ovako smještenog lavirinta možemo, rastezanjem grana, dobiti lavirint L_i' [14], tako da svi čvorovi smještenog lavirinta pripadaju $\mathbf{Z}^2$ s korakom $\lambda_i = \|Q_i\|!$. Posmatrajmo inicijalni π-lavirint $(c_i, v_{s(i)})$, gdje je $c_i^{-1}(\{1\}) = V(L_i')$, i ponašanje automata $\mathbf{A}_i$ u njemu. Iz **Leme 2**, iz geometrije lavirinta C_i, i činjenice da ako automat prepoznaje lavirint L, to će jedan te isti čvor lavirinta L biti posjećen najviše $\|Q_i\|$ puta, slijedi da će automat $\mathbf{A}_i$ u jednom momentu biti u stanju q_{F_1}. □

Teorema 5. Postoji kolektiv $(\mathbf{A}_i, \mathbf{K}_i)$ tipa (1,1) koji prepoznaje klasu $(\mathbf{C}_i, v_{s(i)}) = \{(c, v_{s(i)}) |\ c \in \mathbf{C}_i, v_{s(i)}$, s(i)-tačka skupa $c^{-1}(\{1\})\}$, $\mathbf{A}_i$ – pješak, $i \in \{0, 4, 6, 8, 9\}$.

Dokaz: Primjetimo iz dokaza **Teoreme 2** (ili **Teoreme 4**), s obzirom da jedinu informaciju koju automat ima u bilo kom trenutku jeste okolina tačke u kojoj se nalazi, nema informaciju da li se nalazi u "okolini" rupe ili beskonačne (spoljne) oblasti. Potrebna mu je još neka informacija.

Opišimo funkcionisanje kolektiva automata $(\mathbf{A}_i, \mathbf{K}_i)$, koji će biti konstruisani.

Neka je $i \in \{0, 4, 6, 8, 9\}$. Iz definicije klase $\mathbf{C}_i$ slijedi da ako je $c \in \mathbf{C}_i$, to skup $c^{-1}(\{1\})$ možemo horizontalnim dužima izdjeliti na podskupove C_j, $j \in (1,...,k_i)$, tako da za sve $j \in \{1,..., k_i\}$, postoji $l \in \{1,..., 9\}$ tako da $C_j \in \Phi_l$, gdje je

$$k_i = \begin{cases} 6, & \text{ako je } i = 0, \\ 5, & \text{ako je } i = 4, \text{ i } k_i \in \{9, 10\}, \text{ako je } i \in \{6, 9\}. \\ 12 & \text{ako je } i = 8. \end{cases}$$

Neka je $i \in \{0, 4, 6, 9, 8\}$. Neka je $c \in \mathbf{C}_i$ i $c^{-1}(\{1\}) = K$. Primjetimo tačku z_1 iz definicije elementa K. Uvijek možemo konstruisati automat, koji polazi iz tačke $v_{s(i)}$ (nekada je to tačka z_1) i dolazi do tačke z_1. Pa možemo smatrati da automat započinje kretanje u tački z_1 skupa K. Krećući se po skupu K, na sličan način kako to rade automati iz **Leme 1**, u jednom momentu automat (i kamen koji je stalno uz njega) nailazi na rupu. Automat kamen $\mathbf{K}_i$ se tada "razdvaja" od automata, pamteći da je automat $\mathbf{A}_i$ bio u toj tački. U daljem ponašanju automata $\mathbf{A}_i$ zahtjeva se da u obilasku rupe u jednom te istom smjeru, on ponovo posjeti tu tačku, tj. automat $\mathbf{A}_i$ obilazi rupu.
Konstruišimo kolektive $\mathbf{S}_i = (\mathbf{A}_i, \mathbf{K}_i)$, $i \in \{0, 4, 6, 9, 8\}$.

U opisu automata $\mathbf{A}_i$, smatraćemo da postoji "prioritet" među ulaznim simbolima nekog stanja tog automata, definisan sa "predhodno opisan". Takođe ćemo u opisu automata $\mathbf{A}_i$, izostaviti kod stanja automata kamena $\mathbf{K}_i$, osim u onom dijelu gdje funkcionisanje automata $\mathbf{A}_i$, zavisi od "prisustva" automata kamena $\mathbf{K}_i$.

Kolektiv $\mathbf{S}_0 = (\boldsymbol{A}_0, \boldsymbol{K}_0)$ je definisan na sljedeći način:
$Q_0 = \{q_i \mid i \in \{1, ..., 40\}\} \cup Q_F$,
$\varphi_0(q_1, a) = q_4$ $\psi_0(q_1, a) = n$ za $a = 148$,
$\varphi_0(q_1, a) = q_2$ $\psi_0(q_1, a) = w$ za $a \in \{208, 212\}$,
$\varphi_0(q_1, a) = q_9$ $\psi_0(q_1, a) = w$ za $a \in \{80, 84\}$,
$\varphi_0(q_1, a) = q_{F_0}$ $\psi_0(q_1, a) = 0$ inače,

$\varphi_0(q_2, a) = q_2$ $\psi_0(q_2, a) = w$ za $a \in \{255, 223, 214, 215, \}$,
$\varphi_0(q_2, a) = q_3$ $\psi_0(q_2, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_0(q_2, a) = q_9$ $\psi_0(q_2, a) = w$ za $a \in \{127, 95, 86, 87\}$,
$\varphi_0(q_2, a) = q_{F_0}$ $\psi_0(q_2, a) = 0$ inače,

$\varphi_0(q_3, a) = q_4$ $\psi_0(q_3, a) = n$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_0(q_3, a) = q_3$ $\psi_0(q_3, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1\}$,
$\varphi_0(q_3, a) = q_{F_0}$ $\psi_0(q_3, a) = 0$ inače,

$\varphi_0(q_4, a) = q_5$ $\psi_0(q_4, a) = w$ za $a \in \{208, 212, 240, 244\}$,
$\varphi_0(q_4, a) = q_2$ $\psi_0(q_4, a) = w$ za $a \in \{248, 252\}$,
$\varphi_0(q_4, a) = q_6$ $\psi_0(q_4, a) = e$ za $a \in \{74, 78, 202, 94, 206, 218, 106, 110, 234, 126, 238, 250, 210, 242\}$,
$\varphi_0(q_4, a) = q_4$ $\psi_0(q_4, a) = e$ za $a \in \{214, 246, 222, 254\}$,
$\varphi_0(q_4, a) = q_9$ $\psi_0(q_4, a) = w$ za $a \in \{120, 124\}$,
$\varphi_0(q_4, a) = q_{F_0}$ $\psi_0(q_4, a) = 0$ inače,

$\varphi_0(q_5, a) = q_5$ $\psi_0(q_5, a) = w$ za $a \in \{214, 246\}$,
$\varphi_0(q_5, a) = q_2$ $\psi_0(q_5, a) = w$ za $a \in \{222, 254\}$,
$\varphi_0(q_5, a) = q_{F_0}$ $\psi_0(q_5, a) = 0$ inače,

$\varphi_0(q_6, a) = q_6$ $\psi_0(q_6, a) = e$ za $a \in \{98, 102, 118, 246, 226, 230, 66, 70, 86, 214, 194, 198\}$,
$\varphi_0(q_6, a) = q_7$ $\psi_0(q_6, a) = w$ za $a \in \{112, 116, 244, 240, 80, 84, 208, 212\}$,
$\varphi_0(q_6, a) = q_{F_0}$ $\psi_0(q_6, a) = 0$ inače,

$\varphi_0(q_7, a) = q_7$ $\psi_0(q_7, a) = w$ za $a \in \{98, 102, 118, 246, 66, 70, 86, 214, 242, 210\}$,
$\varphi_0(q_7, a) = q_8$ $\psi_0(q_7, a) = w$ za $a \in \{74, 78, 94, 218, 106, 110, 126, 250, 254, 222\}$,
$\varphi_0(q_7, a) = q_7$ $\psi_0(q_7, a) = w$ za $a \in \{194, 198, 226,230\}$,
$\varphi_0(q_7, a) = q_8$ $\psi_0(q_7, a) = w$ za $a \in \{202, 206, 234, 238\}$,
$\varphi_0(q_7, a) = q_{F_0}$ $\psi_0(q_7, a) = 0$ inače,

$\varphi_0(q_8, a) = q_8$ $\psi_0(q_8, a) = w$ za $a \in \{255, 223, 215, 251, 219, 211, 71, 79, 111, 107, 75, 67, 214, 66, 210\}$,
$\varphi_0(q_8, a) = q_{10}$ $\psi_0(q_8, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_0(q_8, a) = q_{11}$ $\psi_0(q_8, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_0(q_8, a) = q_8$ $\psi_0(q_8, a) = w$ za $a \in \{194, 195, 198, 199, 203, 207, 235, 239\}$,
$\varphi_0(q_8, a) = q_{F_0}$ $\psi_0(q_8, a) = 0$ inače,

$\varphi_0(q_9, a) = q_9$ $\psi_0(q_9, a) = w$ za $a \in \{211, 67, 210, 66, 255, 223, 70, 71, 107, 75, 215, 111, 79, 219, 251, 214\}$,
$\varphi_0(q_9, a) = q_{10}$ $\psi_0(q_9, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_0(q_9, a) = q_{11}$ $\psi_0(q_9, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_0(q_9, a) = q_9$ $\psi_0(q_9, a) = w$ za $a \in \{194, 195, 198, 199, 203, 207, 235, 239\}$,
$\varphi_0(q_9, a) = q_{F_0}$ $\psi_0(q_9, a) = 0$ inače,

$\varphi_0(q_{10}, a) = q_{11}$ $\psi_0(q_{10}, a) = n$ za $a \in \{210, 211, 219, 218, 250, 251, 242\}$,
$\varphi_0(q_{10}, a) = q_{10}$ $\psi_0(q_{10}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_0(q_{10}, a) = q_{F_0}$ $\psi_0(q_{10}, a) = 0$ inače,

$\varphi_0(q_{11}, a) = q_{11}$ $\psi_0(q_{11}, a) = w$ za $a \in \{214, 66, 194, 210, 248, 104, 232, 203, 215, 211, 67, 195, 216, 200, 72, 255, 223, 251, 219, 107, 75, 235, 249, 233, 105, 217, 201, 73\}$,
$\varphi_0(q_{11}, a) = q_{11}$ $\psi_0(q_{11}, a) = n$ za $a \in \{18, 19, 24, 25, 28, 29, 27, 146, 147, 152, 153, 155\}$,
$\varphi_0(q_{11}, a) = q_{12}$ $\psi_0(q_{11}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_0(q_{11}, a) = q_{13}$ $\psi_0(q_{11}, a) = w$ za $a \in \{253, 125, 221, 93, 95, 127, 88, 92, 220, 252, 124, 120, 121, 89\}$,
$\varphi_0(q_{11}, a) = q_{15}$ $\psi_0(q_{11}, a) = e$ za $a \in \{10, 14, 30\}$,
$\varphi_0(q_{11}, a) = q_{F_0}$ $\psi_0(q_{11}, a) = 0$ inače,

$\varphi_0(q_{12}, a) = q_{11}$ $\psi_0(q_{12}, a) = n$ za $a \in \{210, 211, 216, 217, 219, 248, 249, 251\}$,

$\varphi_0(q_{12}, a) = q_{12}$ $\psi_0(q_{12}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_0(q_{12}, a) = q_{F_0}$ $\psi_0(q_{12}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{13}, a) = q_{13}$ $\psi_0(q_{13}, a) = w$ za $a \in \{107, 111, 214, 223, 255, 127, 215, 95\}$,
$\varphi_0(q_{13}, a) = q_{14}$ $\psi_0(q_{13}, a) = e$ za $a \in \{11, 15, 7, 43, 47\}$,
$\varphi_0(q_{13}, a) = q_{15}$ $\psi_0(q_{13}, a) = n$ za $a \in \{22, 23, 31, 63\}$,
$\varphi_0(q_{13}, a) = q_{F_0}$ $\psi_0(q_{13}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{14}, a) = q_{14}$ $\psi_0(q_{14}, a) = e$ za $a \in \{107, 111, 79\}$,
$\varphi_0(q_{14}, a) = q_{15}$ $\psi_0(q_{14}, a) = n$ za $a \in \{88, 89, 92, 93, 95, 125, 127, 120, 121, 124\}$,
$\varphi_0(q_{14}, a) = q_{F_0}$ $\psi_0(q_{14}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{15}, a) = q_{15}$ $\psi_0(q_{15}, a) = e$ za $a \in \{246, 63, 30, 10, 14, 110, 111, 214, 66, 70, 86, 254, 126, 127, 106, 107, 43, 47, 62, 46, 42, 255, 31, 15, 11, 118, 98, 102\}$,
$\varphi_0(q_{15}, a) = q_{15}$ $\psi_0(q_{15}, a) = n$ za $a \in \{56, 60, 124, 120, 24, 28, 112, 116, 80, 84\}$,
$\varphi_0(q_{15}, a) = q_{16}$ $\psi_0(q_{15}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_0(q_{15}, a) = q_{17}$ $\psi_0(q_{15}, a) = e$ za $a \in \{242, 247, 243, 119, 114, 115, 103, 99, 250, 251, 122, 123, 215, 210, 211, 67, 71, 87, 82, 83\}$,
$\varphi_0(q_{15}, a) = q_{F_0}$ $\psi_0(q_{15}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{16}, a) = q_{15}$ $\psi_0(q_{16}, a) = n$ za $a \in \{30, 31, 62, 63, 86, 118, 126, 127\}$,
$\varphi_0(q_{16}, a) = q_{16}$ $\psi_0(q_{16}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_0(q_{16}, a) = q_{F_0}$ $\psi_0(q_{16}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{17}, a) = q_{17}$ $\psi_0(q_{17}, a) = e$ za $a \in \{66, 67, 106, 107, 98, 99, 194, 195, 226, 227, 234, 235\}$,
$\varphi_0(q_{17}, a) = q_{18}$ $\psi_0(q_{17}, a) = s$ za $a \in \{223, 219, 216, 217, 200, 201, 203, 91, 95, 75, 79, 72, 73\}$,
$\varphi_0(q_{17}, a) = q_{F_0}$ $\psi_0(q_{17}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{18}, a) = q_{18}$ $\psi_0(q_{18}, a) = e$ za $a \in \{107, 66, 67, 75, 31, 22, 23, 235, 203, 194, 195, 27, 18, 19, 255, 251, 223, 219, 214, 210, 215, 211, 159, 151, 150, 155, 146, 147\}$,
$\varphi_0(q_{18}, a) = q_{18}$ $\psi_0(q_{18}, a) = s$ za $a \in \{24, 25, 72, 73, 152, 153, 216, 217, 200, 201, 184, 56\}$,
$\varphi_0(q_{18}, a) = q_{19}$ $\psi_0(q_{18}, a) = w$ za $a \in \{104, 105, 232, 233, 248, 249\}$,
$\varphi_0(q_{18}, a) = q_{20}$ $\psi_0(q_{18}, a) = e$ za $a \in \{154, 158, 30, 62, 63, 59, 58, 26, 254, 250, 186, 187, 190, 191\}$,
$\varphi_0(q_{18}, a) = q_{22}$ $\psi_0(q_{18}, a) = w$ za $a \in \{80, 112, 120\}$,
$\varphi_0(q_{18}, a) = q_{F_0}$ $\psi_0(q_{18}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{19}, a) = q_{18}$ $\psi_0(q_{19}, a) = s$ za $a \in \{223, 219, 203, 75, 31, 159, 27, 155\}$,
$\varphi_0(q_{19}, a) = q_{19}$ $\psi_0(q_{19}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_0(q_{19}, a) = q_{F_0}$ $\psi_0(q_{19}, a) = 0$ inače,

$\varphi_0(q_{20}, a) = q_{20}$ $\psi_0(q_{20}, a) = e$ za $a \in \{235, 246, 214, 251, 254, 255, 250, 107\}$,
$\varphi_0(q_{20}, a) = q_{21}$ $\psi_0(q_{20}, a) = w$ za $a \in \{208, 212, 224, 240, 244\}$,
$\varphi_0(q_{20}, a) = q_{22}$ $\psi_0(q_{20}, a) = s$ za $a \in \{104, 232, 248, 252\}$,
$\varphi_0(q_{20}, a) = q_{F_0}$ $\psi_0(q_{20}, a) = 0$ inače,

$\varphi_0(q_{21}, a) = q_{22}$ $\psi_0(q_{21}, a) = s$ za $a \in \{154, 158, 30, 62, 58, 26, 254, 250, 186, 190\}$,
$\varphi_0(q_{21}, a) = q_{21}$ $\psi_0(q_{21}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_0(q_{21}, a) = q_{F_0}$ $\psi_0(q_{21}, a) = 0$ inače,

$\varphi_0(q_{22}, a) = q_{22}$ $\psi_0(q_{22}, a) = w$ za $a \in \{246, 66, 98, 120, 80, 112, 106, 107, 255, 127, 254, 126, 214,$
$86, 118, 248, 240, 208, 70, 102, 110, 124, 116, 84, 252, 244, 212, 111\}$,
$\varphi_0(q_{22}, a) = q_{22}$ $\psi_0(q_{22}, a) = s$ za $a \in \{14, 46, 28, 60, 62, 30, 24, 56, 10, 42\}$,
$\varphi_0(q_{22}, a) = q_{23}$ $\psi_0(q_{22}, a) = e$ za $a \in \{11, 15, 31, 43, 47, 63\}$,
$\varphi_0(q_{22}, a) = q_{24}$ $\psi_0(q_{22}, a) = w$ za $a \in \{222, 78, 95, 223, 94, 74, 79, 75\}$,
$\varphi_0(q_{22}, a) = q_{F_0}$ $\psi_0(q_{22}, a) = 0$ inače,

$\varphi_0(q_{23}, a) = q_{22}$ $\psi_0(q_{23}, a) = s$ za $a \in \{126, 120, 106, 124, 252, 248, 110, 254\}$,
$\varphi_0(q_{23}, a) = q_{23}$ $\psi_0(q_{23}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_0(q_{23}, a) = q_{F_0}$ $\psi_0(q_{23}, a) = 0$ inače,

$\varphi_0(q_{24}, a) = q_{24}$ $\psi_0(q_{24}, a) = w$ za $a \in \{215, 87, 67, 71, 214, 86, 70, 66\}$,
$\varphi_0(q_{24}, a) = q_{F_0}$ $\psi_0(q_{24}, a) = 0$ inače,

$\varphi_0(q_{25}, a) = q_{25}$ $\psi_0(q_{25}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1, a_4 = 0\}$,
$\varphi_0(q_{25}, a) = q_{25}$ $\psi_0(q_{25}, a) = n$ za $a \in \{ b \in A |\ 24 \le b \le 31$ ili $56 \le b \le 63$ ili $80 \le b \le 95$ ili $112 \le b \le 127\}$,
$\varphi_0(q_{25}, a) = q_{26}$ $\psi_0(q_{25}, a) = n$ za $a \in \{b \in A |\ 144 \le b \le 159$ ili $184 \le b \le 191\}$,
$\varphi_0(q_{25}, a) = q_{F_0}$ $\psi_0(q_{25}, a) = 0$ inače,

$\varphi_0(q_{26}, a) = q_{26}$ $\psi_0(q_{26}, a) = w$ za $a \in \{ b \in A |\ 64 \le b \le 103$ ili $112 \le b \le 119$ ili $192 \le b \le 231$ ili $240 \le b \le 247\}$,
$\varphi_0(q_{26}, a) = q_{26}$ $\psi_0(q_{26}, a) = n$ za $a \in \{ b \in A |\ 16 \le b \le 29$ ili $b = 31$ili $144 \le b \le 159\}$,

$\varphi_0(q_{26}, a) = q_{27}$ $\psi_0(q_{26}, a) = w$ za $a \in \{106, 110, 122, 126, 234, 250, 254\}$,
$\varphi_0(q_{26}, a) = q_{30}$ $\psi_0(q_{26}, a) = e$ za $a \in \{10, 42\}$,
$\varphi_0(q_{26}, a) = q_{28}$ $\psi_0(q_{26}, a) = e$ za $a \in \{14, 30, 46, 62\}$,
$\varphi_0(q_{26}, a) = q_{F_0}$ $\psi_0(q_{26}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{27}, a) = q_{27}$ $\psi_0(q_{27}, a) = w$ za $a \in \{107, 111, 127, 123, 235, 251, 255\}$,
$\varphi_0(q_{27}, a) = q_{28}$ $\psi_0(q_{27}, a) = e$ za $a \in \{15, 31, 63, 47\}$,
$\varphi_0(q_{27}, a) = q_{30}$ $\psi_0(q_{27}, a) = e$ za $a \in \{11, 43\}$,
$\varphi_0(q_{27}, a) = q_{F_0}$ $\psi_0(q_{27}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{28}, a) = q_{28}$ $\psi_0(q_{28}, a) = e$ za $a \in \{254, 255, 246, 247, 214, 215, 126, 127, 118, 119, 86, 87\}$,
$\varphi_0(q_{28}, a) = q_{29}$ $\psi_0(q_{28}, a) = e$ za $a \in \{122, 123, 114, 115, 82, 83, 250, 251, 242, 243, 210, 211\}$,
$\varphi_0(q_{28}, a) = q_{31}$ $\psi_0(q_{28}, a) = e$ za $a \in \{95, 223\}$,
$\varphi_0(q_{28}, a) = q_{32}$ $\psi_0(q_{28}, a) = e$ za $a \in \{91, 219\}$,
$\varphi_0(q_{28}, a) = q_{36}$ $\psi_0(q_{28}, a) = n$ za $a \in \{216, 217\}$,
$\varphi_0(q_{28}, a) = q_{F_0}$ $\psi_0(q_{28}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{29}, a) = q_{29}$ $\psi_0(q_{29}, a) = e$ za $a \in \{234, 235, 226, 227, 194, 195, 106, 107, 98, 99, 66, 67\}$,
$\varphi_0(q_{29}, a) = q_{32}$ $\psi_0(q_{29}, a) = e$ za $a \in \{203, 75\}$,
$\varphi_0(q_{29}, a) = q_{35}$ $\psi_0(q_{29}, a) = w$ za $a \in \{200, 201, 72, 73\}$,
$\varphi_0(q_{29}, a) = q_{F_0}$ $\psi_0(q_{29}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{30}, a) = q_{30}$ $\psi_0(q_{30}, a) = e$ za $a \in \{66, 67, 98, 99, 106, 107\}$,
$\varphi_0(q_{30}, a) = q_{28}$ $\psi_0(q_{30}, a) = e$ za $a \in \{110, 111, 102, 103, 70, 71\}$,
$\varphi_0(q_{30}, a) = q_{F_1}$ $\psi_0(q_{30}, a) = \mathbf{0}$ za $a \in \{72, 73\}$,
$\varphi_0(q_{30}, a) = q_{31}$ $\psi_0(q_{30}, a) = e$ za $a = 79$,
$\varphi_0(q_{30}, a) = q_{33}$ $\psi_0(q_{30}, a) = e$ za $a = 75$,
$\varphi_0(q_{30}, a) = q_{F_0}$ $\psi_0(q_{30}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{31}, a) = q_{36}$ $\psi_0(q_{31}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_0(q_{31}, a) = q_{31}$ $\psi_0(q_{31}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_0(q_{31}, a) = q_{32}$ $\psi_0(q_{31}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_0(q_{31}, a) = q_{F_0}$ $\psi_0(q_{31}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{32}, a) = q_{35}$ $\psi_0(q_{32}, a) = w$ za $a \in \{72, 73, 104, 105, 232, 233\}$,
$\varphi_0(q_{32}, a) = q_{32}$ $\psi_0(q_{32}, a) = e$ za $a \in \{107, 235\}$,
$\varphi_0(q_{32}, a) = q_{F_0}$ $\psi_0(q_{32}, a) = \mathbf{0}$ inače,

$\varphi_0(q_{33}, a) = q_{F_1}$ $\psi_0(q_{33}, a) = 0$ za $a \in \{104, 105\}$,

$\varphi_0(q_{33}, a) = q_{33}$ $\psi_0(q_{33}, a) = e$ za $a = 107$,
$\varphi_0(q_{33}, a) = q_{34}$ $\psi_0(q_{33}, a) = e$ za $a = 111$,
$\varphi_0(q_{33}, a) = q_{F_0}$ $\psi_0(q_{33}, a) = 0$ inače,

$\varphi_0(q_{34}, a) = q_{34}$ $\psi_0(q_{34}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_0(q_{34}, a) = q_{36}$ $\psi_0(q_{34}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_0(q_{34}, a) = q_{32}$ $\psi_0(q_{34}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_0(q_{34}, a) = q_{F_0}$ $\psi_0(q_{34}, a) = 0$ inače.

$\varphi_0(q_{35}, a) = q_{36}$ $\psi_0(q_{35}, a) = n$ za $a \in \{210, 114, 115, 122, 123, 82, 242, 243, 250, 251, 219, 83, 211, 91\}$,
$\varphi_0(q_{35}, a) = q_{35}$ $\psi_0(q_{35}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_0(q_{35}, a) = q_{F_0}$ $\psi_0(q_{35}, a) = 0$ inače,

$\varphi_0(q_{36}, a) = q_{36}$ $\psi_0(q_{36}, a) = n$ za $a = 123$,
$\varphi_0(q_{36}, a) = q_{36}$ $\psi_0(q_{36}, a) = w$ za $a \in \{104, 105, 107, 232, 233, 235\}$,
$\varphi_0(q_{36}, a) = q_{37}$ $\psi_0(q_{36}, a) = w$ za $a \in \{248, 249, 251\}$,
$\varphi_0(q_{36}, a) = q_{40}$ $\psi_0(q_{36}, a) = s$ za $a = 41$,
$\varphi_0(q_{36}, a) = q_{F_1}$ $\psi_0(q_{36}, a) = 0$ za $a \in \{11, 43\}$,
$\varphi_0(q_{36}, a) = q_{F_0}$ $\psi_0(q_{36}, a) = 0$ inače,

$\varphi_0(q_{37}, a) = q_{37}$ $\psi_0(q_{37}, a) = w$ za $a = 255$,
$\varphi_0(q_{37}, a) = q_{39}$ $\psi_0(q_{37}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_0(q_{37}, a) = q_{38}$ $\psi_0(q_{37}, a) = w$ za $a = 127$,
$\varphi_0(q_{37}, a) = q_{F_0}$ $\psi_0(q_{37}, a) = 0$ inače,

$\varphi_0(q_{38}, a) = q_{38}$ $\psi_0(q_{38}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_0(q_{38}, a) = q_{39}$ $\psi_0(q_{38}, a) = e$ za $a \in \{11, 15, 43, 47\}$,
$\varphi_0(q_{38}, a) = q_{F_0}$ $\psi_0(q_{38}, a) = 0$ inače,

$\varphi_0(q_{39}, a) = q_{36}$ $\psi_0(q_{38}, a) = n$ za $a \in \{248, 249, 251\}$,
$\varphi_0(q_{39}, a) = q_{39}$ $\psi_0(q_{39}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_0(q_{39}, a) = q_{F_0}$ $\psi_0(q_{39}, a) = 0$ inače,

$\varphi_0(q_{40}, a) = q_{40}$ $\psi_0(q_{40}, a) = w$ za $a \in \{82, 83, 91, 114, 115, 122, 123, 70, 71, 79, 102, 103, 110, 111, 66, 67, 75, 98, 99, 106, 107\}$,
$\varphi_0(q_{40}, a) = q_{F_1}$ $\psi_0(q_{40}, a) = 0$ za $a \in \{10, 11, 14, 15, 42, 43, 46, 47\}$,

$\varphi_0(q_{40}, a) = q_{F_0}$ $\psi_0(q_{40}, a) = 0$ inače,

Neka je $M = \{194, 195, 198, 199, 202, 203, 206, 207, 226, 230, 234, 235, 238, 239\} \subseteq A$.
Tada,
$\psi_{k0}(q_{k0}, (\{q_i\}, a)) = \psi_0(q_i, (\{q_{k0}\}, a))$ za $i \in \{1, 2, 3, 4, 5, 6\}$, $a \in A$,

$\psi_{k0}(q_{k0}, (\{q_7\}, a)) = 0$ $a \in M_1 = \{202, 206, 234, 238, 194, 198, 226, 230\} \subset M$,
$\psi_{k0}(q_{k0}, (\{q_7\}, a)) = \psi_0(q_7, (\{q_{k0}\}, a))$ za $a \notin M_1$,

$\psi_{k0}(q_{k0}, (\{q_8\}, a)) = 0$ $a \in M_1 = \{195, 194, 203, 239, 207, 235\} \subset M$,
$\psi_{k0}(q_{k0}, (\{q_8\}, a)) = \psi_0(q_8, (\{q_{k0}\}, a))$ za $a \notin M_1$,

$\psi_{k0}(q_{k0}, (\{q_9\}, a)) = 0$ $a \in M_1 = \{195, 194, 203, 239, 207, 235, 198, 199\} \subset M$,
$\psi_{k0}(q_{k0}, (\{q_9\}, a)) = \psi_0(q_9, (\{q_{k0}\}, a))$ za $a \notin M_1$,

$\psi_{k0}(q_{k0}, (\{q_{22}\}, a)) = 0$, $a \in A$,
$\varphi_0(q_{22}, (\{q_{k0}\}, a)) = q_{25}$ $\psi_0(q_{22}, (\{q_{k0}\}, a)) = e$ za $a \in M \setminus \{195, 199\}$
$\varphi_0(q_{22}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_0(q_{22}, (\{\lambda\}, a) = 0$ za $a \in M \setminus \{195, 199\}$, tj. ako se automati A_0, K_0 ne susretnu,

$\psi_{k0}(q_{k0}, (\{q_{24}\}, a)) = 0$, $a \in A$,
$\varphi_0(q_{24}, (\{q_{k0}\}, a)) = q_{25}$ $\psi_0(q_{24}, (\{q_{k0}\}, a)) = e$ za $a \in \{194, 195, 198, 199\} \subset M$,
$\varphi_0(q_{24}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_0(q_{24}, (\{\lambda\}, a)) = 0$ za $a \in \{194, 195, 198, 199\}$, tj. ako se automati A_0, K_0 ne susretnu.

Kolektiv $S_4 = (A_4, K_4)$ je definisan na sledeći način:
$Q_4 = \{q_i \mid i \in \{1, ..., 31\}\} \cup Q_F$,

$\varphi_4(q_1, a) = q_2$ $\psi_4(q_1, a) = w$ za $a \in \{208, 212\}$,
$\varphi_4(q_1, a) = q_2$ $\psi_4(q_1, a) = n$ za $a \in \{16, 148\}$,
$\varphi_4(q_1, a) = q_{F_0}$ $\psi_4(q_1, a) = 0$ inače,

$\varphi_4(q_2, a) = q_2$ $\psi_4(q_2, a) = w$ za $a \in \{255, 252, 248, 214, \}$,
$\varphi_4(q_2, a) = q_2$ $\psi_4(q_2, a) = n$ za $a \in \{24, 156\}$,
$\varphi_4(q_2, a) = q_3$ $\psi_4(q_2, a) = n$ za $a \in \{22, 31\}$,
$\varphi_4(q_2, a) = q_4$ $\psi_4(q_2, a) = e$ za $a \in \{150, 159\}$,
$\varphi_4(q_2, a) = q_5$ $\psi_4(q_2, a) = n$ za $a = 222$,
$\varphi_4(q_2, a) = q_9$ $\psi_4(q_2, a) = e$ za $a = 90$,
$\varphi_4(q_2, a) = q_{F_0}$ $\psi_4(q_2, a) = 0$ inače,

$\varphi_4(q_3, a) = q_3$ $\psi_4(q_3, a) = e$ za $a \in \{255, 31\}$,
$\varphi_4(q_3, a) = q_2$ $\psi_4(q_3, a) = n$ za $a = 248$,
$\varphi_4(q_3, a) = q_4$ $\psi_4(q_3, a) = e$ za $a = 159$,
$\varphi_4(q_3, a) = q_{F_0}$ $\psi_4(q_3, a) = 0$ inače,

$\varphi_4(q_4, a) = q_4$ $\psi_4(q_4, a) = e$ za $a \in \{255, 214\}$,
$\varphi_4(q_4, a) = q_5$ $\psi_4(q_4, a) = n$ za $a \in \{212, 252\}$,
$\varphi_4(q_4, a) = q_{F_0}$ $\psi_4(q_4, a) = 0$ inače,

$\varphi_4(q_5, a) = q_5$ $\psi_4(q_5, a) = n$ za $a \in \{254, 255\}$,
$\varphi_4(q_5, a) = q_6$ $\psi_4(q_5, a) = w$ za $a \in \{251, 250\}$,
$\varphi_4(q_5, a) = q_7$ $\psi_4(q_5, a) = s$ za $a = 123$,
$\varphi_4(q_5, a) = q_{F_0}$ $\psi_4(q_5, a) = 0$ inače,

$\varphi_4(q_6, a) = q_6$ $\psi_4(q_6, a) = w$ za $a = 255$,
$\varphi_4(q_6, a) = q_7$ $\psi_4(q_6, a) = s$ za $a = 127$,
$\varphi_4(q_6, a) = q_8$ $\psi_4(q_6, a) = e$ za $a = 95$,
$\varphi_4(q_6, a) = q_{F_0}$ $\psi_4(q_6, a) = 0$ inače,

$\varphi_4(q_7, a) = q_7$ $\psi_4(q_7, a) = s$ za $a = 255$,
$\varphi_4(q_7, a) = q_8$ $\psi_4(q_7, a) = e$ za $a = 223$,
$\varphi_4(q_7, a) = q_9$ $\psi_4(q_7, a) = e$ za $a = 222$,
$\varphi_4(q_7, a) = q_{F_0}$ $\psi_4(q_7, a) = 0$ inače,

$\varphi_4(q_8, a) = q_8$ $\psi_4(q_8, a) = e$ za $a = 255$,
$\varphi_4(q_8, a) = q_9$ $\psi_4(q_8, a) = e$ za $a \in \{250, 254\}$,
$\varphi_4(q_8, a) = q_{F_0}$ $\psi_4(q_8, a) = 0$ inače,

$\varphi_4(q_9, a) = q_9$ $\psi_4(q_9, a) = e$ za $a \in \{214, 66, 226, 246\}$,
$\varphi_4(q_9, a) = q_{10}$ $\psi_4(q_9, a) = w$ za $a \in \{208, 240\}$,
$\varphi_4(q_9, a) = q_{13}$ $\psi_4(q_9, a) = w$ za $a \in \{64, 224\}$,
$\varphi_4(q_9, a) = q_{F_0}$ $\psi_4(q_9, a) = 0$ inače,

$\varphi_4(q_{10}, a) = q_{11}$ $\psi_4(q_{10}, a) = w$ za $a \in \{222, 223\}$,
$\varphi_4(q_{10}, a) = q_{10}$ $\psi_4(q_{10}, a) = w$ za $a \in \{214, 246, 254, 255\}$,
$\varphi_4(q_{10}, a) = q_{F_0}$ $\psi_4(q_{10}, a) = 0$ inače,

$\varphi_4(q_{11}, a) = q_{11}$ $\psi_4(q_{11}, a) = w$ za $a \in \{215, 214, 248, 255\}$,
$\varphi_4(q_{11}, a) = q_{12}$ $\psi_4(q_{11}, a) = n$ za $a \in \{22, 23, 31\}$,
$\varphi_4(q_{11}, a) = q_{13}$ $\psi_4(q_{11}, a) = w$ za $a \in \{104, 232\}$,

$\varphi_4(q_{11}, a) = q_{F_0}$ $\psi_4(q_{11}, a) = 0$ inače,

$\varphi_4(q_{12}, a) = q_{11}$ $\psi_4(q_{12}, a) = n$ za $a = 248$,
$\varphi_4(q_{12}, a) = q_{12}$ $\psi_4(q_{12}, a) = e$ za $a \in \{31, 255, 27, 251, 235, 107, 111, 127, 123, 11, 15\}$,
$\varphi_4(q_{12}, a) = q_{13}$ $\psi_4(q_{12}, a) = w$ za $a \in \{104, 232\}$,
$\varphi_4(q_{12}, a) = q_{F_0}$ $\psi_4(q_{12}, a) = 0$ inače,

$\varphi_4(q_{13}, a) = q_{13}$ $\psi_4(q_{13}, a) = w$ za $a \in \{107, 235, 251, 255, 66, 226, 250\}$,
$\varphi_4(q_{13}, a) = q_{14}$ $\psi_4(q_{13}, a) = n$ za $a \in \{90, 95, 123, 127\}$,
$\varphi_4(q_{13}, a) = q_{F_0}$ $\psi_4(q_{13}, a) = 0$ inače,

$\varphi_4(q_{14}, a) = q_{14}$ $\psi_4(q_{14}, a) = e$ za $a \in \{63, 255, 31, 159, 191\}$,
$\varphi_4(q_{14}, a) = q_{14}$ $\psi_4(q_{14}, a) = n$ za $a \in \{24, 57, 152, 185\}$,
$\varphi_4(q_{14}, a) = q_{15}$ $\psi_4(q_{14}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_4(q_{14}, a) = q_{16}$ $\psi_4(q_{14}, a) = w$ za $a \in \{72, 88, 216\}$,
$\varphi_4(q_{14}, a) = q_{F_0}$ $\psi_4(q_{14}, a) = 0$ inače,

$\varphi_4(q_{15}, a) = q_{14}$ $\psi_4(q_{15}, a) = n$ za $a = 31$,
$\varphi_4(q_{15}, a) = q_{14}$ $\psi_4(q_{15}, a) = e$ za $a = 159$,
$\varphi_4(q_{15}, a) = q_{15}$ $\psi_4(q_{15}, a) = w$ za $a \in \{248, 255, 104, 107, 127, 111, 120\}$,
$\varphi_4(q_{15}, a) = q_{16}$ $\psi_4(q_{15}, a) = w$ za $a \in \{75, 79, 95, 223\}$,
$\varphi_4(q_{15}, a) = q_{F_0}$ $\psi_4(q_{15}, a) = 0$ inače,

$\varphi_4(q_{16}, a) = q_{16}$ $\psi_4(q_{16}, a) = w$ za $a \in \{66, 67, 98, 71, 103, 246, 118, 70, 102, 87, 119, 214, 86, 215, 247, 99\}$,
$\varphi_4(q_{16}, a) = q_{17}$ $\psi_4(q_{16}, a) = s$ za $a \in \{254, 126, 42, 30, 110, 46, 14, 106, 62, 10\}$,
$\varphi_4(q_{16}, a) = q_{F_0}$ $\psi_4(q_{16}, a) = 0$ inače,

$\varphi_4(q_{17}, a) = q_{17}$ $\psi_4(q_{17}, a) = w$ za $a \in \{110, 70, 102, 120, 112, 80, 214, 86, 246, 118, 111, 107, 255, 127, 254, 126, 66, 98, 106, 252, 244, 212, 124, 116, 84, 248, 240, 208\}$,
$\varphi_4(q_{17}, a) = q_{17}$ $\psi_4(q_{17}, a) = s$ za $a \in \{28, 29, 30, 60, 62, 14, 46, 10, 42, 24, 56, 25, 61, 57\}$,
$\varphi_4(q_{17}, a) = q_{18}$ $\psi_4(q_{17}, a) = e$ za $a \in \{11, 15, 31, 43, 47, 63\}$,
$\varphi_4(q_{17}, a) = q_{19}$ $\psi_4(q_{17}, a) = w$ za $a \in \{121, 125, 253, 249\}$,
$\varphi_4(q_{17}, a) = q_{20}$ $\psi_4(q_{17}, a) = w$ za $a \in \{82, 123\}$,
$\varphi_4(q_{17}, a) = q_{21}$ $\psi_4(q_{17}, a) = e$ za $a \in \{18, 27\}$,
$\varphi_4(q_{17}, a) = q_{F_0}$ $\psi_4(q_{17}, a) = 0$ inače,

$\varphi_4(q_{18}, a) = q_{17}$ $\psi_4(q_{18}, a) = s$ za $a \in \{254, 126, 110, 106, 248, 252, 120, 124\}$,
$\varphi_4(q_{18}, a) = q_{18}$ $\psi_4(q_{18}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,

$\varphi_4(q_{18}, a) = q_{F_0}$ $\psi_4(q_{18}, a) = 0$ inače,

$\varphi_4(q_{19}, a) = q_{19}$ $\psi_4(q_{19}, a) = w$ za $a \in \{111, 255, 127, 107\}$,
$\varphi_4(q_{19}, a) = q_{20}$ $\psi_4(q_{19}, a) = s$ za $a \in \{43, 47, 63\}$,
$\varphi_4(q_{19}, a) = q_{21}$ $\psi_4(q_{19}, a) = s$ za $a \in \{11, 15, 31\}$,
$\varphi_4(q_{19}, a) = q_{F_0}$ $\psi_4(q_{19}, a) = 0$ inače,

$\varphi_4(q_{20}, a) = q_{20}$ $\psi_4(q_{20}, a) = w$ za $a \in \{66, 70, 86, 127, 111, 107\}$,
$\varphi_4(q_{20}, a) = q_{31}$ $\psi_4(q_{20}, a) = e$ za $a \in \{2, 6, 11, 15\}$,
$\varphi_4(q_{20}, a) = q_{F_0}$ $\psi_4(q_{20}, a) = 0$ inače,

$\varphi_4(q_{21}, a) = q_{21}$ $\psi_4(q_{21}, a) = e$ za $a \in \{31, 255, 22, 214, 251, 210, 199, 194, 66, 71, 235, 239, 107, 111, 70, 82, 86\}$,
$\varphi_4(q_{21}, a) = q_{22}$ $\psi_4(q_{21}, a) = n$ za $a \in \{90, 95, 123, 127\}$,
$\varphi_4(q_{21}, a) = q_{F_0}$ $\psi_4(q_{21}, a) = 0$ inače,

$\varphi_4(q_{22}, a) = q_{22}$ $\psi_4(q_{22}, a) = n$ za $a \in \{63, 31, 159, 191, 24, 57, 152, 185\}$,
$\varphi_4(q_{22}, a) = q_{23}$ $\psi_4(q_{22}, a) = e$ za $a = 75$,
$\varphi_4(q_{22}, a) = q_{24}$ $\psi_4(q_{22}, a) = w$ za $a = 72$
$\varphi_4(q_{22}, a) = q_{26}$ $\psi_4(q_{22}, a) = w$ za $a \in \{79, 88, 95, 216, 223\}$,
$\varphi_4(q_{22}, a) = q_{F_0}$ $\psi_4(q_{22}, a) = 0$ inače,

$\varphi_4(q_{23}, a) = q_{23}$ $\psi_4(q_{23}, a) = e$ za $a = 107$,
$\varphi_4(q_{23}, a) = q_{24}$ $\psi_4(q_{23}, a) = w$ za $a = 104$,
$\varphi_4(q_{23}, a) = q_{26}$ $\psi_4(q_{23}, a) = w$ za $a = 111$,
$\varphi_4(q_{23}, a) = q_{F_0}$ $\psi_4(q_{23}, a) = 0$ inače,

$\varphi_4(q_{24}, a) = q_{24}$ $\psi_4(q_{24}, a) = w$ za $a \in \{98, 99, 66, 67, 75, 107\}$,
$\varphi_4(q_{24}, a) = q_{25}$ $\psi_4(q_{24}, a) = w$ za $a = 106$,
$\varphi_4(q_{24}, a) = q_{F_1}$ $\psi_4(q_{24}, a) = 0$ za $a \in \{10, 42\}$,
$\varphi_4(q_{24}, a) = q_{F_0}$ $\psi_4(q_{24}, a) = 0$ inače,

$\varphi_4(q_{25}, a) = q_{25}$ $\psi_4(q_{24}, a) = w$ za $a = 107$,
$\varphi_4(q_{25}, a) = q_{F_1}$ $\psi_4(q_{25}, a) = 0$ za $a = 11$,
$\varphi_4(q_{25}, a) = q_{F_0}$ $\psi_4(q_{25}, a) = 0$ inače,

$\varphi_4(q_{26}, a) = q_{26}$ $\psi_4(q_{26}, a) = w$ za $a \in \{215, 247, 87, 119, 67, 99, 214, 86, 246, 118, 70, 102, 66, 98, 71, 103, 107, 75\}$,
$\varphi_4(q_{26}, a) = q_{27}$ $\psi_4(q_{26}, a) = w$ za $a \in \{106, 110, 126, 254\}$,
$\varphi_4(q_{26}, a) = q_{28}$ $\psi_4(q_{26}, a) = e$ za $a \in \{14, 30, 46, 62, 10, 42\}$,

$\varphi_4(q_{26}, a) = q_{F_0}$ $\psi_4(q_{26}, a) = \mathbf{0}$ inače,

$\varphi_4(q_{27}, a) = q_{27}$ $\psi_4(q_{27}, a) = w$ za $a \in \{107, 111, 127, 255\}$,
$\varphi_4(q_{27}, a) = q_{28}$ $\psi_4(q_{27}, a) = e$ za $a \in \{15, 31, 63, 47, 11, 43\}$,
$\varphi_4(q_{27}, a) = q_{F_0}$ $\psi_4(q_{27}, a) = \mathbf{0}$ inače,

$\varphi_4(q_{28}, a) = q_{28}$ $\psi_4(q_{28}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_4(q_{28}, a) = q_{29}$ $\psi_4(q_{28}, a) = n$ za $a \in \{88, 120, 216, 248\}$,
$\varphi_4(q_{28}, a) = q_{F_0}$ $\psi_4(q_{28}, a) = \mathbf{0}$ inače,

$\varphi_4(q_{29}, a) = q_{28}$ $\psi_4(q_{29}, a) = e$ za $a \in \{11, 15, 31, 43, 47, 63\}$,
$\varphi_4(q_{29}, a) = q_{29}$ $\psi_4(q_{29}, a) = w$ za $a \in \{248, 127, 111, 107, 120, 255\}$,
$\varphi_4(q_{29}, a) = q_{F_1}$ $\psi_4(q_{29}, a) = \mathbf{0}$ za $a = 40$,
$\varphi_4(q_{29}, a) = q_{30}$ $\psi_4(q_{29}, a) = w$ za $a = 104$,
$\varphi_4(q_{29}, a) = q_{F_0}$ $\psi_4(q_{29}, a) = \mathbf{0}$ inače,

$\varphi_4(q_{30}, a) = q_{30}$ $\psi_4(q_{30}, a) = w$ za $a = 107$,
$\varphi_4(q_{30}, a) = q_{F_1}$ $\psi_4(q_{30}, a) = \mathbf{0}$ za $a \in \{11, 43\}$,
$\varphi_4(q_{30}, a) = q_{F_0}$ $\psi_4(q_{30}, a) = \mathbf{0}$ inače,

$\varphi_4(q_{31}, a) = q_{31}$ $\psi_4(q_{31}, a) = e$ za $a \in \{66, 70, 107, 111\}$,
$\varphi_4(q_{31}, a) = q_{21}$ $\psi_4(q_{31}, a) = e$ za $a \in \{82, 123, 86, 127\}$,
$\varphi_4(q_{31}, a) = q_{F_0}$ $\psi_4(q_{31}, a) = \mathbf{0}$ inače,

Neka je $M = \{90, 95, 123, 127\} \subseteq A$. Tada,
$\psi_{k4}(q_{k4}, (\{q_i\}, a)) = \psi_4(q_i, (\{q_{k4}\}, a))$ za $i \in \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$, $a \in A$,

$\psi_{k4}(q_{k4}, (\{q_{13}\}, a)) = \mathbf{0}$ $a \in M$,
$\psi_{k4}(q_{k4}, (\{q_{13}\}, a)) = \psi_4(q_{13}, (\{q_{k4}\}, a))$ za $a \notin M$,

$\psi_{k4}(q_{k4}, (\{q_{21}\}, a)) = \mathbf{0}$, $a \in A$,
$\varphi_4(q_{21}, (\{q_{k4}\}, a)) = q_{22}$ $\psi_4(q_{21}, (\{q_{k4}\}, a)) = n$ za $a \in M$
$\varphi_4(q_{21}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_4(q_{21}, (\{\lambda\}, a)) = \mathbf{0}$ za $a \in M$, tj. ako se automati A_4, K_4 ne susretnu,

Kolektiv $S_6 = (A_6, K_6)$ je definisan na sljedeći način:
$Q_6 = \{q_i \mid i \in \{1, ..., 81\}\} \cup Q_F$,

$\varphi_6(q_1, a) = q_2$ $\psi_6(q_1, a) = e$ za $a \in \{18, 19, 22, 23\}$,

$\varphi_6(q_1, a) = q_{F_0}$ $\psi_6(q_1, a) = \mathbf{0}$ inače,

$\varphi_6(q_2, a) = q_{10}$ $\psi_0(q_2, a) = w$ za $a \in \{80, 84\}$,
$\varphi_6(q_2, a) = q_3$ $\psi_6(q_2, a) = w$ za $a \in \{208, 212\}$,
$\varphi_6(q_2, a) = q_5$ $\psi_6(q_2, a) = n$ za $a = 148$,
$\varphi_6(q_2, a) = q_2$ $\psi_6(q_2, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1,\ a_3 = 0\}$,
$\varphi_6(q_2, a) = q_2$ $\psi_6(q_2, a) = s$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_3 = 1\}$,
$\varphi_6(q_2, a) = q_{F_0}$ $\psi_6(q_2, a) = \mathbf{0}$ inače,

$\varphi_6(q_3, a) = q_3$ $\psi_6(q_3, a) = w$ za $a \in \{255, 223, 214, 215, \}$,
$\varphi_6(q_3, a) = q_4$ $\psi_6(q_3, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_6(q_3, a) = q_{10}$ $\psi_6(q_3, a) = w$ za $a \in \{127, 95, 86, 87\}$,
$\varphi_6(q_3, a) = q_{F_0}$ $\psi_6(q_3, a) = \mathbf{0}$ inače,

$\varphi_6(q_4, a) = q_5$ $\psi_6(q_4, a) = n$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_6(q_4, a) = q_4$ $\psi_6(q_4, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1\}$,
$\varphi_6(q_4, a) = q_{F_0}$ $\psi_6(q_4, a) = \mathbf{0}$ inače,

$\varphi_6(q_5, a) = q_6$ $\psi_6(q_5, a) = w$ za $a \in \{208, 212, 240, 244\}$,
$\varphi_6(q_5, a) = q_3$ $\psi_6(q_5, a) = w$ za $a \in \{248, 252\}$,
$\varphi_6(q_5, a) = q_7$ $\psi_6(q_5, a) = e$ za $a \in \{74, 78, 202, 94, 206, 218, 106, 110, 234, 126, 238, 250, 210, 242\}$,
$\varphi_6(q_5, a) = q_5$ $\psi_6(q_5, a) = e$ za $a \in \{214, 246, 222, 254\}$,
$\varphi_6(q_5, a) = q_{10}$ $\psi_6(q_5, a) = w$ za $a \in \{120, 124\}$,
$\varphi_6(q_5, a) = q_{F_0}$ $\psi_6(q_5, a) = \mathbf{0}$ inače,

$\varphi_6(q_6, a) = q_6$ $\psi_6(q_6, a) = w$ za $a \in \{214, 246\}$,
$\varphi_6(q_6, a) = q_3$ $\psi_6(q_6, a) = w$ za $a \in \{222, 254\}$,
$\varphi_6(q_6, a) = q_{F_0}$ $\psi_6(q_6, a) = \mathbf{0}$ inače,

$\varphi_6(q_7, a) = q_7$ $\psi_6(q_7, a) = e$ za $a \in \{98, 102, 118, 246, 226, 230, 66, 70, 86, 214, 194, 198\}$,
$\varphi_6(q_7, a) = q_8$ $\psi_6(q_7, a) = w$ za $a \in \{112, 116, 244, 240, 80, 84, 208, 212\}$,
$\varphi_6(q_7, a) = q_{F_0}$ $\psi_6(q_7, a) = \mathbf{0}$ inače,

$\varphi_6(q_8, a) = q_8$ $\psi_6(q_8, a) = w$ za $a \in \{98, 102, 118, 246, 66, 70, 86, 214, 242, 210, 146\}$,
$\varphi_6(q_8, a) = q_9$ $\psi_6(q_8, a) = w$ za $a \in \{74, 78, 94, 218, 106, 110, 126, 250, 254, 222\}$,
$\varphi_6(q_8, a) = q_8$ $\psi_6(q_8, a) = w$ za $a \in \{26, 230, 194, 198\}$,

$\varphi_6(q_8, a) = q_9$ $\psi_6(q_8, a) = w$ za $a \in \{202, 206, 234, 238\}$,
$\varphi_6(q_8, a) = q_{F_0}$ $\psi_6(q_8, a) = \mathbf{0}$ inače,

$\varphi_6(q_9, a) = q_9$ $\psi_6(q_9, a) = w$ za $a \in \{255, 223, 215, 251, 219, 211, 71, 79, 111, 107, 75, 67, 214, 66, 210\}$,
$\varphi_6(q_9, a) = q_{11}$ $\psi_6(q_9, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_6(q_9, a) = q_{12}$ $\psi_6(q_9, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_6(q_9, a) = q_9$ $\psi_6(q_9, a) = w$ za $a \in \{203, 207, 194, 195, 235, 239, 198, 199\}$,
$\varphi_6(q_9, a) = q_{F_0}$ $\psi_6(q_9, a) = \mathbf{0}$ inače,

$\varphi_6(q_{10}, a) = q_9$ $\psi_6(q_9, a) = w$ za $a \in \{211, 67, 210, 66, 255, 223, 70, 71, 107, 75, 215, 111, 79, 219, 251, 214\}$,
$\varphi_6(q_{10}, a) = q_{11}$ $\psi_6(q_{10}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_6(q_{10}, a) = q_{12}$ $\psi_6(q_{10}, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_6(q_{10}, a) = q_{10}$ $\psi_6(q_{10}, a) = w$ za $a \in \{203, 207, 194, 195, 235, 239, 198, 199\}$,
$\varphi_6(q_{10}, a) = q_{F_0}$ $\psi_6(q_{10}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{11}, a) = q_{12}$ $\psi_6(q_{11}, a) = n$ za $a \in \{210, 211, 219, 218, 250, 251, 242\}$,
$\varphi_6(q_{11}, a) = q_{11}$ $\psi_6(q_{11}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_6(q_{11}, a) = q_{F_0}$ $\psi_6(q_{11}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{12}, a) = q_{12}$ $\psi_6(q_{12}, a) = w$ za $a \in \{214, 66, 194, 210, 248, 104, 232, 203, 215, 211, 67, 195, 216, 200, 72, 255, 223, 251, 219, 107, 75, 235, 249, 233, 105, 217, 201, 73\}$,
$\varphi_6(q_{12}, a) = q_{12}$ $\psi_6(q_{12}, a) = n$ za $a \in \{18, 19, 24, 25, 28, 29, 27, 146, 147, 152, 153, 155\}$,
$\varphi_6(q_{12}, a) = q_{17}$ $\psi_6(q_{12}, a) = e$ za $a = 26$,
$\varphi_6(q_{12}, a) = q_{15}$ $\psi_6(q_{12}, a) = e$ za $a = 30$,
$\varphi_6(q_{12}, a) = q_{14}$ $\psi_6(q_{12}, a) = w$ za $a \in \{253, 221, 220, 252\}$,
$\varphi_6(q_{12}, a) = q_{21}$ $\psi_6(q_{12}, a) = w$ za $a \in \{120, 121, 124, 127\}$,
$\varphi_6(q_{12}, a) = q_{13}$ $\psi_6(q_{12}, a) = e$ za $a \in \{22, 23, 150, 151, 159, 31\}$,
$\varphi_6(q_{12}, a) = q_{F_0}$ $\psi_6(q_{12}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{13}, a) = q_{12}$ $\psi_6(q_{13}, a) = n$ za $a \in \{210, 211, 216, 217, 219, 248, 249, 251\}$,
$\varphi_6(q_{13}, a) = q_{13}$ $\psi_6(q_{13}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_6(q_{13}, a) = q_{F_0}$ $\psi_6(q_{13}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{14}, a) = q_{14}$ $\psi_6(q_{14}, a) = w$ za $a \in \{214, 215, 223, 255\}$,
$\varphi_6(q_{14}, a) = q_{15}$ $\psi_6(q_{14}, a) = n$ za $a \in \{22, 23, 31\}$,
$\varphi_6(q_{14}, a) = q_{F_0}$ $\psi_6(q_{14}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{15}, a) = q_{15}$ $\psi_6(q_{15}, a) = e$ za $a \in \{31, 214, 246, 254, 255\}$,
$\varphi_6(q_{15}, a) = q_{16}$ $\psi_6(q_{15}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_6(q_{15}, a) = q_{17}$ $\psi_6(q_{15}, a) = e$ za $a \in \{251, 250, 242, 210, 27\}$,
$\varphi_6(q_{15}, a) = q_{23}$ $\psi_6(q_{15}, a) = e$ za $a \in \{211, 215, 243, 247\}$,
$\varphi_6(q_{15}, a) = q_{F_0}$ $\psi_6(q_{15}, a) = 0$ inače,

$\varphi_6(q_{16}, a) = q_{16}$ $\psi_6(q_{16}, a) = w$ za $a \in \{255, 246, 214, 254\}$,
$\varphi_6(q_{16}, a) = q_{15}$ $\psi_6(q_{16}, a) = n$ za $a \in \{30, 31\}$,
$\varphi_6(q_{16}, a) = q_{F_0}$ $\psi_6(q_{16}, a) = 0$ inače,

$\varphi_6(q_{17}, a) = q_{17}$ $\psi_6(q_{17}, a) = e$ za $a \in \{127, 126, 118, 106, 107, 110, 111, 214, 194, 198, 239, 238, 234, 235, 230, 226, 98, 102, 86, 66, 70, 255, 254, 246\}$,
$\varphi_6(q_{17}, a) = q_{18}$ $\psi_6(q_{17}, a) = w$ za $a \in \{240, 244, 208, 212\}$,
$\varphi_6(q_{17}, a) = q_{19}$ $\psi_6(q_{17}, a) = n$ za $a \in \{80, 84, 112, 116, 120, 124\}$,
$\varphi_6(q_{17}, a) = q_{23}$ $\psi_6(q_{17}, a) = e$ za $a \in \{231, 227, 199, 195, 123, 122, 119, 115, 114, 99, 103, 83, 87, 82, 67, 71, 251, 250, 210, 247, 242, 243, 215, 211\}$,
$\varphi_6(q_{17}, a) = q_{F_0}$ $\psi_6(q_{17}, a) = 0$ inače,

$\varphi_6(q_{18}, a) = q_{19}$ $\psi_6(q_{18}, a) = n$ za $a \in \{86, 126, 127, 118\}$,
$\varphi_6(q_{18}, a) = q_{18}$ $\psi_6(q_{18}, a) = w$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_6(q_{18}, a) = q_{F_0}$ $\psi_6(q_{18}, a) = 0$ inače,

$\varphi_6(q_{19}, a) = q_{19}$ $\psi_6(q_{19}, a) = e$ za $a \in \{246, 63, 30, 10, 14, 110, 111, 214, 66, 70, 86, 254, 126, 127, 106, 107, 43, 47, 62, 46, 42, 255, 31, 15, 11, 118, 98, 102\}$,
$\varphi_6(q_{19}, a) = q_{19}$ $\psi_6(q_{19}, a) = n$ za $a \in \{56, 60, 124, 120, 24, 28, 112, 116, 80, 84\}$,
$\varphi_6(q_{19}, a) = q_{20}$ $\psi_6(q_{19}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_6(q_{19}, a) = q_{23}$ $\psi_6(q_{19}, a) = e$ za $a \in \{242, 247, 243, 119, 114, 115, 103, 99, 250, 251, 122, 123, 215, 210, 211, 67, 71, 87, 82, 83\}$,
$\varphi_6(q_{19}, a) = q_{F_0}$ $\psi_6(q_{19}, a) = 0$ inače,

$\varphi_6(q_{20}, a) = q_{19}$ $\psi_6(q_{20}, a) = n$ za $a \in \{30, 31, 62, 63, 86, 118, 126, 127\}$,
$\varphi_6(q_{20}, a) = q_{20}$ $\psi_6(q_{20}, a) = w$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_6(q_{20}, a) = q_{F_0}$ $\psi_6(q_{20}, a) = 0$ inače,

$\varphi_6(q_{21}, a) = q_{21}$ $\psi_6(q_{21}, a) = w$ za $a \in \{111, 239, 107, 235, 251, 255\}$,
$\varphi_6(q_{21}, a) = q_{22}$ $\psi_6(q_{21}, a) = e$ za $a \in \{27, 31\}$,
$\varphi_6(q_{21}, a) = q_{F_0}$ $\psi_6(q_{21}, a) = 0$ inače,

$\varphi_6(q_{22}, a) = q_{22}$ $\psi_6(q_{22}, a) = e$ za $a \in \{111, 239, 107, 251, 255, 235\}$,

$\varphi_6(q_{15}, a) = q_{15}$ $\psi_6(q_{15}, a) = e$ za $a \in \{31, 214, 246, 254, 255\}$,
$\varphi_6(q_{15}, a) = q_{16}$ $\psi_6(q_{15}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_6(q_{15}, a) = q_{17}$ $\psi_6(q_{15}, a) = e$ za $a \in \{251, 250, 242, 210, 27\}$,
$\varphi_6(q_{15}, a) = q_{23}$ $\psi_6(q_{15}, a) = e$ za $a \in \{211, 215, 243, 247\}$,
$\varphi_6(q_{15}, a) = q_{F_0}$ $\psi_6(q_{15}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{16}, a) = q_{16}$ $\psi_6(q_{16}, a) = w$ za $a \in \{255, 246, 214, 254\}$,
$\varphi_6(q_{16}, a) = q_{15}$ $\psi_6(q_{16}, a) = n$ za $a \in \{30, 31\}$,
$\varphi_6(q_{16}, a) = q_{F_0}$ $\psi_6(q_{16}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{17}, a) = q_{17}$ $\psi_6(q_{17}, a) = e$ za $a \in \{127, 126, 118, 106, 107, 110, 111, 214, 194, 198, 239, 238, 234, 235, 230, 226, 98, 102, 86, 66, 70, 255, 254, 246\}$,
$\varphi_6(q_{17}, a) = q_{18}$ $\psi_6(q_{17}, a) = w$ za $a \in \{240, 244, 208, 212\}$,
$\varphi_6(q_{17}, a) = q_{19}$ $\psi_6(q_{17}, a) = n$ za $a \in \{80, 84, 112, 116, 120, 124\}$,
$\varphi_6(q_{17}, a) = q_{23}$ $\psi_6(q_{17}, a) = e$ za $a \in \{231, 227, 199, 195, 123, 122, 119, 115, 114, 99, 103, 83, 87, 82, 67, 71, 251, 250, 210, 247, 242, 243, 215, 211\}$,
$\varphi_6(q_{17}, a) = q_{F_0}$ $\psi_6(q_{17}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{18}, a) = q_{19}$ $\psi_6(q_{18}, a) = n$ za $a \in \{86, 126, 127, 118\}$,
$\varphi_6(q_{18}, a) = q_{18}$ $\psi_6(q_{18}, a) = w$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_6(q_{18}, a) = q_{F_0}$ $\psi_6(q_{18}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{19}, a) = q_{19}$ $\psi_6(q_{19}, a) = e$ za $a \in \{246, 63, 30, 10, 14, 110, 111, 214, 66, 70, 86, 254, 126, 127, 106, 107, 43, 47, 62, 46, 42, 255, 31, 15, 11, 118, 98, 102\}$,
$\varphi_6(q_{19}, a) = q_{19}$ $\psi_6(q_{19}, a) = n$ za $a \in \{56, 60, 124, 120, 24, 28, 112, 116, 80, 84\}$,
$\varphi_6(q_{19}, a) = q_{20}$ $\psi_6(q_{19}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_6(q_{19}, a) = q_{23}$ $\psi_6(q_{19}, a) = e$ za $a \in \{242, 247, 243, 119, 114, 115, 103, 99, 250, 251, 122, 123, 215, 210, 211, 67, 71, 87, 82, 83\}$,
$\varphi_6(q_{19}, a) = q_{F_0}$ $\psi_6(q_{19}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{20}, a) = q_{19}$ $\psi_6(q_{20}, a) = n$ za $a \in \{30, 31, 62, 63, 86, 118, 126, 127\}$,
$\varphi_6(q_{20}, a) = q_{20}$ $\psi_6(q_{20}, a) = w$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_6(q_{20}, a) = q_{F_0}$ $\psi_6(q_{20}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{21}, a) = q_{21}$ $\psi_6(q_{21}, a) = w$ za $a \in \{111, 239, 107, 235, 251, 255\}$,
$\varphi_6(q_{21}, a) = q_{22}$ $\psi_6(q_{21}, a) = e$ za $a \in \{27, 31\}$,
$\varphi_6(q_{21}, a) = q_{F_0}$ $\psi_6(q_{21}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{22}, a) = q_{22}$ $\psi_6(q_{22}, a) = e$ za $a \in \{111, 239, 107, 251, 255, 235\}$,

$\varphi_6(q_{22}, a) = q_{19}$ $\psi_6(q_{22}, a) = n$ za $a \in \{120, 121, 124, 127\}$,
$\varphi_6(q_{22}, a) = q_{F_0}$ $\psi_6(q_{22}, a) = 0$ inače,

$\varphi_6(q_{23}, a) = q_{23}$ $\psi_6(q_{23}, a) = e$ za $a \in \{66, 67, 106, 107, 98, 99, 194, 195, 226, 227, 234, 235\}$,
$\varphi_6(q_{23}, a) = q_{24}$ $\psi_6(q_{23}, a) = s$ za $a \in \{223, 219, 216, 217, 200, 201, 203, 91, 95, 75, 79, 72, 73\}$,
$\varphi_6(q_{23}, a) = q_{F_0}$ $\psi_6(q_{23}, a) = 0$ inače,

$\varphi_6(q_{24}, a) = q_{24}$ $\psi_6(q_{24}, a) = e$ za $a \in \{107, 66, 67, 75, 31, 22, 23, 235, 203, 194, 195, 27, 18, 19, 255, 251, 223, 219, 214, 210, 215, 211, 159, 151, 150, 155, 146, 147\}$,
$\varphi_6(q_{24}, a) = q_{24}$ $\psi_6(q_{24}, a) = s$ za $a \in \{24, 25, 72, 73, 152, 153, 216, 217, 200, 201, 184, 56\}$,
$\varphi_6(q_{24}, a) = q_{25}$ $\psi_6(q_{24}, a) = w$ za $a \in \{104, 105, 232, 233, 248, 249\}$,
$\varphi_6(q_{24}, a) = q_{26}$ $\psi_6(q_{24}, a) = e$ za $a \in \{154, 158, 30, 62, 63, 59, 58, 26, 254, 250, 186, 187, 190, 191\}$,
$\varphi_6(q_{24}, a) = q_{28}$ $\psi_6(q_{24}, a) = w$ za $a \in \{80, 112, 120\}$,
$\varphi_6(q_{24}, a) = q_{F_0}$ $\psi_6(q_{24}, a) = 0$ inače,

$\varphi_6(q_{25}, a) = q_{24}$ $\psi_6(q_{25}, a) = s$ za $a \in \{223, 219, 203, 75, 31, 159, 27, 155\}$,
$\varphi_6(q_{25}, a) = q_{25}$ $\psi_6(q_{25}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_6(q_{25}, a) = q_{F_0}$ $\psi_6(q_{25}, a) = 0$ inače,

$\varphi_6(q_{26}, a) = q_{26}$ $\psi_6(q_{26}, a) = e$ za $a \in \{235, 246, 214, 251, 254, 255, 250, 107\}$,
$\varphi_6(q_{26}, a) = q_{27}$ $\psi_6(q_{26}, a) = w$ za $a \in \{208, 212, 224, 240, 244\}$,
$\varphi_6(q_{26}, a) = q_{28}$ $\psi_6(q_{26}, a) = s$ za $a \in \{104, 232, 248, 252\}$,
$\varphi_6(q_{26}, a) = q_{F_0}$ $\psi_6(q_{26}, a) = 0$ inače,

$\varphi_6(q_{27}, a) = q_{28}$ $\psi_6(q_{27}, a) = s$ za $a \in \{154, 158, 30, 62, 58, 26, 254, 250, 186, 190\}$,
$\varphi_6(q_{27}, a) = q_{27}$ $\psi_6(q_{27}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_6(q_{27}, a) = q_{F_0}$ $\psi_6(q_{27}, a) = 0$ inače,

$\varphi_6(q_{28}, a) = q_{28}$ $\psi_6(q_{28}, a) = w$ za $a \in \{246, 66, 98, 120, 80, 112, 106, 107, 255, 127, 254, 126, 214, 86, 118, 248, 240, 208, 70, 102, 110, 124, 116, 84, 252, 244, 212, 111\}$,
$\varphi_6(q_{28}, a) = q_{28}$ $\psi_6(q_{28}, a) = s$ za $a \in \{14, 46, 28, 60, 62, 30, 24, 56, 10, 42\}$,
$\varphi_6(q_{28}, a) = q_{29}$ $\psi_6(q_{28}, a) = e$ za $a \in \{11, 15, 31, 43, 47, 63\}$,
$\varphi_6(q_{28}, a) = q_{30}$ $\psi_6(q_{28}, a) = w$ za $a \in \{222, 78, 95, 223, 94, 74, 79, 75\}$,
$\varphi_6(q_{28}, a) = q_{31}$ $\psi_6(q_{28}, a) = e$ za $a \in \{235, 203, 226, 194, 202, 234, 198, 230, 206, 238, 207, 239\}$,

$\varphi_6(q_{28}, a) = q_{F_0}$ $\psi_6(q_{28}, a) = 0$ inače,

$\varphi_6(q_{29}, a) = q_{28}$ $\psi_6(q_{29}, a) = s$ za $a \in \{126, 120, 106, 124, 252, 248, 110, 254\}$,
$\varphi_6(q_{29}, a) = q_{29}$ $\psi_6(q_{29}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_6(q_{29}, a) = q_{F_0}$ $\psi_6(q_{29}, a) = 0$ inače,

$\varphi_6(q_{30}, a) = q_{30}$ $\psi_6(q_{30}, a) = w$ za $a \in \{215, 87, 67, 71, 214, 86, 70, 66\}$,
$\varphi_6(q_{30}, a) = q_{31}$ $\psi_6(q_{30}, a) = e$ za $a \in \{194, 195, 198, 199\}$,
$\varphi_6(q_{30}, a) = q_{F_0}$ $\psi_6(q_{30}, a) = 0$ inače,

$\varphi_6(q_{31}, a) = q_{31}$ $\psi_6(q_{31}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1, a_4 = 0\}$,
$\varphi_6(q_{31}, a) = q_{31}$ $\psi_6(q_{31}, a) = n$ za $a \in \{ b \in A |\ 24 \le b \le 31$ ili $56 \le b \le 63$ ili $80 \le b \le 95$ ili $112 \le b \le 127\}$,
$\varphi_6(q_{31}, a) = q_{32}$ $\psi_6(q_{31}, a) = n$ za $a \in \{b \in A |\ 144 \le b \le 159$ ili $184 \le b \le 191\}$,
$\varphi_6(q_{31}, a) = q_{F_0}$ $\psi_6(q_{31}, a) = 0$ inače,

$\varphi_6(q_{32}, a) = q_{32}$ $\psi_6(q_{32}, a) = w$ za $a \in \{ b \in A |\ 64 \le b \le 103$ ili $112 \le b \le 119$ ili $192 \le b \le 231$ ili $240 \le b \le 247\}$,
$\varphi_6(q_{32}, a) = q_{32}$ $\psi_6(q_{32}, a) = n$ za $a \in \{ b \in A |\ 16 \le b \le 29$ ili $b = 31$ili $144 \le b \le 159\}$,
$\varphi_6(q_{32}, a) = q_{33}$ $\psi_6(q_{32}, a) = w$ za $a = 254$,
$\varphi_6(q_{32}, a) = q_{35}$ $\psi_6(q_{32}, a) = e$ za $a = 30$,
$\varphi_6(q_{32}, a) = q_{38}$ $\psi_6(q_{32}, a) = w$ za $a \in \{110, 122, 126, 238\}$,
$\varphi_6(q_{32}, a) = q_{39}$ $\psi_6(q_{32}, a) = w$ za $a \in \{106, 234, 250\}$,
$\varphi_6(q_{32}, a) = q_{40}$ $\psi_6(q_{32}, a) = e$ za $a = 26$,
$\varphi_6(q_{32}, a) = q_{49}$ $\psi_6(q_{32}, a) = e$ za $a \in \{10, 42\}$,
$\varphi_6(q_{32}, a) = q_{47}$ $\psi_6(q_{32}, a) = e$ za $a \in \{14, 46, 62\}$,
$\varphi_6(q_{32}, a) = q_{F_0}$ $\psi_6(q_{32}, a) = 0$ inače,

$\varphi_6(q_{33}, a) = q_{33}$ $\psi_6(q_{33}, a) = w$ za $a = 255$,
$\varphi_6(q_{33}, a) = q_{34}$ $\psi_6(q_{33}, a) = e$ za $a = 31$,
$\varphi_6(q_{33}, a) = q_{38}$ $\psi_6(q_{33}, a) = w$ za $a = 127$,
$\varphi_6(q_{33}, a) = q_{F_0}$ $\psi_6(q_{33}, a) = 0$ inače,

$\varphi_6(q_{34}, a) = q_{34}$ $\psi_6(q_{34}, a) = e$ za $a = 255$,
$\varphi_6(q_{34}, a) = q_{35}$ $\psi_6(q_{34}, a) = e$ za $a = 254$,
$\varphi_6(q_{34}, a) = q_{F_0}$ $\psi_6(q_{34}, a) = 0$ inače,

$\varphi_6(q_{35}, a) = q_{35}$ $\psi_6(q_{35}, a) = e$ za $a \in \{246, 247, 214, 215, 223, 255\}$,
$\varphi_6(q_{35}, a) = q_{36}$ $\psi_6(q_{35}, a) = n$ za $a \in \{216, 217, 248, 249\}$,

$\varphi_6(q_{35}, a) = q_{43}$ $\psi_6(q_{35}, a) = e$ za $a \in \{242, 243, 219, 210, 211, 251\}$,
$\varphi_6(q_{35}, a) = q_{F_0}$ $\psi_6(q_{35}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{36}, a) = q_{36}$ $\psi_6(q_{36}, a) = w$ za $a \in \{105, 233, 249, 248, 232, 104, 107, 235, 251, 255\}$,
$\varphi_6(q_{36}, a) = q_{60}$ $\psi_6(q_{36}, a) = n$ za $a = 27$,
$\varphi_6(q_{36}, a) = q_{59}$ $\psi_6(q_{36}, a) = s$ za $a \in \{11, 43\}$,
$\varphi_6(q_{36}, a) = q_{37}$ $\psi_6(q_{36}, a) = e$ za $a = 31$,
$\varphi_6(q_{36}, a) = q_{60}$ $\psi_6(q_{36}, a) = w$ za $a \in \{121, 125, 253\}$,
$\varphi_6(q_{36}, a) = q_{41}$ $\psi_6(q_{36}, a) = s$ za $a \in \{120, 124, 252\}$,
$\varphi_6(q_{36}, a) = q_{45}$ $\psi_6(q_{36}, a) = w$ za $a \in \{123, 127\}$,
$\varphi_6(q_{36}, a) = q_{F_0}$ $\psi_6(q_{36}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{37}, a) = q_{37}$ $\psi_6(q_{37}, a) = e$ za $a = 255$,
$\varphi_6(q_{37}, a) = q_{36}$ $\psi_6(q_{37}, a) = n$ za $a \in \{248, 251, 249\}$,
$\varphi_6(q_{37}, a) = q_{F_0}$ $\psi_6(q_{37}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{38}, a) = q_{38}$ $\psi_6(q_{38}, a) = w$ za $a \in \{235, 239, 251, 255, 111, 107\}$,
$\varphi_6(q_{38}, a) = q_{49}$ $\psi_6(q_{38}, a) = e$ za $a \in \{11, 43\}$,
$\varphi_6(q_{38}, a) = q_{47}$ $\psi_6(q_{38}, a) = e$ za $a \in \{15, 47\}$,
$\varphi_6(q_{38}, a) = q_{40}$ $\psi_6(q_{38}, a) = e$ za $a \in \{27, 31\}$,
$\varphi_6(q_{38}, a) = q_{F_0}$ $\psi_6(q_{38}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{39}, a) = q_{39}$ $\psi_6(q_{39}, a) = w$ za $a \in \{107, 235, 251, 255\}$,
$\varphi_6(q_{39}, a) = q_{38}$ $\psi_6(q_{39}, a) = w$ za $a \in \{127, 123\}$,
$\varphi_6(q_{39}, a) = q_{49}$ $\psi_6(q_{39}, a) = e$ za $a = 11$,
$\varphi_6(q_{39}, a) = q_{40}$ $\psi_6(q_{39}, a) = e$ za $a \in \{27, 31\}$,
$\varphi_6(q_{39}, a) = q_{F_0}$ $\psi_6(q_{39}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{40}, a) = q_{40}$ $\psi_6(q_{40}, a) = e$ za $a \in \{255, 251, 234, 235, 106, 107, 250\}$,
$\varphi_6(q_{40}, a) = q_{49}$ $\psi_6(q_{40}, a) = e$ za $a \in \{98, 99, 226, 227\}$,
$\varphi_6(q_{40}, a) = q_{47}$ $\psi_6(q_{40}, a) = e$ za $a \in \{110, 238, 111, 239, 102, 103, 230, 231\}$,
$\varphi_6(q_{40}, a) = q_{F_0}$ $\psi_6(q_{40}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{41}, a) = q_{41}$ $\psi_6(q_{41}, a) = s$ za $a = 248$,
$\varphi_6(q_{41}, a) = q_{42}$ $\psi_6(q_{41}, a) = n$ za $a = 249$,
$\varphi_6(q_{41}, a) = q_{F_0}$ $\psi_6(q_{41}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{42}, a) = q_{42}$ $\psi_6(q_{42}, a) = n$ za $a = 248$,
$\varphi_6(q_{42}, a) = q_{60}$ $\psi_6(q_{42}, a) = w$ za $a \in \{120, 124, 252\}$,
$\varphi_6(q_{42}, a) = q_{F_0}$ $\psi_6(q_{42}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{43}, a) = q_{43}$ $\psi_6(q_{43}, a) = e$ za $a \in \{194, 195, 66, 67, 107, 75, 235, 203\}$,
$\varphi_6(q_{43}, a) = q_{44}$ $\psi_6(q_{43}, a) = w$ za $a \in \{72, 73, 200, 201, 232, 233, 104, 105\}$,
$\varphi_6(q_{43}, a) = q_{50}$ $\psi_6(q_{43}, a) = e$ za $a \in \{79, 207\}$,
$\varphi_6(q_{43}, a) = q_{47}$ $\psi_6(q_{43}, a) = e$ za $a \in \{70, 239, 198, 199, 111, 71\}$,
$\varphi_6(q_{43}, a) = q_{F_0}$ $\psi_6(q_{43}, a) = 0$ inače,

$\varphi_6(q_{44}, a) = q_{36}$ $\psi_6(q_{44}, a) = n$ za $a \in \{242, 243, 210, 211, 219, 251\}$,
$\varphi_6(q_{44}, a) = q_{44}$ $\psi_6(q_{44}, a) = w$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_6(q_{44}, a) = q_{F_0}$ $\psi_6(q_{44}, a) = 0$ inače,

$\varphi_6(q_{45}, a) = q_{45}$ $\psi_6(q_{45}, a) = w$ za $a \in \{111, 107, 239, 235, 251, 255\}$,
$\varphi_6(q_{45}, a) = q_{46}$ $\psi_6(q_{45}, a) = e$ za $a \in \{27, 31\}$,
$\varphi_6(q_{45}, a) = q_{58}$ $\psi_6(q_{45}, a) = e$ za $a \in \{11, 15\}$,
$\varphi_6(q_{45}, a) = q_{F_0}$ $\psi_6(q_{45}, a) = 0$ inače,

$\varphi_6(q_{46}, a) = q_{46}$ $\psi_6(q_{46}, a) = e$ za $a \in \{251, 255\}$,
$\varphi_6(q_{46}, a) = q_{58}$ $\psi_6(q_{46}, a) = e$ za $a \in \{239, 235\}$,
$\varphi_6(q_{46}, a) = q_{F_0}$ $\psi_6(q_{46}, a) = 0$ inače,

$\varphi_6(q_{47}, a) = q_{47}$ $\psi_6(q_{47}, a) = e$ za $a \in \{254, 255, 246, 247, 214, 215, 126, 127, 118, 119, 86, 87\}$,
$\varphi_6(q_{47}, a) = q_{48}$ $\psi_6(q_{47}, a) = e$ za $a \in \{122, 123, 114, 115, 82, 83, 250, 251, 242, 243, 210, 211\}$,
$\varphi_6(q_{47}, a) = q_{50}$ $\psi_6(q_{47}, a) = e$ za $a \in \{95, 223\}$,
$\varphi_6(q_{47}, a) = q_{51}$ $\psi_6(q_{47}, a) = e$ za $a \in \{91, 219\}$,
$\varphi_6(q_{47}, a) = q_{55}$ $\psi_6(q_{47}, a) = n$ za $a \in \{216, 217\}$,
$\varphi_6(q_{47}, a) = q_{F_0}$ $\psi_6(q_{47}, a) = 0$ inače,

$\varphi_6(q_{48}, a) = q_{48}$ $\psi_6(q_{48}, a) = e$ za $a \in \{234, 235, 226, 227, 194, 195, 106, 107, 98, 99, 66, 67\}$,
$\varphi_6(q_{48}, a) = q_{51}$ $\psi_6(q_{48}, a) = e$ za $a \in \{203, 75\}$,
$\varphi_6(q_{48}, a) = q_{54}$ $\psi_6(q_{48}, a) = w$ za $a \in \{200, 201, 72, 73\}$,
$\varphi_6(q_{48}, a) = q_{F_0}$ $\psi_6(q_{48}, a) = 0$ inače,

$\varphi_6(q_{49}, a) = q_{49}$ $\psi_6(q_{49}, a) = e$ za $a \in \{66, 67, 98, 99, 106, 107\}$,
$\varphi_6(q_{49}, a) = q_{47}$ $\psi_6(q_{49}, a) = e$ za $a \in \{110, 111, 102, 103, 70, 71\}$,
$\varphi_6(q_{49}, a) = q_{59}$ $\psi_6(q_{49}, a) = w$ za $a \in \{72, 73\}$,
$\varphi_6(q_{49}, a) = q_{50}$ $\psi_6(q_{49}, a) = e$ za $a = 79$,
$\varphi_6(q_{49}, a) = q_{52}$ $\psi_6(q_{49}, a) = e$ za $a = 75$,
$\varphi_6(q_{49}, a) = q_{F_0}$ $\psi_6(q_{49}, a) = 0$ inače,

$\varphi_6(q_{50}, a) = q_{55}$ $\psi_6(q_{50}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_6(q_{50}, a) = q_{50}$ $\psi_6(q_{50}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_6(q_{50}, a) = q_{51}$ $\psi_6(q_{50}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_6(q_{50}, a) = q_{F_0}$ $\psi_6(q_{50}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{51}, a) = q_{54}$ $\psi_6(q_{51}, a) = w$ za $a \in \{72, 73, 104, 105, 232, 233\}$,
$\varphi_6(q_{51}, a) = q_{51}$ $\psi_6(q_{51}, a) = e$ za $a \in \{107, 235\}$,
$\varphi_6(q_{51}, a) = q_{F_0}$ $\psi_6(q_{51}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{52}, a) = q_{59}$ $\psi_6(q_{52}, a) = w$ za $a \in \{104, 105\}$,
$\varphi_6(q_{52}, a) = q_{52}$ $\psi_6(q_{52}, a) = e$ za $a = 107$,
$\varphi_6(q_{52}, a) = q_{53}$ $\psi_6(q_{52}, a) = e$ za $a = 111$,
$\varphi_6(q_{52}, a) = q_{F_0}$ $\psi_6(q_{52}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{53}, a) = q_{53}$ $\psi_6(q_{53}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_6(q_{53}, a) = q_{55}$ $\psi_6(q_{53}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_6(q_{53}, a) = q_{51}$ $\psi_6(q_{53}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_6(q_{53}, a) = q_{F_0}$ $\psi_6(q_{53}, a) = \mathbf{0}$ inače.

$\varphi_6(q_{54}, a) = q_{55}$ $\psi_6(q_{54}, a) = n$ za $a \in \{210, 114, 115, 122, 123, 82, 242, 243, 250, 251, 219, 83, 211, 91\}$,
$\varphi_6(q_{54}, a) = q_{41}$ $\psi_6(q_{54}, a) = s$ za $a \in \{120, 124, 252\}$,
$\varphi_6(q_{54}, a) = q_{60}$ $\psi_6(q_{54}, a) = w$ za $a \in \{121, 125, 253\}$,
$\varphi_6(q_{54}, a) = q_{54}$ $\psi_6(q_{54}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_6(q_{54}, a) = q_{F_0}$ $\psi_6(q_{54}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{55}, a) = q_{55}$ $\psi_6(q_{55}, a) = n$ za $a = 123$,
$\varphi_6(q_{55}, a) = q_{55}$ $\psi_6(q_{55}, a) = w$ za $a \in \{104, 105, 107, 232, 233, 235\}$,
$\varphi_6(q_{55}, a) = q_{56}$ $\psi_6(q_{55}, a) = w$ za $a \in \{248, 249, 251\}$,
$\varphi_6(q_{55}, a) = q_{59}$ $\psi_6(q_{55}, a) = s$ za $a \in \{11, 43, 41\}$,
$\varphi_6(q_{55}, a) = q_{41}$ $\psi_6(q_{55}, a) = s$ za $a \in \{120, 124, 252\}$,
$\varphi_6(q_{55}, a) = q_{60}$ $\psi_6(q_{55}, a) = w$ za $a \in \{121, 125, 253\}$,
$\varphi_6(q_{55}, a) = q_{F_0}$ $\psi_6(q_{55}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{56}, a) = q_{56}$ $\psi_6(q_{56}, a) = w$ za $a = 255$,
$\varphi_6(q_{56}, a) = q_{58}$ $\psi_6(q_{56}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_6(q_{56}, a) = q_{57}$ $\psi_6(q_{56}, a) = w$ za $a = 127$,
$\varphi_6(q_{56}, a) = q_{F_0}$ $\psi_6(q_{56}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{57}, a) = q_{57}$ $\psi_6(q_{57}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_6(q_{57}, a) = q_{58}$ $\psi_6(q_{57}, a) = e$ za $a \in \{11, 15, 43, 47\}$,
$\varphi_6(q_{57}, a) = q_{F_0}$ $\psi_6(q_{57}, a) = 0$ inače,

$\varphi_6(q_{58}, a) = q_{55}$ $\psi_6(q_{58}, a) = n$ za $a \in \{248, 249, 251, 123\}$,
$\varphi_6(q_{58}, a) = q_{58}$ $\psi_6(q_{58}, a) = e$ za $a \in \{b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_6(q_{58}, a) = q_{F_0}$ $\psi_6(q_{58}, a) = 0$ inače,

$\varphi_6(q_{59}, a) = q_{60}$ $\psi_6(q_{59}, a) = w$ za $a \in \{235, 239, 234, 238, 227, 231, 203, 207, 226, 230, 195, 199, 194, 198\}$,
$\varphi_6(q_{59}, a) = q_{59}$ $\psi_6(q_{59}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1,\ a_7 = 0\}$,
$\varphi_6(q_{59}, a) = q_{59}$ $\psi_6(q_{59}, a) = s$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_3 = 1,\ a_6 = 0\}$,
$\varphi_6(q_{59}, a) = q_{F_0}$ $\psi_6(q_{59}, a) = 0$ inače.

$\varphi_6(q_{60}, a) = q_{60}$ $\psi_6(q_{60}, a) = w$ za $a \in \{249, 121, 253, 127, 255, 125, 111, 107\}$,
$\varphi_6(q_{60}, a) = q_{61}$ $\psi_6(q_{60}, a) = e$ za $a \in \{11, 15, 43, 47\}$,
$\varphi_6(q_{60}, a) = q_{62}$ $\psi_6(q_{60}, a) = n$ za $a \in \{31, 25, 29, 63, 120, 124\}$,
$\varphi_6(q_{60}, a) = q_{60}$ $\psi_6(q_{60}, a) = n$ za $a \in \{211, 243, 210, 242, 251, 219, 26, 250, 27\}$,
$\varphi_6(q_{60}, a) = q_{F_0}$ $\psi_6(q_{60}, a) = 0$ inače,

$\varphi_6(q_{61}, a) = q_{61}$ $\psi_6(q_{61}, a) = e$ za $a \in \{111, 107\}$,
$\varphi_6(q_{61}, a) = q_{62}$ $\psi_6(q_{61}, a) = n$ za $a \in \{120, 121, 124, 125, 127\}$,
$\varphi_6(q_{61}, a) = q_{F_0}$ $\psi_6(q_{61}, a) = 0$ inače,

$\varphi_6(q_{62}, a) = q_{62}$ $\psi_6(q_{62}, a) = e$ za $a \in \{246, 118, 98, 102, 214, 66, 70, 86, 30, 14, 10, 255, 254, 127, 126, 107, 106, 110, 111, 31, 15, 11, 63, 47, 43, 62, 46, 42\}$,
$\varphi_6(q_{62}, a) = q_{62}$ $\psi_6(q_{62}, a) = n$ za $a \in \{120, 112, 116, 124, 60, 56, 24, 28, 80, 84\}$,
$\varphi_6(q_{62}, a) = q_{63}$ $\psi_6(q_{62}, a) = w$ za $a \in \{208, 212, 248, 240, 244, 252\}$,
$\varphi_6(q_{62}, a) = q_{64}$ $\psi_6(q_{62}, a) = e$ za $a \in \{251, 250, 123, 122, 242, 243, 247, 114, 115, 119, 99, 103, 210, 211, 215, 67, 71, 82, 83, 87\}$,
$\varphi_6(q_{62}, a) = q_{F_0}$ $\psi_6(q_{62}, a) = 0$ inače,

$\varphi_6(q_{63}, a) = q_{62}$ $\psi_6(q_{63}, a) = n$ za $a \in \{127, 126, 118, 86, 31, 63, 62, 30\}$,
$\varphi_6(q_{63}, a) = q_{63}$ $\psi_6(q_{63}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1,\ \}$,
$\varphi_6(q_{63}, a) = q_{F_0}$ $\psi_6(q_{63}, a) = 0$ inače,

$\varphi_6(q_{64}, a) = q_{64}$ $\psi_6(q_{64}, a) = e$ za $a \in \{234, 235, 226, 227, 194, 195, 107, 106, 98, 99, 66, 67\}$,
$\varphi_6(q_{64}, a) = q_{65}$ $\psi_6(q_{64}, a) = s$ za $a \in \{91, 95, 75, 79, 72, 73, 223, 219, 216, 217, 203, 201, 200\}$,
$\varphi_6(q_{64}, a) = q_{F_0}$ $\psi_6(q_{64}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{65}, a) = q_{65}$ $\psi_6(q_{65}, a) = e$ za $a \in \{107, 66, 67, 75, 31, 22, 23, 235, 203, 194, 195, 27, 18, 19, 255, 251, 223, 219, 214, 210, 215, 211, 159, 151, 150, 155, 146, 147\}$,
$\varphi_6(q_{65}, a) = q_{65}$ $\psi_6(q_{65}, a) = s$ za $a \in \{152, 153, 216, 217, 200, 201, 24, 25, 72, 73, 56, 184\}$,
$\varphi_6(q_{65}, a) = q_{66}$ $\psi_6(q_{65}, a) = w$ za $a \in \{248, 249, 232, 233, 104, 105\}$,
$\varphi_6(q_{65}, a) = q_{67}$ $\psi_6(q_{65}, a) = w$ za $a \in \{64, 192, 208\}$,
$\varphi_6(q_{65}, a) = q_{67}$ $\psi_6(q_{65}, a) = n$ za $a \in \{16, 144\}$,
$\varphi_6(q_{65}, a) = q_{F_0}$ $\psi_6(q_{65}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{66}, a) = q_{65}$ $\psi_6(q_{66}, a) = s$ za $a \in \{223, 219, 203, 75, 31, 159, 27, 155\}$,
$\varphi_6(q_{66}, a) = q_{66}$ $\psi_6(q_{66}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1, \}$,
$\varphi_6(q_{66}, a) = q_{F_0}$ $\psi_6(q_{66}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{67}, a) = q_{68}$ $\psi_6(q_{67}, a) = w$ za $a \in \{254, 110, 126, 106, 122, 234, 250\}$,
$\varphi_6(q_{67}, a) = q_{69}$ $\psi_6(q_{67}, a) = e$ za $a \in \{30, 62, 14, 46\}$,
$\varphi_6(q_{67}, a) = q_{71}$ $\psi_6(q_{67}, a) = e$ za $a \in \{10, 42\}$,
$\varphi_6(q_{67}, a) = q_{67}$ $\psi_6(q_{67}, a) = n$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 0,\ a_4 = 1 \}$,
$\varphi_6(q_{67}, a) = q_{67}$ $\psi_6(q_{67}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_6(q_{67}, a) = q_{F_0}$ $\psi_6(q_{67}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{68}, a) = q_{68}$ $\psi_6(q_{68}, a) = w$ za $a \in \{107, 111, 127, 123, 235, 251, 255\}$,
$\varphi_6(q_{68}, a) = q_{69}$ $\psi_6(q_{68}, a) = e$ za $a \in \{15, 31, 63, 47\}$,
$\varphi_6(q_{68}, a) = q_{71}$ $\psi_6(q_{68}, a) = e$ za $a \in \{11, 43\}$,
$\varphi_6(q_{68}, a) = q_{F_0}$ $\psi_6(q_{68}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{69}, a) = q_{69}$ $\psi_6(q_{69}, a) = e$ za $a \in \{254, 255, 246, 247, 214, 215, 126, 127, 118, 119, 86, 87\}$,
$\varphi_6(q_{69}, a) = q_{70}$ $\psi_6(q_{69}, a) = e$ za $a \in \{122, 123, 114, 115, 82, 83, 250, 251, 242, 243, 210, 211\}$,
$\varphi_6(q_{69}, a) = q_{72}$ $\psi_6(q_{69}, a) = e$ za $a \in \{95, 223\}$,
$\varphi_6(q_{69}, a) = q_{73}$ $\psi_6(q_{69}, a) = e$ za $a \in \{91, 219\}$,
$\varphi_6(q_{69}, a) = q_{77}$ $\psi_6(q_{69}, a) = n$ za $a \in \{216, 217\}$,
$\varphi_6(q_{69}, a) = q_{F_0}$ $\psi_6(q_{69}, a) = \mathbf{0}$ inače,

$\varphi_6(q_{70}, a) = q_{70}$ $\psi_6(q_{70}, a) = e$ za $a \in \{234, 235, 226, 227, 194, 195, 106, 107, 98, 99, 66, 67\}$,
$\varphi_6(q_{70}, a) = q_{73}$ $\psi_6(q_{70}, a) = e$ za $a \in \{203, 75\}$,
$\varphi_6(q_{70}, a) = q_{76}$ $\psi_6(q_{70}, a) = w$ za $a \in \{200, 201\}$,
$\varphi_6(q_{70}, a) = q_{F_0}$ $\psi_6(q_{70}, a) = 0$ inače,

$\varphi_6(q_{71}, a) = q_{71}$ $\psi_6(q_{71}, a) = e$ za $a \in \{66, 67, 98, 99, 106, 107\}$,
$\varphi_6(q_{71}, a) = q_{69}$ $\psi_6(q_{71}, a) = e$ za $a \in \{110, 111, 102, 103, 70, 71\}$,
$\varphi_6(q_{71}, a) = q_{F_1}$ $\psi_6(q_{71}, a) = 0$ za $a \in \{72, 73\}$,
$\varphi_6(q_{71}, a) = q_{72}$ $\psi_6(q_{71}, a) = e$ za $a = 79$,
$\varphi_6(q_{71}, a) = q_{74}$ $\psi_6(q_{71}, a) = e$ za $a = 75$,
$\varphi_6(q_{71}, a) = q_{F_0}$ $\psi_6(q_{71}, a) = 0$ inače,

$\varphi_6(q_{72}, a) = q_{77}$ $\psi_6(q_{72}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_6(q_{72}, a) = q_{72}$ $\psi_6(q_{72}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_6(q_{72}, a) = q_{73}$ $\psi_6(q_{72}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_6(q_{72}, a) = q_{F_0}$ $\psi_6(q_{72}, a) = 0$ inače,

$\varphi_6(q_{73}, a) = q_{76}$ $\psi_6(q_{73}, a) = w$ za $a \in \{72, 73, 104, 105, 232, 233\}$,
$\varphi_6(q_{73}, a) = q_{73}$ $\psi_6(q_{73}, a) = e$ za $a \in \{107, 235\}$,
$\varphi_6(q_{73}, a) = q_{F_0}$ $\psi_6(q_{73}, a) = 0$ inače,

$\varphi_6(q_{74}, a) = q_{F_1}$ $\psi_6(q_{74}, a) = 0$ za $a \in \{104, 105\}$,
$\varphi_6(q_{74}, a) = q_{74}$ $\psi_6(q_{74}, a) = e$ za $a = 107$,
$\varphi_6(q_{74}, a) = q_{75}$ $\psi_6(q_{74}, a) = e$ za $a = 111$,
$\varphi_6(q_{74}, a) = q_{F_0}$ $\psi_6(q_{74}, a) = 0$ inače,

$\varphi_6(q_{75}, a) = q_{75}$ $\psi_6(q_{75}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_6(q_{75}, a) = q_{77}$ $\psi_6(q_{75}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_6(q_{75}, a) = q_{73}$ $\psi_6(q_{75}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_6(q_{75}, a) = q_{F_0}$ $\psi_6(q_{75}, a) = 0$ inače.

$\varphi_6(q_{76}, a) = q_{77}$ $\psi_6(q_{76}, a) = n$ za $a \in \{210, 114, 115, 122, 123, 82, 242, 243, 250, 251, 219, 83, 211, 91\}$,
$\varphi_6(q_{76}, a) = q_{76}$ $\psi_6(q_{76}, a) = w$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_6(q_{76}, a) = q_{F_0}$ $\psi_6(q_{76}, a) = 0$ inače,

$\varphi_6(q_{77}, a) = q_{77}$ $\psi_6(q_{77}, a) = n$ za $a = 123$,

$\varphi_6(q_{77}, a) = q_{77}$ $\psi_6(q_{77}, a) = w$ za $a \in \{104, 105, 107, 232, 233, 235\}$,
$\varphi_6(q_{77}, a) = q_{78}$ $\psi_6(q_{77}, a) = w$ za $a \in \{248, 249, 251\}$,
$\varphi_6(q_{77}, a) = q_{81}$ $\psi_6(q_{77}, a) = s$ za $a = 41$,
$\varphi_6(q_{77}, a) = q_{F_1}$ $\psi_6(q_{77}, a) = 0$ za $a \in \{11, 43\}$,
$\varphi_6(q_{77}, a) = q_{F_0}$ $\psi_6(q_{77}, a) = 0$ inače,

$\varphi_6(q_{78}, a) = q_{78}$ $\psi_6(q_{78}, a) = w$ za $a = 255$,
$\varphi_6(q_{78}, a) = q_{80}$ $\psi_6(q_{78}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_6(q_{78}, a) = q_{79}$ $\psi_6(q_{78}, a) = w$ za $a = 127$,
$\varphi_6(q_{78}, a) = q_{F_0}$ $\psi_6(q_{78}, a) = 0$ inače,

$\varphi_6(q_{79}, a) = q_{79}$ $\psi_6(q_{79}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_6(q_{79}, a) = q_{80}$ $\psi_6(q_{79}, a) = e$ za $a \in \{11, 15, 43, 47\}$,
$\varphi_6(q_{79}, a) = q_{F_0}$ $\psi_6(q_{79}, a) = 0$ inače,

$\varphi_6(q_{80}, a) = q_{77}$ $\psi_6(q_{80}, a) = n$ za $a \in \{248, 249, 251\}$,
$\varphi_6(q_{80}, a) = q_{80}$ $\psi_6(q_{80}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,$
$a_1 = 1\}$,
$\varphi_6(q_{80}, a) = q_{F_0}$ $\psi_6(q_{80}, a) = 0$ inače,

$\varphi_6(q_{81}, a) = q_{81}$ $\psi_6(q_{81}, a) = w$ za $a \in \{82, 83, 91, 114, 115, 122, 123, 70, 71, 79, 102, 103,$
$110, 111, 66, 67, 75, 98, 99, 106, 107\}$,
$\varphi_6(q_{81}, a) = q_{F_1}$ $\psi_6(q_{81}, a) = 0$ za $a \in \{10, 11, 14, 15, 42, 43, 46, 47\}$,
$\varphi_6(q_{81}, a) = q_{F_0}$ $\psi_6(q_{81}, a) = 0$ inače,

Neka je $M = \{194, 195, 198, 199, 202, 203, 206, 207, 226, 230, 234, 235, 238, 239\} \subseteq A$.
Tada,
$\psi_{k6}(q_{k6}, (\{q_i\}, a)) = \psi_6(q_i, (\{q_{k6}\}, a))$ za $i \in \{1, 2, 3, 4, 5, 6, 7\}$, $a \in A$,

$\psi_{k6}(q_{k6}, (\{q_8\}, a)) = 0$ $a \in M_1 = \{202, 206, 234, 238, 194, 198, 226, 230\} \subset M$,
$\psi_{k6}(q_{k6}, (\{q_8\}, a)) = \psi_6(q_8, (\{q_{k6}\}, a))$ za $a \notin M_1$,

$\psi_{k6}(q_{k6}, (\{q_9\}, a)) = 0$ $a \in M_1 = \{195, 194, 203, 239, 207, 235\} \subset M$,
$\psi_{k6}(q_{k6}, (\{q_9\}, a)) = \psi_6(q_9, (\{q_{k6}\}, a))$ za $a \notin M_1$,

$\psi_{k6}(q_{k6}, (\{q_{10}\}, a)) = 0$ $a \in M_1 = \{195, 194, 203, 239, 207, 235, 198, 199\} \subset M$,
$\psi_{k6}(q_{k6}, (\{q_{10}\}, a)) = \psi_6(q_{10}, (\{q_{k6}\}, a))$ za $a \notin M_1$,

$\psi_{k6}(q_{k6}, (\{q_{29}\}, a)) = 0$, $a \in A$,
$\varphi_6(q_{29}, (\{q_{k6}\}, a)) = q_{31}$ $\psi_6(q_{29}, (\{q_{k6}\}, a)) = e$ za $a \in M$

$\varphi_6(q_{29}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_6(q_{29}, (\{\lambda\}, a)) = 0$ za $a \in M$, tj. ako se automati A_6, K_6 ne susretnu,

$\psi_{k6}(q_{k6}, (\{q_{30}\}, a)) = 0$, $a \in A$,
$\varphi_6(q_{30}, (\{q_{k6}\}, a)) = q_{31}$ $\psi_6(q_{30}, (\{q_{k6}\}, a)) = e$ za $a \in \{194, 195, 198, 199\} \subset M$,
$\varphi_6(q_{30}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_6(q_{30}, (\{\lambda\}, a)) = 0$ za $a \in \{194, 195, 198, 199\}$, tj. ako se automati A_6, K_6 ne susretnu.

Kolektiv $S_8 = (A_8, K_8)$ je definisan na sljedeći način:
$Q_8 = \{q_i \mid i \in \{1, ..., 89\}\} \cup Q_F$,
$\varphi_8(q_1, a) = q_4$ $\psi_8(q_1, a) = n$ za $a = 148$,
$\varphi_8(q_1, a) = q_2$ $\psi_8(q_1, a) = w$ za $a \in \{208, 212\}$,
$\varphi_8(q_1, a) = q_9$ $\psi_8(q_1, a) = w$ za $a \in \{80, 84\}$,
$\varphi_8(q_1, a) = q_{F_0}$ $\psi_8(q_1, a) = 0$ inače,

$\varphi_8(q_2, a) = q_2$ $\psi_8(q_2, a) = w$ za $a \in \{255, 223, 214, 215, \}$,
$\varphi_8(q_2, a) = q_3$ $\psi_8(q_2, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_8(q_2, a) = q_9$ $\psi_8(q_2, a) = w$ za $a \in \{127, 95, 86, 87\}$,
$\varphi_8(q_2, a) = q_{F_0}$ $\psi_8(q_2, a) = 0$ inače,

$\varphi_8(q_3, a) = q_4$ $\psi_8(q_3, a) = n$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_8(q_3, a) = q_3$ $\psi_8(q_3, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1\}$,
$\varphi_8(q_3, a) = q_{F_0}$ $\psi_8(q_3, a) = 0$ inače,

$\varphi_8(q_4, a) = q_5$ $\psi_8(q_4, a) = w$ za $a \in \{208, 212, 240, 244\}$,
$\varphi_8(q_4, a) = q_2$ $\psi_8(q_4, a) = w$ za $a \in \{248, 252\}$,
$\varphi_8(q_4, a) = q_6$ $\psi_8(q_4, a) = e$ za $a \in \{74, 78, 202, 94, 206, 218, 106, 110, 234, 126, 238, 250, 210, 242\}$,
$\varphi_8(q_4, a) = q_4$ $\psi_8(q_4, a) = e$ za $a \in \{214, 246, 222, 254\}$,
$\varphi_8(q_4, a) = q_9$ $\psi_8(q_4, a) = w$ za $a \in \{120, 124\}$,
$\varphi_8(q_4, a) = q_{F_0}$ $\psi_8(q_4, a) = 0$ inače,

$\varphi_8(q_5, a) = q_5$ $\psi_8(q_5, a) = w$ za $a \in \{214, 246\}$,
$\varphi_8(q_5, a) = q_2$ $\psi_8(q_5, a) = w$ za $a \in \{222, 254\}$,
$\varphi_8(q_5, a) = q_{F_0}$ $\psi_8(q_5, a) = 0$ inače,

$\varphi_8(q_6, a) = q_6$ $\psi_8(q_6, a) = e$ za $a \in \{98, 102, 118, 246, 226, 230, 66, 70, 86, 214, 194, 198\}$,

$\varphi_8(q_6, a) = q_7$ $\psi_8(q_6, a) = w$ za $a \in \{112, 116, 244, 240, 80, 84, 208, 212\}$,
$\varphi_8(q_6, a) = q_{F_0}$ $\psi_8(q_6, a) = \mathbf{0}$ inače,

$\varphi_8(q_7, a) = q_7$ $\psi_8(q_7, a) = w$ za $a \in \{98, 102, 118, 246, 66, 70, 86, 214, 242, 210\}$,
$\varphi_8(q_7, a) = q_8$ $\psi_8(q_7, a) = w$ za $a \in \{74, 78, 94, 218, 106, 110, 126, 250, 254, 222\}$,
$\varphi_8(q_7, a) = q_7$ $\psi_8(q_7, a) = w$ za $a \in \{226, 230, 194, 198\}$,
$\varphi_8(q_7, a) = q_8$ $\psi_8(q_7, a) = w$ za $a \in \{202, 206, 234, 238\}$,
$\varphi_8(q_7, a) = q_{F_0}$ $\psi_8(q_7, a) = \mathbf{0}$ inače,

$\varphi_8(q_8, a) = q_8$ $\psi_8(q_8, a) = w$ za $a \in \{255, 223, 215, 251, 219, 211, 71, 79, 111, 107, 75, 67, 214, 66, 210\}$,
$\varphi_8(q_8, a) = q_{10}$ $\psi_8(q_8, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_8(q_8, a) = q_{11}$ $\psi_8(q_8, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_8(q_8, a) = q_8$ $\psi_8(q_8, a) = w$ za $a \in \{203, 207, 194, 195, 198, 199, 235, 239\}$,
$\varphi_8(q_8, a) = q_{F_0}$ $\psi_8(q_8, a) = \mathbf{0}$ inače,

$\varphi_8(q_9, a) = q_9$ $\psi_8(q_9, a) = w$ za $a \in \{211, 67, 210, 66, 255, 223, 70, 71, 107, 75, 215, 111, 79, 219, 251, 214\}$,
$\varphi_8(q_9, a) = q_{10}$ $\psi_8(q_9, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_8(q_9, a) = q_{11}$ $\psi_8(q_9, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_8(q_9, a) = q_{10}$ $\psi_8(q_9, a) = e$ za $a \in \{203, 207, 194, 195, 198, 199, 235, 239\}$,
$\varphi_8(q_9, a) = q_{F_0}$ $\psi_8(q_9, a) = \mathbf{0}$ inače,

$\varphi_8(q_{10}, a) = q_{11}$ $\psi_8(q_{10}, a) = n$ za $a \in \{210, 211, 219, 218, 250, 251, 242\}$,
$\varphi_8(q_{10}, a) = q_{10}$ $\psi_8(q_{10}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{10}, a) = q_{F_0}$ $\psi_8(q_{10}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{11}, a) = q_{11}$ $\psi_8(q_{11}, a) = w$ za $a \in \{214, 66, 194, 210, 248, 104, 232, 203, 215, 211, 67, 195, 216, 200, 72, 255, 223, 251, 219, 107, 75, 235, 249, 233, 105, 217, 201, 73\}$,
$\varphi_8(q_{11}, a) = q_{11}$ $\psi_8(q_{11}, a) = n$ za $a \in \{18, 19, 24, 25, 28, 29, 27, 146, 147, 152, 153, 155\}$,
$\varphi_8(q_{11}, a) = q_{12}$ $\psi_8(q_{11}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_8(q_{11}, a) = q_{13}$ $\psi_8(q_{11}, a) = w$ za $a \in \{253, 125, 221, 93, 95, 127, 88, 92, 220, 252, 124, 120, 121, 89\}$,
$\varphi_8(q_{11}, a) = q_{15}$ $\psi_8(q_{11}, a) = e$ za $a \in \{10, 14, 30\}$,
$\varphi_8(q_{11}, a) = q_{17}$ $\psi_8(q_{11}, a) = e$ za $a \in \{26, 154, 158\}$,
$\varphi_8(q_{11}, a) = q_{F_0}$ $\psi_8(q_{11}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{12}, a) = q_{11}$ $\psi_8(q_{12}, a) = n$ za $a \in \{210, 211, 216, 217, 219, 248, 249, 251\}$,
$\varphi_8(q_{12}, a) = q_{12}$ $\psi_8(q_{12}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{12}, a) = q_{F_0}$ $\psi_8(q_{12}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{13}, a) = q_{13}$ $\psi_8(q_{13}, a) = w$ za $a \in \{107, 111, 214, 223, 255, 127, 215, 95\}$,
$\varphi_8(q_{13}, a) = q_{14}$ $\psi_8(q_{13}, a) = e$ za $a \in \{11, 15, 7, 43, 47\}$,
$\varphi_8(q_{13}, a) = q_{15}$ $\psi_8(q_{13}, a) = n$ za $a \in \{22, 23, 31, 63\}$,
$\varphi_8(q_{13}, a) = q_{F_0}$ $\psi_8(q_{13}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{14}, a) = q_{14}$ $\psi_8(q_{14}, a) = e$ za $a \in \{107, 111, 79\}$,
$\varphi_8(q_{14}, a) = q_{15}$ $\psi_8(q_{14}, a) = n$ za $a \in \{88, 89, 92, 93, 95, 125, 127, 120, 121, 124\}$,
$\varphi_8(q_{14}, a) = q_{F_0}$ $\psi_8(q_{14}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{15}, a) = q_{15}$ $\psi_8(q_{15}, a) = e$ za $a \in \{246, 63, 30, 10, 14, 110, 111, 214, 66, 70, 86, 254, 126, 127, 106, 107, 43, 47, 62, 46, 42, 255, 31, 15, 11, 118, 98, 102\}$,
$\varphi_8(q_{15}, a) = q_{15}$ $\psi_8(q_{15}, a) = n$ za $a \in \{56, 60, 124, 120, 24, 28, 112, 116, 80, 84\}$,
$\varphi_8(q_{15}, a) = q_{16}$ $\psi_8(q_{15}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_8(q_{15}, a) = q_{17}$ $\psi_8(q_{15}, a) = e$ za $a \in \{154, 158, 26, 186, 190, 58, 59, 155, 159, 187, 191, 215, 211, 210, 250, 251, 242, 243, 247, 99, 103, 114, 115, 119, 122, 123, 67, 71, 82, 83, 87, 250\}$,
$\varphi_8(q_{15}, a) = q_{F_0}$ $\psi_8(q_{15}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{16}, a) = q_{15}$ $\psi_8(q_{16}, a) = n$ za $a \in \{30, 31, 62, 63, 86, 118, 126, 127\}$,
$\varphi_8(q_{16}, a) = q_{16}$ $\psi_8(q_{16}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_8(q_{16}, a) = q_{F_0}$ $\psi_8(q_{16}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{17}, a) = q_{17}$ $\psi_8(q_{17}, a) = e$ za $a \in \{66, 67, 70, 71, 86, 87, 98, 99, 102, 103, 106, 107, 110, 111, 118, 119, 126, 127, 214, 215, 246, 247, 254, 255, 234, 235, 238, 239, 194, 195, 198, 199, 226, 227, 230, 231, 242, 243, 251\}$,
$\varphi_8(q_{17}, a) = q_{18}$ $\psi_8(q_{17}, a) = s$ za $a \in \{93, 95, 75, 79, 203, 207, 220, 216, 88, 89, 92, 219, 223, 221, 217, 72, 73, 91, 200, 201\}$,
$\varphi_8(q_{17}, a) = q_{F_0}$ $\psi_8(q_{17}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{18}, a) = q_{18}$ $\psi_8(q_{18}, a) = e$ za $a \in \{107, 66, 67, 75, 31, 22, 23, 235, 203, 194, 195, 27, 18, 19, 255, 251, 223, 219, 214, 210, 215, 211, 159, 151, 150, 155, 146, 147\}$,
$\varphi_8(q_{18}, a) = q_{18}$ $\psi_8(q_{18}, a) = s$ za $a \in \{24, 25, 72, 73, 152, 153, 216, 217, 200, 201, 184, 56\}$,
$\varphi_8(q_{18}, a) = q_{19}$ $\psi_8(q_{18}, a) = w$ za $a \in \{104, 105, 232, 233, 248, 249\}$,
$\varphi_8(q_{18}, a) = q_{20}$ $\psi_8(q_{18}, a) = e$ za $a \in \{154, 158, 30, 62, 63, 59, 58, 26, 254, 250, 186, 187, 190, 191\}$,
$\varphi_8(q_{18}, a) = q_{22}$ $\psi_8(q_{18}, a) = w$ za $a \in \{80, 112, 120\}$,
$\varphi_8(q_{18}, a) = q_{F_0}$ $\psi_8(q_{18}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{19}, a) = q_{18}$ $\psi_8(q_{19}, a) = s$ za $a \in \{223, 219, 203, 75, 31, 159, 27, 155\}$,

$\varphi_8(q_{19}, a) = q_{19}$ $\psi_8(q_{19}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_8(q_{19}, a) = q_{F_0}$ $\psi_8(q_{19}, a) = 0$ inače,

$\varphi_8(q_{20}, a) = q_{20}$ $\psi_8(q_{20}, a) = e$ za $a \in \{235, 246, 214, 251, 254, 255, 250, 107\}$,
$\varphi_8(q_{20}, a) = q_{21}$ $\psi_8(q_{20}, a) = w$ za $a \in \{208, 212, 224, 240, 244\}$,
$\varphi_8(q_{20}, a) = q_{22}$ $\psi_8(q_{20}, a) = s$ za $a \in \{104, 232, 248, 252\}$,
$\varphi_8(q_{20}, a) = q_{F_0}$ $\psi_8(q_{20}, a) = 0$ inače,

$\varphi_8(q_{21}, a) = q_{22}$ $\psi_8(q_{21}, a) = s$ za $a \in \{154, 158, 30, 62, 58, 26, 254, 250, 186, 190\}$,
$\varphi_8(q_{21}, a) = q_{21}$ $\psi_8(q_{21}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_8(q_{21}, a) = q_{F_0}$ $\psi_8(q_{21}, a) = 0$ inače,

$\varphi_8(q_{22}, a) = q_{22}$ $\psi_8(q_{22}, a) = w$ za $a \in \{246, 66, 98, 120, 80, 112, 106, 107, 255, 127, 254, 126, 214, 86, 118, 248, 240, 208, 70, 102, 110, 124, 116, 84, 252, 244, 212, 111\}$,
$\varphi_8(q_{22}, a) = q_{22}$ $\psi_8(q_{22}, a) = s$ za $a \in \{14, 46, 28, 60, 62, 30, 24, 56, 10, 42\}$,
$\varphi_8(q_{22}, a) = q_{23}$ $\psi_8(q_{22}, a) = e$ za $a \in \{11, 15, 31, 43, 47, 63\}$,
$\varphi_8(q_{22}, a) = q_{24}$ $\psi_8(q_{22}, a) = w$ za $a \in \{222, 78, 95, 223, 94, 74, 79, 75\}$,
$\varphi_8(q_{22}, a) = q_{25}$ $\psi_8(q_{22}, a) = e$ za $a \in \{235, 203, 226, 194, 202, 234, 198, 230, 206, 238, 207, 239\}$,
$\varphi_8(q_{22}, a) = q_{F_0}$ $\psi_8(q_{22}, a) = 0$ inače,

$\varphi_8(q_{23}, a) = q_{22}$ $\psi_8(q_{23}, a) = s$ za $a \in \{126, 120, 106, 124, 252, 248, 110, 254\}$,
$\varphi_8(q_{23}, a) = q_{23}$ $\psi_8(q_{23}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{23}, a) = q_{F_0}$ $\psi_8(q_{23}, a) = 0$ inače,

$\varphi_8(q_{24}, a) = q_{24}$ $\psi_8(q_{24}, a) = w$ za $a \in \{215, 87, 67, 71, 214, 86, 70, 66\}$,
$\varphi_8(q_{24}, a) = q_{25}$ $\psi_8(q_{24}, a) = e$ za $a \in \{194, 195, 198, 199\}$,
$\varphi_8(q_{24}, a) = q_{F_0}$ $\psi_8(q_{24}, a) = 0$ inače,

$\varphi_8(q_{25}, a) = q_{25}$ $\psi_8(q_{25}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1, a_4 = 0\}$,
$\varphi_8(q_{25}, a) = q_{25}$ $\psi_8(q_{25}, a) = n$ za $a \in \{ b \in A |\ 24 \le b \le 31$ ili $56 \le b \le 63$ ili $80 \le b \le 95$ ili $112 \le b \le 127\}$,
$\varphi_8(q_{25}, a) = q_{26}$ $\psi_8(q_{25}, a) = n$ za $a \in \{b \in A |\ 144 \le b \le 159$ ili $184 \le b \le 191\}$,
$\varphi_8(q_{25}, a) = q_{F_0}$ $\psi_8(q_{25}, a) = 0$ inače,

$\varphi_8(q_{26}, a) = q_{26}$ $\psi_8(q_{26}, a) = w$ za $a \in \{ b \in A |\ 64 \le b \le 103$ ili $112 \le b \le 119$ ili $192 \le b \le 231$ ili $240 \le b \le 247\}$,

$\varphi_8(q_{26}, a) = q_{26}$ $\psi_8(q_{26}, a) = n$ za $a \in \{ b \in A | 16 \leq b \leq 25$ ili $b = 27$ili $b = 28$ ili $b = 29$ ili $b = 31$ili $144 \leq b \leq 159\}$,
$\varphi_8(q_{26}, a) = q_{46}$ $\psi_8(q_{26}, a) = e$ za $a \in \{26, 58, 186, 190, 154, 158\}$,
$\varphi_8(q_{26}, a) = q_{27}$ $\psi_8(q_{26}, a) = w$ za $a \in \{106, 110, 122, 126, 234, 250, 254, 238\}$,
$\varphi_8(q_{26}, a) = q_{30}$ $\psi_8(q_{26}, a) = e$ za $a \in \{10, 42\}$,
$\varphi_8(q_{26}, a) = q_{28}$ $\psi_8(q_{26}, a) = e$ za $a \in \{14, 30, 46, 62\}$,
$\varphi_8(q_{26}, a) = q_{F_0}$ $\psi_8(q_{26}, a) = 0$ inače,

$\varphi_8(q_{27}, a) = q_{27}$ $\psi_8(q_{27}, a) = w$ za $a \in \{107, 111, 127, 123, 235, 239, 251, 255\}$,
$\varphi_8(q_{27}, a) = q_{28}$ $\psi_8(q_{27}, a) = e$ za $a \in \{15, 31, 63, 47\}$,
$\varphi_8(q_{27}, a) = q_{46}$ $\psi_8(q_{27}, a) = e$ za $a \in \{27, 187, 59, 155, 159, 191\}$,
$\varphi_8(q_{27}, a) = q_{30}$ $\psi_8(q_{27}, a) = e$ za $a \in \{11, 43\}$,
$\varphi_8(q_{27}, a) = q_{F_0}$ $\psi_8(q_{27}, a) = 0$ inače,

$\varphi_8(q_{28}, a) = q_{28}$ $\psi_8(q_{28}, a) = e$ za $a \in \{254, 255, 246, 247, 214, 215, 126, 127, 118, 119, 86, 87\}$,
$\varphi_8(q_{28}, a) = q_{29}$ $\psi_8(q_{28}, a) = e$ za $a \in \{122, 123, 114, 115, 82, 83, 250, 251, 242, 243, 210, 211\}$,
$\varphi_8(q_{28}, a) = q_{31}$ $\psi_8(q_{28}, a) = e$ za $a \in \{95, 223\}$,
$\varphi_8(q_{28}, a) = q_{32}$ $\psi_8(q_{28}, a) = e$ za $a \in \{91, 219\}$,
$\varphi_8(q_{28}, a) = q_{36}$ $\psi_8(q_{28}, a) = n$ za $a \in \{216, 217\}$,
$\varphi_8(q_{28}, a) = q_{53}$ $\psi_8(q_{28}, a) = n$ za $a \in \{220, 221\}$,
$\varphi_8(q_{28}, a) = q_{F_0}$ $\psi_8(q_{28}, a) = 0$ inače,

$\varphi_8(q_{29}, a) = q_{29}$ $\psi_8(q_{29}, a) = e$ za $a \in \{234, 235, 226, 227, 194, 195, 106, 107, 98, 99, 66, 67\}$,
$\varphi_8(q_{29}, a) = q_{32}$ $\psi_8(q_{29}, a) = e$ za $a \in \{203, 75\}$,
$\varphi_8(q_{29}, a) = q_{46}$ $\psi_8(q_{29}, a) = e$ za $a \in \{239, 207, 231, 238, 199, 230, 198, 111, 110, 102, 70, 71, 103, 79\}$,
$\varphi_8(q_{29}, a) = q_{35}$ $\psi_8(q_{29}, a) = w$ za $a \in \{200, 201, 72, 73\}$,
$\varphi_8(q_{29}, a) = q_{F_0}$ $\psi_8(q_{29}, a) = 0$ inače,

$\varphi_8(q_{30}, a) = q_{30}$ $\psi_8(q_{30}, a) = e$ za $a \in \{66, 67, 98, 99, 106, 107\}$,
$\varphi_8(q_{30}, a) = q_{28}$ $\psi_8(q_{30}, a) = e$ za $a \in \{110, 111, 102, 103, 70, 71\}$,
$\varphi_8(q_{30}, a) = q_{31}$ $\psi_8(q_{30}, a) = e$ za $a = 79$,
$\varphi_8(q_{30}, a) = q_{33}$ $\psi_8(q_{30}, a) = e$ za $a = 75$,
$\varphi_8(q_{30}, a) = q_{F_0}$ $\psi_8(q_{30}, a) = 0$ inače,

$\varphi_8(q_{31}, a) = q_{36}$ $\psi_8(q_{31}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_8(q_{31}, a) = q_{53}$ $\psi_8(q_{31}, a) = n$ za $a \in \{252, 253\}$,
$\varphi_8(q_{31}, a) = q_{31}$ $\psi_8(q_{31}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_8(q_{31}, a) = q_{32}$ $\psi_8(q_{31}, a) = e$ za $a \in \{123, 251\}$,

$\varphi_8(q_{31}, a) = q_{F_0}$ $\psi_8(q_{31}, a) = 0$ inače,

$\varphi_8(q_{32}, a) = q_{35}$ $\psi_8(q_{32}, a) = w$ za $a \in \{72, 73, 104, 105, 232, 233\}$,
$\varphi_8(q_{32}, a) = q_{32}$ $\psi_8(q_{32}, a) = e$ za $a \in \{107, 235\}$,
$\varphi_8(q_{32}, a) = q_{47}$ $\psi_8(q_{32}, a) = e$ za $a = 111$,
$\varphi_8(q_{32}, a) = q_{F_0}$ $\psi_8(q_{32}, a) = 0$ inače,

$\varphi_8(q_{33}, a) = q_{33}$ $\psi_8(q_{33}, a) = e$ za $a = 107$,
$\varphi_8(q_{33}, a) = q_{34}$ $\psi_8(q_{33}, a) = e$ za $a = 111$,
$\varphi_8(q_{33}, a) = q_{F_0}$ $\psi_8(q_{33}, a) = 0$ inače,

$\varphi_8(q_{34}, a) = q_{34}$ $\psi_8(q_{34}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_8(q_{34}, a) = q_{36}$ $\psi_8(q_{34}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_8(q_{34}, a) = q_{32}$ $\psi_8(q_{34}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_8(q_{34}, a) = q_{F_0}$ $\psi_8(q_{34}, a) = 0$ inače.

$\varphi_8(q_{35}, a) = q_{36}$ $\psi_8(q_{35}, a) = n$ za $a \in \{210, 114, 115, 122, 123, 82, 242, 243, 250, 251, 219, 83, 211, 91\}$,
$\varphi_8(q_{35}, a) = q_{35}$ $\psi_8(q_{35}, a) = w$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_8(q_{35}, a) = q_{F_0}$ $\psi_8(q_{35}, a) = 0$ inače,

$\varphi_8(q_{36}, a) = q_{36}$ $\psi_8(q_{36}, a) = n$ za $a = 123$,
$\varphi_8(q_{36}, a) = q_{36}$ $\psi_8(q_{36}, a) = w$ za $a \in \{104, 105, 107, 232, 233, 235\}$,
$\varphi_8(q_{36}, a) = q_{37}$ $\psi_8(q_{36}, a) = w$ za $a \in \{248, 249, 251\}$,
$\varphi_8(q_{36}, a) = q_{48}$ $\psi_8(q_{36}, a) = w$ za $a \in \{120, 121, 124, 125\}$,
$\varphi_8(q_{36}, a) = q_{42}$ $\psi_8(q_{36}, a) = w$ za $a \in \{252, 253\}$,
$\varphi_8(q_{36}, a) = q_{40}$ $\psi_8(q_{36}, a) = s$ za $a = 189$,
$\varphi_8(q_{36}, a) = q_{F_0}$ $\psi_8(q_{36}, a) = 0$ inače,

$\varphi_8(q_{37}, a) = q_{37}$ $\psi_8(q_{37}, a) = w$ za $a = 255$,
$\varphi_8(q_{37}, a) = q_{39}$ $\psi_8(q_{37}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_8(q_{37}, a) = q_{50}$ $\psi_8(q_{37}, a) = e$ za $a \in \{159, 191\}$,
$\varphi_8(q_{37}, a) = q_{38}$ $\psi_8(q_{37}, a) = w$ za $a = 127$,
$\varphi_8(q_{37}, a) = q_{F_0}$ $\psi_8(q_{37}, a) = 0$ inače,

$\varphi_8(q_{38}, a) = q_{38}$ $\psi_8(q_{38}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_8(q_{38}, a) = q_{39}$ $\psi_8(q_{38}, a) = e$ za $a \in \{11, 15, 43, 47\}$,
$\varphi_8(q_{38}, a) = q_{44}$ $\psi_8(q_{38}, a) = w$ za $a \in \{239, 235\}$,
$\varphi_8(q_{38}, a) = q_{F_0}$ $\psi_8(q_{38}, a) = 0$ inače,

$\varphi_8(q_{39}, a) = q_{36}$ $\psi_8(q_{38}, a) = n$ za $a \in \{248, 249, 251\}$,

$\varphi_8(q_{39}, a) = q_{39}$ $\psi_8(q_{39}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{39}, a) = q_{F_0}$ $\psi_8(q_{39}, a) = 0$ inače,

$\varphi_8(q_{40}, a) = q_{40}$ $\psi_8(q_{40}, a) = w$ za $a \in \{82, 83, 91, 114, 115, 122, 123, 70, 71, 79, 102, 103, 110, 111, 66, 67, 75, 98, 99, 106, 107\}$,
$\varphi_8(q_{40}, a) = q_{41}$ $\psi_8(q_{40}, a) = e$ za $a \in \{10, 11, 14, 15, 42, 43, 46, 47\}$,
$\varphi_8(q_{40}, a) = q_{F_0}$ $\psi_8(q_{40}, a) = 0$ inače,

$\varphi_8(q_{41}, a) = q_{53}$ $\psi_8(q_{41}, a) = n$ za $a = 189$,
$\varphi_8(q_{41}, a) = q_{41}$ $\psi_8(q_{41}, a) = n$ za $a \in \{122, 123, 114, 115, 82, 83, 91\}$,
$\varphi_8(q_{41}, a) = q_{41}$ $\psi_8(q_{41}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{41}, a) = q_{F_0}$ $\psi_8(q_{41}, a) = 0$ inače,

$\varphi_8(q_{42}, a) = q_{42}$ $\psi_8(q_{42}, a) = w$ za $a = 255$,
$\varphi_8(q_{42}, a) = q_{43}$ $\psi_8(q_{42}, a) = e$ za $a \in \{31, 191, 63, 159\}$,
$\varphi_8(q_{42}, a) = q_{48}$ $\psi_8(q_{42}, a) = w$ za $a = 127$,
$\varphi_8(q_{42}, a) = q_{F_0}$ $\psi_8(q_{42}, a) = 0$ inače,

$\varphi_8(q_{43}, a) = q_{43}$ $\psi_8(q_{43}, a) = e$ za $a = 255$,
$\varphi_8(q_{43}, a) = q_{53}$ $\psi_8(q_{43}, a) = n$ za $a \in \{252, 253\}$,
$\varphi_8(q_{43}, a) = q_{F_0}$ $\psi_8(q_{43}, a) = 0$ inače,

$\varphi_8(q_{44}, a) = q_{44}$ $\psi_8(q_{44}, a) = w$ za $a \in \{251, 255\}$,
$\varphi_8(q_{44}, a) = q_{45}$ $\psi_8(q_{44}, a) = e$ za $a \in \{31, 191, 27, 63, 159, 187, 59, 155\}$,
$\varphi_8(q_{44}, a) = q_{F_0}$ $\psi_8(q_{44}, a) = 0$ inače,

$\varphi_8(q_{45}, a) = q_{48}$ $\psi_8(q_{45}, a) = w$ za $a \in \{248, 249\}$,
$\varphi_8(q_{45}, a) = q_{45}$ $\psi_8(q_{45}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{45}, a) = q_{F_0}$ $\psi_8(q_{45}, a) = 0$ inače,

$\varphi_8(q_{46}, a) = q_{48}$ $\psi_8(q_{46}, a) = w$ za $a \in \{216, 217, 220, 221, 88, 89, 92, 93\}$,
$\varphi_8(q_{46}, a) = q_{47}$ $\psi_8(q_{46}, a) = e$ za $a \in \{223, 79, 95, 75, 219, 203, 207\}$,
$\varphi_8(q_{46}, a) = q_{46}$ $\psi_8(q_{46}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{46}, a) = q_{F_0}$ $\psi_8(q_{46}, a) = 0$ inače,

$\varphi_8(q_{47}, a) = q_{47}$ $\psi_8(q_{47}, a) = e$ za $a \in \{111, 127, 107, 251, 235, 255, 239\}$,
$\varphi_8(q_{47}, a) = q_{48}$ $\psi_8(q_{47}, a) = w$ za $a \in \{248, 249, 252, 253, 120, 121, 124, 125\}$,

$\varphi_8(q_{47}, a) = q_{F_0}$ $\psi_8(q_{47}, a) = 0$ inače,

$\varphi_8(q_{48}, a) = q_{48}$ $\psi_8(q_{48}, a) = w$ za $a \in \{255, 127, 223, 95, 111, 79, 247, 119, 215, 87, 103, 71, 67, 99, 75, 107, 126, 254, 110, 246, 214, 118, 86, 70, 102, 106, 98, 66\}$,
$\varphi_8(q_{48}, a) = q_{50}$ $\psi_8(q_{48}, a) = e$ za $a \in \{158, 159, 190, 191\}$,
$\varphi_8(q_{48}, a) = q_{F_0}$ $\psi_8(q_{48}, a) = 0$ inače,

$\varphi_8(q_{49}, a) = q_{49}$ $\psi_8(q_{49}, a) = w$ za $a \in \{251, 211, 243, 250, 210, 242, 255, 214, 246, 254, 219, 215, 247, 223\}$,
$\varphi_8(q_{49}, a) = q_{50}$ $\psi_8(q_{49}, a) = e$ za $a \in \{30, 31, 62, 63, 158, 159, 190, 191\}$,
$\varphi_8(q_{49}, a) = q_{60}$ $\psi_8(q_{49}, a) = n$ za $a \in \{187, 155, 59, 27, 186, 154, 58, 26\}$,
$\varphi_8(q_{49}, a) = q_{F_0}$ $\psi_8(q_{49}, a) = 0$ inače,

$\varphi_8(q_{50}, a) = q_{60}$ $\psi_8(q_{50}, a) = n$ za $a \in \{251, 211, 243, 250, 210, 242, 219\}$,
$\varphi_8(q_{50}, a) = q_{53}$ $\psi_8(q_{50}, a) = n$ za $a \in \{216, 217, 220, 221, 248, 249, 252, 253\}$,
$\varphi_8(q_{50}, a) = q_{50}$ $\psi_8(q_{50}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{50}, a) = q_{F_0}$ $\psi_8(q_{50}, a) = 0$ inače,

$\varphi_8(q_{51}, a) = q_{51}$ $\psi_8(q_{51}, a) = w$ za $a \in \{255, 223, 214, 215, \}$,
$\varphi_8(q_{51}, a) = q_{52}$ $\psi_8(q_{51}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_8(q_{51}, a) = q_{58}$ $\psi_8(q_{51}, a) = w$ za $a \in \{127, 95, 86, 87\}$,
$\varphi_8(q_{51}, a) = q_{F_0}$ $\psi_8(q_{51}, a) = 0$ inače,

$\varphi_8(q_{52}, a) = q_{53}$ $\psi_8(q_{52}, a) = n$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_8(q_{52}, a) = q_{52}$ $\psi_8(q_{52}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{52}, a) = q_{F_0}$ $\psi_8(q_{52}, a) = 0$ inače,

$\varphi_8(q_{53}, a) = q_{54}$ $\psi_8(q_{53}, a) = w$ za $a \in \{208, 212, 240, 244\}$,
$\varphi_8(q_{53}, a) = q_{51}$ $\psi_8(q_{53}, a) = w$ za $a \in \{248, 252\}$,
$\varphi_8(q_{53}, a) = q_{55}$ $\psi_8(q_{53}, a) = e$ za $a \in \{74, 78, 202, 94, 206, 218, 106, 110, 234, 126, 238, 250, 210, 242\}$,
$\varphi_8(q_{53}, a) = q_{53}$ $\psi_8(q_{53}, a) = e$ za $a \in \{214, 246, 222, 254\}$,
$\varphi_8(q_{53}, a) = q_{F_0}$ $\psi_8(q_{53}, a) = 0$ inače,

$\varphi_8(q_{54}, a) = q_{54}$ $\psi_8(q_{54}, a) = w$ za $a \in \{214, 246\}$,
$\varphi_8(q_{54}, a) = q_{51}$ $\psi_8(q_{54}, a) = w$ za $a \in \{222, 254\}$,
$\varphi_8(q_{54}, a) = q_{F_0}$ $\psi_8(q_{54}, a) = 0$ inače,

$\varphi_8(q_{55}, a) = q_{55}$ $\psi_8(q_{55}, a) = e$ za $a \in \{98, 102, 118, 246, 226, 230, 66, 70, 86, 214, 194, 198\}$,
$\varphi_8(q_{55}, a) = q_{56}$ $\psi_8(q_{55}, a) = w$ za $a \in \{112, 116, 244, 240, 80, 84, 208, 212\}$,
$\varphi_8(q_{55}, a) = q_{F_0}$ $\psi_8(q_{55}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{56}, a) = q_{56}$ $\psi_8(q_{56}, a) = w$ za $a \in \{98, 102, 118, 246, 66, 70, 86, 214, 242, 210\}$,
$\varphi_8(q_{56}, a) = q_{57}$ $\psi_8(q_{56}, a) = w$ za $a \in \{74, 78, 94, 218, 106, 110, 126, 250, 254, 222\}$,
$\varphi_8(q_{56}, a) = q_{56}$ $\psi_8(q_{56}, a) = w$ za $a \in \{226, 230, 194, 198\}$,
$\varphi_8(q_{56}, a) = q_{57}$ $\psi_8(q_{56}, a) = w$ za $a \in \{202, 206, 234, 238\}$,
$\varphi_8(q_{56}, a) = q_{F_0}$ $\psi_8(q_{56}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{57}, a) = q_{57}$ $\psi_8(q_8, a) = w$ za $a \in \{255, 223, 215, 251, 219, 211, 71, 79, 111, 107, 75, 67, 214, 66, 210\}$,
$\varphi_8(q_{57}, a) = q_{59}$ $\psi_8(q_{57}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_8(q_{57}, a) = q_{60}$ $\psi_8(q_{57}, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_8(q_{57}, a) = q_{57}$ $\psi_8(q_{57}, a) = w$ za $a \in \{203, 207, 194, 195, 235, 239, 198, 199\}$,
$\varphi_8(q_{57}, a) = q_{F_0}$ $\psi_8(q_{57}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{58}, a) = q_{58}$ $\psi_8(q_9, a) = w$ za $a \in \{211, 67, 210, 66, 255, 223, 70, 71, 107, 75, 215, 111, 79, 219, 251, 214\}$,
$\varphi_8(q_{58}, a) = q_{59}$ $\psi_8(q_{58}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_8(q_{58}, a) = q_{60}$ $\psi_8(q_{58}, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_8(q_{58}, a) = q_{58}$ $\psi_8(q_{58}, a) = w$ za $a \in \{203, 207, 194, 195, 235, 239, 198, 199\}$,
$\varphi_8(q_{58}, a) = q_{F_0}$ $\psi_8(q_{58}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{59}, a) = q_{60}$ $\psi_8(q_{59}, a) = n$ za $a \in \{210, 211, 219, 218, 250, 251, 242\}$,
$\varphi_8(q_{59}, a) = q_{59}$ $\psi_8(q_{59}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{59}, a) = q_{F_0}$ $\psi_8(q_{59}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{60}, a) = q_{60}$ $\psi_8(q_{60}, a) = w$ za $a \in \{214, 66, 194, 210, 248, 104, 232, 203, 215, 211, 67, 195, 216, 200, 72, 255, 223, 251, 219, 107, 75, 235, 249, 233, 105, 217, 201, 73\}$,
$\varphi_8(q_{60}, a) = q_{60}$ $\psi_8(q_{60}, a) = n$ za $a \in \{18, 19, 24, 25, 28, 29, 27, 146, 147, 152, 153, 155\}$,
$\varphi_8(q_{60}, a) = q_{61}$ $\psi_8(q_{60}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_8(q_{60}, a) = q_{62}$ $\psi_8(q_{60}, a) = w$ za $a \in \{253, 125, 221, 93, 95, 127, 88, 92, 220, 252, 124, 120, 121, 89\}$,
$\varphi_8(q_{60}, a) = q_{64}$ $\psi_8(q_{60}, a) = e$ za $a \in \{10, 14, 30\}$,
$\varphi_8(q_{60}, a) = q_{F_0}$ $\psi_8(q_{60}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{61}, a) = q_{60}$ $\psi_8(q_{61}, a) = n$ za $a \in \{210, 211, 216, 217, 219, 248, 249, 251\}$,
$\varphi_8(q_{61}, a) = q_{61}$ $\psi_8(q_{61}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,

$\varphi_8(q_{61}, a) = q_{F_0}$ $\psi_8(q_{61}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{62}, a) = q_{62}$ $\psi_8(q_{62}, a) = w$ za $a \in \{107, 111, 214, 223, 255, 127, 215, 95\}$,
$\varphi_8(q_{62}, a) = q_{63}$ $\psi_8(q_{62}, a) = e$ za $a \in \{11, 15, 7, 43, 47\}$,
$\varphi_8(q_{62}, a) = q_{64}$ $\psi_8(q_{62}, a) = n$ za $a \in \{22, 23, 31, 63\}$,
$\varphi_8(q_{62}, a) = q_{F_0}$ $\psi_8(q_{62}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{63}, a) = q_{63}$ $\psi_8(q_{63}, a) = e$ za $a \in \{107, 111, 79\}$,
$\varphi_8(q_{63}, a) = q_{64}$ $\psi_8(q_{63}, a) = n$ za $a \in \{88, 89, 92, 93, 95, 125, 127, 120, 121, 124\}$,
$\varphi_8(q_{63}, a) = q_{F_0}$ $\psi_8(q_{63}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{64}, a) = q_{64}$ $\psi_8(q_{64}, a) = e$ za $a \in \{246, 63, 30, 10, 14, 110, 111, 214, 66, 70, 86, 254, 126, 127, 106, 107, 43, 47, 62, 46, 42, 255, 31, 15, 11, 118, 98, 102\}$,
$\varphi_8(q_{64}, a) = q_{64}$ $\psi_8(q_{64}, a) = n$ za $a \in \{56, 60, 124, 120, 24, 28, 112, 116, 80, 84\}$,
$\varphi_8(q_{64}, a) = q_{65}$ $\psi_8(q_{64}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_8(q_{64}, a) = q_{66}$ $\psi_8(q_{64}, a) = e$ za $a \in \{242, 247, 243, 119, 114, 115, 103, 99, 250, 251, 122, 123, 215, 210, 211, 67, 71, 87, 82, 83\}$,
$\varphi_8(q_{64}, a) = q_{F_0}$ $\psi_8(q_{64}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{65}, a) = q_{64}$ $\psi_8(q_{65}, a) = n$ za $a \in \{30, 31, 62, 63, 86, 118, 126, 127\}$,
$\varphi_8(q_{65}, a) = q_{65}$ $\psi_8(q_{65}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_8(q_{65}, a) = q_{F_0}$ $\psi_8(q_{65}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{66}, a) = q_{66}$ $\psi_8(q_{66}, a) = e$ za $a \in \{66, 67, 106, 107, 98, 99, 194, 195, 226, 227, 234, 235\}$,
$\varphi_8(q_{66}, a) = q_{67}$ $\psi_8(q_{66}, a) = s$ za $a \in \{223, 219, 216, 217, 200, 201, 203, 91, 95, 75, 79, 72, 73\}$,
$\varphi_8(q_{66}, a) = q_{F_0}$ $\psi_8(q_{66}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{67}, a) = q_{67}$ $\psi_8(q_{67}, a) = e$ za $a \in \{107, 66, 67, 75, 31, 22, 23, 235, 203, 194, 195, 27, 18, 19, 255, 251, 223, 219, 214, 210, 215, 211, 159, 151, 150, 155, 146, 147\}$,
$\varphi_8(q_{67}, a) = q_{67}$ $\psi_8(q_{67}, a) = s$ za $a \in \{24, 25, 72, 73, 152, 153, 216, 217, 200, 201, 184, 56\}$,
$\varphi_8(q_{67}, a) = q_{68}$ $\psi_8(q_{67}, a) = w$ za $a \in \{104, 105, 232, 233, 248, 249\}$,
$\varphi_8(q_{67}, a) = q_{69}$ $\psi_8(q_{67}, a) = e$ za $a \in \{154, 158, 30, 62, 63, 59, 58, 26, 254, 250, 186, 187, 190, 191\}$,
$\varphi_8(q_{67}, a) = q_{71}$ $\psi_8(q_{67}, a) = w$ za $a \in \{80, 112, 120\}$,
$\varphi_8(q_{67}, a) = q_{73}$ $\psi_8(q_{67}, a) = w$ za $a \in \{88, 89, 121\}$,
$\varphi_8(q_{67}, a) = q_{F_0}$ $\psi_8(q_{67}, a) = \mathbf{0}$ inače,

$\varphi_8(q_{68}, a) = q_{67}$ $\psi_8(q_{68}, a) = s$ za $a \in \{223, 219, 203, 75, 31, 159, 27, 155\}$,
$\varphi_8(q_{68}, a) = q_{68}$ $\psi_8(q_{68}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_8(q_{68}, a) = q_{F_0}$ $\psi_8(q_{68}, a) = 0$ inače,

$\varphi_8(q_{69}, a) = q_{69}$ $\psi_8(q_{69}, a) = e$ za $a \in \{235, 246, 214, 251, 254, 255, 250, 107\}$,
$\varphi_8(q_{69}, a) = q_{70}$ $\psi_8(q_{69}, a) = w$ za $a \in \{208, 212, 224, 240, 244\}$,
$\varphi_8(q_{69}, a) = q_{71}$ $\psi_8(q_{69}, a) = s$ za $a \in \{104, 232, 248, 252\}$,
$\varphi_8(q_{69}, a) = q_{F_0}$ $\psi_8(q_{69}, a) = 0$ inače,

$\varphi_8(q_{70}, a) = q_{71}$ $\psi_8(q_{70}, a) = s$ za $a \in \{154, 158, 30, 62, 58, 26, 254, 250, 186, 190\}$,
$\varphi_8(q_{70}, a) = q_{70}$ $\psi_8(q_{70}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_8(q_{70}, a) = q_{F_0}$ $\psi_8(q_{70}, a) = 0$ inače,

$\varphi_8(q_{71}, a) = q_{71}$ $\psi_8(q_{71}, a) = w$ za $a \in \{246, 66, 98, 120, 80, 112, 106, 107, 255, 127, 254, 126, 214, 86, 118, 248, 240, 208, 70, 102, 110, 124, 116, 84, 252, 244, 212, 111\}$,
$\varphi_8(q_{71}, a) = q_{71}$ $\psi_8(q_{71}, a) = s$ za $a \in \{14, 46, 28, 60, 62, 30, 24, 56, 10, 42\}$,
$\varphi_8(q_{71}, a) = q_{72}$ $\psi_8(q_{71}, a) = e$ za $a \in \{11, 15, 31, 43, 47, 63\}$,
$\varphi_8(q_{71}, a) = q_{73}$ $\psi_8(q_{71}, a) = w$ za $a \in \{222, 78, 95, 223, 94, 74, 79, 75, 253, 221, 249, 217, 125, 92, 93, 121, 88, 89, 216, 220\}$,
$\varphi_8(q_{71}, a) = q_{F_0}$ $\psi_8(q_{71}, a) = 0$ inače,

$\varphi_8(q_{72}, a) = q_{71}$ $\psi_8(q_{72}, a) = s$ za $a \in \{126, 120, 106, 124, 252, 248, 110, 254\}$,
$\varphi_8(q_{72}, a) = q_{72}$ $\psi_8(q_{72}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{72}, a) = q_{F_0}$ $\psi_8(q_{72}, a) = 0$ inače,

$\varphi_8(q_{73}, a) = q_{73}$ $\psi_8(q_{73}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_8(q_{73}, a) = q_{F_0}$ $\psi_8(q_{73}, a) = 0$ inače,

$\varphi_8(q_{74}, a) = q_{74}$ $\psi_8(q_{25}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1, a_4 = 0\}$,
$\varphi_8(q_{74}, a) = q_{74}$ $\psi_8(q_{74}, a) = n$ za $a \in \{ b \in A |\ 24 \le b \le 31$ ili $56 \le b \le 63$ ili $80 \le b \le 95$ ili $112 \le b \le 127\}$,
$\varphi_8(q_{74}, a) = q_{75}$ $\psi_8(q_{74}, a) = n$ za $a \in \{b \in A |\ 144 \le b \le 159$ ili $184 \le b \le 191\}$,
$\varphi_8(q_{74}, a) = q_{F_0}$ $\psi_8(q_{74}, a) = 0$ inače,

$\varphi_8(q_{75}, a) = q_{75}$ $\psi_8(q_{26}, a) = w$ za $a \in \{ b \in A |\ 64 \le b \le 103$ ili $112 \le b \le 119$ ili $192 \le b \le 231$ ili $240 \le b \le 247\}$,

$\varphi_8(q_{75}, a) = q_{75}$ $\psi_8(q_{75}, a) = n$ za $a \in \{ b \in A |\ 16 \leq b \leq 29$ ili $b = 31$ ili $144 \leq b \leq 159\}$,
$\varphi_8(q_{75}, a) = q_{76}$ $\psi_8(q_{75}, a) = w$ za $a \in \{106, 110, 122, 126, 234, 250, 254\}$,
$\varphi_8(q_{75}, a) = q_{79}$ $\psi_8(q_{75}, a) = e$ za $a \in \{10, 42\}$,
$\varphi_8(q_{75}, a) = q_{77}$ $\psi_8(q_{75}, a) = e$ za $a \in \{14, 30, 46, 62\}$,
$\varphi_8(q_{75}, a) = q_{F_0}$ $\psi_8(q_{75}, a) = 0$ inače,

$\varphi_8(q_{76}, a) = q_{76}$ $\psi_8(q_{76}, a) = w$ za $a \in \{107, 111, 127, 123, 235, 251, 255\}$,
$\varphi_8(q_{76}, a) = q_{77}$ $\psi_8(q_{76}, a) = e$ za $a \in \{15, 31, 63, 47\}$,
$\varphi_8(q_{76}, a) = q_{79}$ $\psi_8(q_{76}, a) = e$ za $a \in \{11, 43\}$,
$\varphi_8(q_{76}, a) = q_{F_0}$ $\psi_8(q_{76}, a) = 0$ inače,

$\varphi_8(q_{77}, a) = q_{77}$ $\psi_8(q_{77}, a) = e$ za $a \in \{254, 255, 246, 247, 214, 215, 126, 127, 118, 119, 86, 87\}$,
$\varphi_8(q_{77}, a) = q_{78}$ $\psi_8(q_{77}, a) = e$ za $a \in \{122, 123, 114, 115, 82, 83, 250, 251, 242, 243, 210, 211\}$,
$\varphi_8(q_{77}, a) = q_{80}$ $\psi_8(q_{77}, a) = e$ za $a \in \{95, 223\}$,
$\varphi_8(q_{77}, a) = q_{81}$ $\psi_8(q_{77}, a) = e$ za $a \in \{91, 219\}$,
$\varphi_8(q_{77}, a) = q_{85}$ $\psi_8(q_{77}, a) = n$ za $a \in \{216, 217\}$,
$\varphi_8(q_{77}, a) = q_{F_0}$ $\psi_8(q_{77}, a) = 0$ inače,

$\varphi_8(q_{78}, a) = q_{78}$ $\psi_8(q_{78}, a) = e$ za $a \in \{234, 235, 226, 227, 194, 195, 106, 107, 98, 99, 66, 67\}$,
$\varphi_8(q_{78}, a) = q_{81}$ $\psi_8(q_{78}, a) = e$ za $a \in \{203, 75\}$,
$\varphi_8(q_{78}, a) = q_{84}$ $\psi_8(q_{78}, a) = w$ za $a \in \{200, 201, 72, 73\}$,
$\varphi_8(q_{78}, a) = q_{F_0}$ $\psi_8(q_{78}, a) = 0$ inače,

$\varphi_8(q_{79}, a) = q_{79}$ $\psi_8(q_{79}, a) = e$ za $a \in \{66, 67, 98, 99, 106, 107\}$,
$\varphi_8(q_{79}, a) = q_{77}$ $\psi_8(q_{79}, a) = e$ za $a \in \{110, 111, 102, 103, 70, 71\}$,
$\varphi_8(q_{79}, a) = q_{F_1}$ $\psi_8(q_{79}, a) = 0$ za $a \in \{72, 73\}$,
$\varphi_8(q_{79}, a) = q_{80}$ $\psi_8(q_{79}, a) = e$ za $a = 79$,
$\varphi_8(q_{79}, a) = q_{82}$ $\psi_8(q_{79}, a) = e$ za $a = 75$,
$\varphi_8(q_{79}, a) = q_{F_0}$ $\psi_8(q_{79}, a) = 0$ inače,

$\varphi_8(q_{80}, a) = q_{85}$ $\psi_8(q_{80}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_8(q_{80}, a) = q_{80}$ $\psi_8(q_{80}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_8(q_{80}, a) = q_{81}$ $\psi_8(q_{80}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_8(q_{80}, a) = q_{F_0}$ $\psi_8(q_{80}, a) = 0$ inače,

$\varphi_8(q_{81}, a) = q_{84}$ $\psi_8(q_{81}, a) = w$ za $a \in \{72, 73, 104, 105, 232, 233\}$,
$\varphi_8(q_{81}, a) = q_{81}$ $\psi_8(q_{81}, a) = e$ za $a \in \{107, 235\}$,
$\varphi_8(q_{81}, a) = q_{F_0}$ $\psi_8(q_{81}, a) = 0$ inače,

$\varphi_8(q_{82}, a) = q_{F_1}$ $\psi_8(q_{82}, a) = 0$ za $a \in \{104, 105\}$,

$\varphi_8(q_{82}, a) = q_{82}$ $\psi_8(q_{82}, a) = e$ za $a = 107$,
$\varphi_8(q_{82}, a) = q_{83}$ $\psi_8(q_{82}, a) = e$ za $a = 111$,
$\varphi_8(q_{82}, a) = q_{F_0}$ $\psi_8(q_{82}, a) = 0$ inače,

$\varphi_8(q_{83}, a) = q_{83}$ $\psi_8(q_{83}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_8(q_{83}, a) = q_{85}$ $\psi_8(q_{83}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_8(q_{83}, a) = q_{81}$ $\psi_8(q_{83}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_8(q_{83}, a) = q_{F_0}$ $\psi_8(q_{83}, a) = 0$ inače.

$\varphi_8(q_{84}, a) = q_{85}$ $\psi_8(q_{84}, a) = n$ za $a \in \{210, 114, 115, 122, 123, 82, 242, 243, 250, 251, 219, 83, 211, 91\}$,
$\varphi_8(q_{84}, a) = q_{84}$ $\psi_8(q_{84}, a) = w$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_8(q_{84}, a) = q_{F_0}$ $\psi_8(q_{84}, a) = 0$ inače,

$\varphi_8(q_{85}, a) = q_{85}$ $\psi_8(q_{85}, a) = n$ za $a = 123$,
$\varphi_8(q_{85}, a) = q_{85}$ $\psi_8(q_{85}, a) = w$ za $a \in \{104, 105, 107, 232, 233, 235\}$,
$\varphi_8(q_{85}, a) = q_{86}$ $\psi_8(q_{85}, a) = w$ za $a \in \{248, 249, 251\}$,
$\varphi_8(q_{85}, a) = q_{89}$ $\psi_8(q_{85}, a) = s$ za $a = 41$,
$\varphi_8(q_{85}, a) = q_{F_1}$ $\psi_8(q_{85}, a) = 0$ za $a \in \{11, 43\}$,
$\varphi_8(q_{85}, a) = q_{F_0}$ $\psi_8(q_{85}, a) = 0$ inače,

$\varphi_8(q_{86}, a) = q_{86}$ $\psi_8(q_{86}, a) = w$ za $a = 255$,
$\varphi_8(q_{86}, a) = q_{88}$ $\psi_8(q_{86}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_8(q_{86}, a) = q_{87}$ $\psi_8(q_{86}, a) = w$ za $a = 127$,
$\varphi_8(q_{86}, a) = q_{F_0}$ $\psi_8(q_{86}, a) = 0$ inače,

$\varphi_8(q_{87}, a) = q_{87}$ $\psi_8(q_{87}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_8(q_{87}, a) = q_{88}$ $\psi_8(q_{87}, a) = e$ za $a \in \{11, 15, 43, 47\}$,
$\varphi_8(q_{87}, a) = q_{F_0}$ $\psi_8(q_{87}, a) = 0$ inače,

$\varphi_8(q_{88}, a) = q_{85}$ $\psi_8(q_{88}, a) = n$ za $a \in \{248, 249, 251\}$,
$\varphi_8(q_{88}, a) = q_{88}$ $\psi_8(q_{88}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_8(q_{88}, a) = q_{F_0}$ $\psi_8(q_{88}, a) = 0$ inače,

$\varphi_8(q_{89}, a) = q_{89}$ $\psi_8(q_{89}, a) = w$ za $a \in \{82, 83, 91, 114, 115, 122, 123, 70, 71, 79, 102, 103, 110, 111, 66, 67, 75, 98, 99, 106, 107\}$,

$\varphi_8(q_{89}, a) = q_{F_1}$ $\psi_8(q_{89}, a) = 0$ za $a \in \{10, 11, 14, 15, 42, 43, 46, 47\}$,

$\varphi_8(q_{89}, a) = q_{F_0}$ $\psi_8(q_{89}, a) = 0$ inače,

Neka je $M = \{194, 195, 198, 199, 202, 203, 206, 207, 226, 230, 234, 235, 238, 239\} \subseteq A$. Tada,

$\psi_{k8}(q_{k8}, (\{q_i\}, a)) = \psi_8(q_i, (\{q_{k8}\}, a))$ za $i \in \{1, 2, 3, 4, 5, 6\}$, $a \in A$,

$\psi_{k8}(q_{k8}, (\{q_7\}, a)) = 0$ $a \in M_1 = \{202, 206, 234, 238, 194, 198, 226, 230\} \subset M$,
$\psi_{k8}(q_{k8}, (\{q_7\}, a)) = \psi_8(q_7, (\{q_{k8}\}, a))$ za $a \notin M_1$,

$\psi_{k8}(q_{k8}, (\{q_8\}, a)) = 0$ $a \in M_1 = \{195, 194, 203, 239, 207, 235\} \subset M$,
$\psi_{k8}(q_{k8}, (\{q_8\}, a)) = \psi_8(q_8, (\{q_{k8}\}, a))$ za $a \notin M_1$,

$\psi_{k8}(q_{k8}, (\{q_9\}, a)) = 0$ $a \in M_1 = \{195, 194, 203, 239, 207, 235, 198, 199\} \subset M$,
$\psi_{k8}(q_{k8}, (\{q_9\}, a)) = \psi_8(q_9, (\{q_{k8}\}, a))$ za $a \notin M_1$,

$\varphi_8(q_{22}, (\{q_{k8}\}, a)) = q_{25}$ $\psi_8(q_{22}, (\{q_{k8}\}, a)) = e$ za $a \in M \setminus \{195, 199\}$
$\varphi_8(q_{22}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_8(q_{22}, (\{\lambda\}, a)) = 0$ za $a \in M \setminus \{195, 199\}$, tj. ako se automati A_8, K_8 ne susretnu,

$\varphi_8(q_{24}, (\{q_{k8}\}, a)) = q_{25}$ $\psi_{k8}(q_{k8}, (\{q_{24}\}, a)) = \psi_8(q_{24}, (\{q_{k8}\}, a)) = e$ za $a \in \{194, 195, 198, 199\} \subset M$,
$\varphi_8(q_{24}, (\{\lambda\}, a) = q_{F_0}$ $\psi_8(q_{24}, (\{\lambda\}, a) = 0$ za $a \in \{194, 195, 198, 199\}$, tj. ako se automati A_8, K_8 ne susretnu.

Neka je $M = \{194, 195, 198, 199, 202, 203, 206, 207, 226, 227, 230, 231, 234, 235, 238, 239\} \subseteq A$. Tada,

$\psi_{k8}(q_{k8}, (\{q_i\}, a)) = \psi_8(q_i, (\{q_{k8}\}, a))$ za $i \in \{25, 26, \ldots, 47\}$, $a \in A$,

$\psi_{k8}(q_{k8}, (\{q_{48}\}, a)) = 0$ $a \in M \setminus \{202, 206\}$,
$\psi_{k8}(q_{k8}, (\{q_{48}\}, a)) = \psi_8(q_{48}, (\{q_{k8}\}, a))$ za $a \notin M \setminus \{202, 206\}$,
$\psi_{k8}(q_{k8}, (\{q_i\}, a)) = \psi_8(q_i, (\{q_{k8}\}, a))$ za $i \in \{50, 51, \ldots, 55\}$, $a \in A$,

$\psi_{k8}(q_{k8}, (\{q_{56}\}, a)) = 0$ $a \in M_1 = \{202, 206, 234, 238, 194, 198, 226, 230\} \subset M$,
$\psi_{k8}(q_{k8}, (\{q_{56}\}, a)) = \psi_8(q_{56}, (\{q_{k8}\}, a)) = \psi_8(q_{56}, a)$ za $a \notin M_1$,

$\psi_{k8}(q_{k8}, (\{q_{57}\}, a)) = 0$ $a \in M_1 = \{195, 194, 203, 239, 207, 235, 198, 199\} \subset M$,
$\psi_{k8}(q_{k8}, (\{q_{57}\}, a)) = \psi_8(q_{57}, (\{q_{k8}\}, a))$ za $a \notin M_1$,

$\psi_{k8}(q_{k8}, (\{q_{58}\}, a)) = 0$ $a \in M_1 = \{195, 194, 203, 239, 207, 235, 198, 199\} \subset M$,
$\psi_{k8}(q_{k8}, (\{q_{58}\}, a)) = \psi_8(q_{58}, (\{q_{k8}\}, a)) = \psi_8(q_{58}, a)$ za $a \notin M_1$,

$\psi_{k8}(q_{k8}, (\{q_{71}\}, a)) = 0$, $a \in A$

$\varphi_8(q_{71}, (\{q_{k8}\}, a)) = q_{74}$ $\psi_8(q_{71}, (\{q_{k8}\}, a)) = e$ za $a \in M \setminus \{195, 199, 227, 231\}$
$\varphi_8(q_{71}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_8(q_{71}, (\{\lambda\}, a) = 0$ za $a \in M \setminus \{195, 199, 227, 231\}$, tj. ako se automati A_8, K_8 ne susretnu,

$\psi_{k8}(q_{k8}, (\{q_{73}\}, a)) = 0$, $a \in A$
$\varphi_8(q_{73}, (\{q_{k8}\}, a)) = q_{74}$ $\psi_8(q_{73}, (\{q_{k8}\}, a)) = e$ za $a \in M$,
$\varphi_8(q_{73}, (\{\lambda\}, a) = q_{F_0}$ $\psi_8(q_{73}, (\{\lambda\}, a) = 0$ za $a \in M$, tj. ako se automati A_8, K_8 ne susretnu.

Kolektiv $S_9 = (A_9, K_9)$ je definisan na sljedeći način:
$Q_6 = \{q_i \mid i \in \{1, ..., 79\}\} \cup Q_F$,

$\varphi_9(q_1, a) = q_2$ $\psi_9(q_1, a) = w$ za $a \in \{80, 112, 208, 240\}$,
$\varphi_9(q_1, a) = q_{F_0}$ $\psi_9(q_1, a) = 0$ inače,

$\varphi_9(q_2, a) = q_6$ $\psi_9(q_2, a) = n$ za $a = 148$,
$\varphi_9(q_2, a) = q_3$ $\psi_9(q_2, a) = e$ za $a \in \{18, 22, 146, 150\}$,
$\varphi_9(q_2, a) = q_2$ $\psi_9(q_2, a) = s$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_0 = 0,\ a_3 = 1\}$,
$\varphi_9(q_2, a) = q_2$ $\psi_9(q_2, a) = w$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_6 = 1,\ a_3 = 0\}$,
$\varphi_9(q_2, a) = q_{F_0}$ $\psi_9(q_2, a) = 0$ inače,

$\varphi_9(q_3, a) = q_4$ $\psi_9(q_3, a) = w$ za $a \in \{208, 212\}$,
$\varphi_9(q_3, a) = q_{11}$ $\psi_9(q_3, a) = w$ za $a \in \{80, 84\}$,
$\varphi_9(q_3, a) = q_3$ $\psi_9(q_3, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1\}$,
$\varphi_9(q_3, a) = q_{F_0}$ $\psi_9(q_3, a) = 0$ inače,

$\varphi_9(q_4, a) = q_4$ $\psi_9(q_4, a) = w$ za $a \in \{255, 223, 214, 215, \}$,
$\varphi_9(q_4, a) = q_5$ $\psi_9(q_4, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_4, a) = q_{11}$ $\psi_9(q_4, a) = w$ za $a \in \{127, 95, 86, 87\}$,
$\varphi_9(q_4, a) = q_{F_0}$ $\psi_9(q_4, a) = 0$ inače,

$\varphi_9(q_5, a) = q_6$ $\psi_9(q_5, a) = n$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_9(q_5, a) = q_5$ $\psi_9(q_5, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,\ a_1 = 1\}$,
$\varphi_9(q_5, a) = q_{F_0}$ $\psi_9(q_5, a) = 0$ inače,

$\varphi_9(q_6, a) = q_7$ $\psi_9(q_6, a) = w$ za $a \in \{208, 212, 240, 244\}$,
$\varphi_9(q_6, a) = q_4$ $\psi_9(q_6, a) = w$ za $a \in \{248, 252\}$,

$\varphi_9(q_6, a) = q_8$ $\psi_9(q_6, a) = e$ za $a \in \{74, 78, 202, 94, 206, 218, 106, 110, 234, 126, 238, 250, 210, 242\}$,
$\varphi_9(q_6, a) = q_6$ $\psi_9(q_6, a) = e$ za $a \in \{214, 246, 222, 254\}$,
$\varphi_9(q_6, a) = q_{11}$ $\psi_9(q_6, a) = w$ za $a \in \{120, 124\}$,
$\varphi_9(q_6, a) = q_{F_0}$ $\psi_9(q_6, a) = \mathbf{0}$ inače,

$\varphi_9(q_7, a) = q_7$ $\psi_9(q_7, a) = w$ za $a \in \{214, 246\}$,
$\varphi_9(q_7, a) = q_4$ $\psi_9(q_7, a) = w$ za $a \in \{222, 254\}$,
$\varphi_9(q_7, a) = q_{F_0}$ $\psi_9(q_7, a) = \mathbf{0}$ inače,

$\varphi_9(q_8, a) = q_8$ $\psi_9(q_8, a) = e$ za $a \in \{98, 102, 118, 246, 226, 230, 66, 70, 86, 214, 194, 198\}$,
$\varphi_9(q_8, a) = q_9$ $\psi_9(q_8, a) = w$ za $a \in \{112, 116, 244, 240, 80, 84, 208, 212\}$,
$\varphi_9(q_8, a) = q_{F_0}$ $\psi_9(q_8, a) = \mathbf{0}$ inače,

$\varphi_9(q_9, a) = q_9$ $\psi_9(q_9, a) = w$ za $a \in \{98, 102, 118, 246, 66, 70, 86, 214, 242, 210, 226, 230, 194, 198, 146\}$,
$\varphi_9(q_9, a) = q_{10}$ $\psi_9(q_9, a) = w$ za $a \in \{74, 78, 94, 218, 106, 110, 126, 250, 254, 222, 202, 206, 234, 238\}$,
$\varphi_9(q_9, a) = q_{F_0}$ $\psi_9(q_9, a) = \mathbf{0}$ inače,

$\varphi_9(q_{10}, a) = q_{10}$ $\psi_9(q_{10}, a) = w$ za $a \in \{255, 223, 215, 251, 219, 211, 71, 79, 111, 107, 75, 67, 214, 66, 210, 203, 207, 194, 195, 235, 239, 198, 199\}$,
$\varphi_9(q_{10}, a) = q_{12}$ $\psi_9(q_{10}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_{10}, a) = q_{13}$ $\psi_9(q_{10}, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_9(q_{10}, a) = q_{F_0}$ $\psi_9(q_{10}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{11}, a) = q_{11}$ $\psi_9(q_{11}, a) = w$ za $a \in \{211, 67, 210, 66, 255, 223, 70, 71, 107, 75, 215, 111, 79, 219, 251, 214, 194, 195, 198, 199, 203, 207, 235, 239\}$,
$\varphi_9(q_{11}, a) = q_{12}$ $\psi_9(q_{11}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_{11}, a) = q_{13}$ $\psi_9(q_{11}, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_9(q_{11}, a) = q_{F_0}$ $\psi_9(q_{11}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{12}, a) = q_{13}$ $\psi_9(q_{12}, a) = n$ za $a \in \{210, 211, 219, 218, 250, 251, 242\}$,
$\varphi_9(q_{12}, a) = q_{12}$ $\psi_9(q_{12}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_9(q_{12}, a) = q_{F_0}$ $\psi_9(q_{12}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{13}, a) = q_{13}$ $\psi_9(q_{13}, a) = w$ za $a \in \{214, 66, 194, 210, 248, 104, 232, 203, 215, 211, 67, 195, 216, 200, 72, 255, 223, 251, 219, 107, 75, 235, 249, 233, 105, 217, 201, 73\}$,
$\varphi_9(q_{13}, a) = q_{13}$ $\psi_9(q_{13}, a) = n$ za $a \in \{18, 19, 24, 25, 27, 146, 147, 152, 153, 155\}$,

$\varphi_9(q_{13}, a) = q_{14}$ $\psi_9(q_{13}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_{13}, a) = q_{15}$ $\psi_9(q_{13}, a) = e$ za $a \in \{2, 3, 11\}$,
$\varphi_9(q_{13}, a) = q_{15}$ $\psi_9(q_{13}, a) = s$ za $a \in \{8, 9\}$,
$\varphi_9(q_{13}, a) = q_{F_0}$ $\psi_9(q_{13}, a) = 0$ inače,

$\varphi_9(q_{14}, a) = q_{13}$ $\psi_9(q_{14}, a) = n$ za $a \in \{210, 211, 216, 217, 219, 248, 249, 251\}$,
$\varphi_9(q_{14}, a) = q_{14}$ $\psi_9(q_{14}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_9(q_{14}, a) = q_{F_0}$ $\psi_9(q_{14}, a) = 0$ inače,

$\varphi_9(q_{15}, a) = q_{16}$ $\psi_9(q_{15}, a) = n$ za $a \in \{127, 126, 94, 95, 86, 87, 80, 84, 112, 116, 120, 124\}$,
$\varphi_9(q_{15}, a) = q_{15}$ $\psi_9(q_{15}, a) = s$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_3 = 1,\ a_1 = 0\}$,
$\varphi_9(q_{15}, a) = q_{15}$ $\psi_9(q_{15}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_9(q_{15}, a) = q_{F_0}$ $\psi_9(q_{15}, a) = 0$ inače,

$\varphi_9(q_{16}, a) = q_{16}$ $\psi_9(q_{16}, a) = e$ za $a \in \{30, 10, 14, 214, 66, 70, 86, 11, 15, 31, 255, 254, 127, 126, 246, 118, 98, 102, 63, 47, 43, 42, 46, 62, 107, 111, 106, 110\}$,
$\varphi_9(q_{16}, a) = q_{16}$ $\psi_9(q_{16}, a) = n$ za $a \in \{56, 60, 120, 124, 112, 116, 24, 28, 80, 84\}$,
$\varphi_9(q_{16}, a) = q_{17}$ $\psi_9(q_{16}, a) = w$ za $a \in \{252, 248, 240, 244, 212, 208\}$,
$\varphi_9(q_{16}, a) = q_{18}$ $\psi_9(q_{16}, a) = e$ za $a \in \{190, 191, 158, 159\}$,
$\varphi_9(q_{16}, a) = q_{19}$ $\psi_9(q_{16}, a) = n$ za $a \in \{152, 184\}$,
$\varphi_9(q_{16}, a) = q_{F_0}$ $\psi_9(q_{16}, a) = 0$ inače,

$\varphi_9(q_{17}, a) = q_{16}$ $\psi_9(q_{17}, a) = n$ za $a \in \{62, 63, 126, 127, 118, 30, 31, 86\}$,
$\varphi_9(q_{17}, a) = q_{17}$ $\psi_9(q_{17}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_9(q_{17}, a) = q_{F_0}$ $\psi_9(q_{17}, a) = 0$ inače,

$\varphi_9(q_{18}, a) = q_{18}$ $\psi_9(q_{18}, a) = e$ za $a \in \{255, 254, 246, 214\}$,
$\varphi_9(q_{18}, a) = q_{19}$ $\psi_9(q_{18}, a) = n$ za $a \in \{208, 240, 248\}$,
$\varphi_9(q_{18}, a) = q_{F_0}$ $\psi_9(q_{18}, a) = 0$ inače,

$\varphi_9(q_{19}, a) = q_{19}$ $\psi_9(q_{19}, a) = w$ za $a \in \{216, 248, 255, 223, 215, 214, 246, 247\}$,
$\varphi_9(q_{19}, a) = q_{20}$ $\psi_9(q_{19}, a) = n$ za $a \in \{22, 23, 150, 151\}$,
$\varphi_9(q_{19}, a) = q_{22}$ $\psi_9(q_{19}, a) = w$ za $a \in \{118, 119, 120, 127, 95, 87, 86, 88\}$,
$\varphi_9(q_{19}, a) = q_{25}$ $\psi_9(q_{19}, a) = s$ za $a \in \{254, 222, 126, 94, 62, 30\}$,
$\varphi_9(q_{19}, a) = q_{F_0}$ $\psi_9(q_{19}, a) = 0$ inače,

$\varphi_9(q_{20}, a) = q_{21}$ $\psi_9(q_{20}, a) = w$ za $a = 248$,
$\varphi_9(q_{20}, a) = q_{34}$ $\psi_9(q_{20}, a) = w$ za $a = 120$,
$\varphi_9(q_{20}, a) = q_{20}$ $\psi_9(q_{20}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,$ $a_1 = 1\}$,
$\varphi_9(q_{20}, a) = q_{F_0}$ $\psi_9(q_{20}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{21}, a) = q_{20}$ $\psi_9(q_{21}, a) = n$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_{21}, a) = q_{21}$ $\psi_9(q_{21}, a) = w$ za $a \in \{255, 223, 215, 214\}$,
$\varphi_9(q_{21}, a) = q_{34}$ $\psi_9(q_{21}, a) = w$ za $a = 127$,
$\varphi_9(q_{21}, a) = q_{F_0}$ $\psi_9(q_{21}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{22}, a) = q_{22}$ $\psi_9(q_{22}, a) = w$ za $a \in \{214, 246, 111, 239, 207, 79, 71, 103, 231, 199, 70, 102, 230, 198, 107, 235, 203, 75, 251, 219, 211, 243, 67, 195, 99, 227, 66, 194, 98, 226, 210, 242, 255, 223\}$,
$\varphi_9(q_{22}, a) = q_{23}$ $\psi_9(q_{22}, a) = e$ za $a \in \{18, 19, 146, 147, 22, 150\}$,
$\varphi_9(q_{22}, a) = q_{25}$ $\psi_9(q_{22}, a) = s$ za $a \in \{78, 206, 110, 238, 218, 250, 106, 42, 10, 74, 202, 234, 222, 254, 14, 46\}$,
$\varphi_9(q_{22}, a) = q_{F_0}$ $\psi_9(q_{22}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{23}, a) = q_{23}$ $\psi_9(q_{23}, a) = e$ za $a \in \{214, 215, 211, 210, 223, 219, 255, 251\}$,
$\varphi_9(q_{23}, a) = q_{24}$ $\psi_9(q_{23}, a) = w$ za $a \in \{203, 207, 194, 195, 198, 199, 235, 239\}$,
$\varphi_9(q_{23}, a) = q_{F_0}$ $\psi_9(q_{23}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{24}, a) = q_{36}$ $\psi_9(q_{24}, a) = n$ za $a \in \{18, 19, 146, 147, 210, 211, 219, 251\}$,
$\varphi_9(q_{24}, a) = q_{24}$ $\psi_9(q_{24}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,$ $a_6 = 1\}$,
$\varphi_9(q_{24}, a) = q_{F_0}$ $\psi_9(q_{24}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{25}, a) = q_{29}$ $\psi_9(q_{25}, a) = n$ za $a = 148$,
$\varphi_9(q_{25}, a) = q_{26}$ $\psi_9(q_{25}, a) = e$ za $a \in \{18, 22, 146, 150\}$,
$\varphi_9(q_{25}, a) = q_{25}$ $\psi_9(q_{25}, a) = s$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,$ $a_3 = 1,\ a_0 = 0\}$,
$\varphi_9(q_{25}, a) = q_{25}$ $\psi_9(q_{25}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,$ $a_6 = 1,\ a_3 = 0\}$,
$\varphi_9(q_{25}, a) = q_{F_0}$ $\psi_9(q_{25}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{26}, a) = q_{27}$ $\psi_9(q_{26}, a) = w$ za $a \in \{208, 212\}$,
$\varphi_9(q_{26}, a) = q_{34}$ $\psi_9(q_{26}, a) = w$ za $a \in \{80, 84\}$,
$\varphi_9(q_{26}, a) = q_{26}$ $\psi_9(q_{26}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7,$ $a_1 = 1\}$,
$\varphi_9(q_{26}, a) = q_{F_0}$ $\psi_9(q_{26}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{27}, a) = q_{27}$ $\psi_9(q_{27}, a) = w$ za $a \in \{255, 223, 214, 215, \}$,
$\varphi_9(q_{27}, a) = q_{28}$ $\psi_9(q_{27}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_{27}, a) = q_{34}$ $\psi_9(q_{27}, a) = w$ za $a \in \{127, 95, 86, 87\}$,
$\varphi_9(q_{27}, a) = q_{F_0}$ $\psi_9(q_{27}, a) = 0$ inače,

$\varphi_9(q_{28}, a) = q_{29}$ $\psi_9(q_{28}, a) = n$ za $a \in \{208, 212, 240, 244, 248, 252\}$,
$\varphi_9(q_{28}, a) = q_{28}$ $\psi_9(q_{28}, a) = e$ za $a \in \{ b \in A | b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_9(q_{28}, a) = q_{F_0}$ $\psi_9(q_{28}, a) = 0$ inače,

$\varphi_9(q_{29}, a) = q_{30}$ $\psi_9(q_{29}, a) = w$ za $a \in \{208, 212, 240, 244\}$,
$\varphi_9(q_{29}, a) = q_{27}$ $\psi_9(q_{29}, a) = w$ za $a \in \{248, 252\}$,
$\varphi_9(q_{29}, a) = q_{31}$ $\psi_9(q_{29}, a) = e$ za $a \in \{74, 78, 202, 94, 206, 218, 106, 110, 234, 126, 238, 250, 210, 242\}$,
$\varphi_9(q_{29}, a) = q_{29}$ $\psi_9(q_{29}, a) = e$ za $a \in \{214, 246, 222, 254\}$,
$\varphi_9(q_{29}, a) = q_{37}$ $\psi_9(q_{29}, a) = e$ za $a \in \{215, 247\}$,
$\varphi_9(q_{29}, a) = q_{38}$ $\psi_9(q_{29}, a) = e$ za $a \in \{211, 243\}$,
$\varphi_9(q_{29}, a) = q_{F_0}$ $\psi_9(q_{29}, a) = 0$ inače,

$\varphi_9(q_{30}, a) = q_{30}$ $\psi_9(q_{30}, a) = w$ za $a \in \{214, 246\}$,
$\varphi_9(q_{30}, a) = q_{27}$ $\psi_9(q_{30}, a) = w$ za $a \in \{222, 254\}$,
$\varphi_9(q_{30}, a) = q_{F_0}$ $\psi_9(q_{30}, a) = 0$ inače,

$\varphi_9(q_{31}, a) = q_{31}$ $\psi_9(q_{31}, a) = e$ za $a \in \{98, 102, 118, 246, 226, 230, 66, 70, 86, 214, 194, 198\}$,
$\varphi_9(q_{31}, a) = q_{32}$ $\psi_9(q_{31}, a) = w$ za $a \in \{112, 116, 244, 240, 80, 84, 208, 212\}$,
$\varphi_9(q_{31}, a) = q_{38}$ $\psi_9(q_{31}, a) = e$ za $a \in \{99, 103, 119, 247, 227, 231, 195, 199, 67, 71, 87, 215\}$,
$\varphi_9(q_{31}, a) = q_{F_0}$ $\psi_9(q_{31}, a) = 0$ inače,

$\varphi_9(q_{32}, a) = q_{32}$ $\psi_9(q_{32}, a) = w$ za $a \in \{98, 102, 118, 246, 66, 70, 86, 214, 242, 210, 146\}$,
$\varphi_9(q_{32}, a) = q_{33}$ $\psi_9(q_{32}, a) = w$ za $a \in \{74, 78, 94, 218, 106, 110, 126, 250, 254, 222\}$,
$\varphi_9(q_{32}, a) = q_{32}$ $\psi_9(q_{32}, a) = w$ za $a \in \{226, 230, 194, 198\}$,
$\varphi_9(q_{32}, a) = q_{33}$ $\psi_9(q_{32}, a) = w$ za $a \in \{202, 206, 234, 238\}$,
$\varphi_9(q_{32}, a) = q_{F_0}$ $\psi_9(q_{32}, a) = 0$ inače,

$\varphi_9(q_{33}, a) = q_{33}$ $\psi_9(q_{33}, a) = w$ za $a \in \{255, 223, 215, 251, 219, 211, 71, 79, 111, 107, 75, 67, 214, 66, 210\}$,
$\varphi_9(q_{33}, a) = q_{35}$ $\psi_9(q_{33}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_{33}, a) = q_{36}$ $\psi_9(q_{33}, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_9(q_{33}, a) = q_{33}$ $\psi_9(q_{33}, a) = w$ za $a \in \{203, 207, 194, 195, 235, 239\}$,

$\varphi_9(q_{33}, a) = q_{F_0}$ $\psi_9(q_{33}, a) = 0$ inače,

$\varphi_9(q_{34}, a) = q_{34}$ $\psi_{34}(q_9, a) = w$ za $a \in \{211, 67, 210, 66, 255, 223, 70, 71, 107, 75, 215, 111, 79, 219, 251, 214\}$,
$\varphi_9(q_{34}, a) = q_{35}$ $\psi_{34}(q_9, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_{34}, a) = q_{36}$ $\psi_{34}(q_9, a) = n$ za $a \in \{18, 19, 27, 146, 147, 155\}$,
$\varphi_9(q_{34}, a) = q_{34}$ $\psi_{34}(q_9, a) = w$ za $a \in \{194, 195, 198, 199, 203, 207, 235, 239\}$,
$\varphi_9(q_{34}, a) = q_{F_0}$ $\psi_{34}(q_9, a) = 0$ inače,

$\varphi_9(q_{35}, a) = q_{36}$ $\psi_9(q_{35}, a) = n$ za $a \in \{210, 211, 219, 218, 250, 251, 242\}$,
$\varphi_9(q_{35}, a) = q_{35}$ $\psi_9(q_{35}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_9(q_{35}, a) = q_{F_0}$ $\psi_9(q_{35}, a) = 0$ inače,

$\varphi_9(q_{36}, a) = q_{36}$ $\psi_9(q_{36}, a) = w$ za $a \in \{214, 66, 194, 210, 248, 104, 232, 203, 215, 211, 67, 195, 216, 200, 72, 255, 223, 251, 219, 107, 75, 235, 249, 233, 105, 217, 201, 73\}$,
$\varphi_9(q_{36}, a) = q_{36}$ $\psi_9(q_{36}, a) = n$ za $a \in \{18, 19, 24, 25, 28, 29, 27, 146, 147, 152, 153, 155\}$,
$\varphi_9(q_{36}, a) = q_{45}$ $\psi_9(q_{36}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_{36}, a) = q_{46}$ $\psi_9(q_{36}, a) = w$ za $a \in \{253, 125, 221, 93, 95, 127, 88, 92, 220, 252, 124, 120, 121, 89\}$,
$\varphi_9(q_{36}, a) = q_{48}$ $\psi_9(q_{36}, a) = e$ za $a \in \{10, 14, 30\}$,
$\varphi_9(q_{36}, a) = q_{F_0}$ $\psi_9(q_{36}, a) = 0$ inače,

$\varphi_9(q_{37}, a) = q_{37}$ $\psi_9(q_{37}, a) = e$ za $a \in \{223, 255\}$,
$\varphi_9(q_{37}, a) = q_{38}$ $\psi_9(q_{37}, a) = e$ za $a \in \{219, 251\}$,
$\varphi_9(q_{37}, a) = q_{43}$ $\psi_9(q_{37}, a) = w$ za $a \in \{216, 248\}$,
$\varphi_9(q_{37}, a) = q_{F_0}$ $\psi_9(q_{37}, a) = 0$ inače,

$\varphi_9(q_{38}, a) = q_{38}$ $\psi_9(q_{38}, a) = e$ za $a \in \{235, 239, 75, 79, 95, 223, 107, 111, 127, 255, 203, 207\}$,
$\varphi_9(q_{38}, a) = q_{39}$ $\psi_9(q_{38}, a) = w$ za $a \in \{88, 120, 248, 216\}$,
$\varphi_9(q_{38}, a) = q_{F_0}$ $\psi_9(q_{38}, a) = 0$ inače,

$\varphi_9(q_{39}, a) = q_{39}$ $\psi_9(q_{39}, a) = w$ za $a \in \{98, 102, 118, 246, 247, 66, 70, 86, 214, 255, 127, 111, 107, 223, 95, 75, 79, 67, 71, 87, 215, 103, 119, 99\}$,
$\varphi_9(q_{39}, a) = q_{33}$ $\psi_9(q_{39}, a) = w$ za $a \in \{74, 78, 94, 106, 110, 126, 218, 250, 254, 222\}$,
$\varphi_9(q_{39}, a) = q_{39}$ $\psi_9(q_{39}, a) = w$ za $a \in \{194, 198, 227, 231, 195, 199, 226, 230\}$,
$\varphi_9(q_{39}, a) = q_{33}$ $\psi_9(q_{39}, a) = w$ za $a \in \{202, 206, 234, 238\}$,
$\varphi_9(q_{39}, a) = q_{40}$ $\psi_9(q_{39}, a) = w$ za $a \in \{203, 207, 235, 239\}$,
$\varphi_9(q_{39}, a) = q_{F_0}$ $\psi_9(q_{39}, a) = 0$ inače,

$\varphi_9(q_{40}, a) = q_{40}$ $\psi_9(q_{40}, a) = w$ za $a \in \{219, 251, 255, 223, 243, 211, 214, 246, 247, 215\}$,
$\varphi_9(q_{40}, a) = q_{41}$ $\psi_9(q_{40}, a) = w$ za $a \in \{222, 254\}$,
$\varphi_9(q_{40}, a) = q_{F_0}$ $\psi_9(q_{40}, a) = 0$ inače,

$\varphi_9(q_{41}, a) = q_{41}$ $\psi_9(q_{41}, a) = w$ za $a \in \{255, 223, 214, 215\}$,
$\varphi_9(q_{41}, a) = q_{42}$ $\psi_9(q_{41}, a) = e$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_{41}, a) = q_{F_0}$ $\psi_9(q_{41}, a) = 0$ inače,

$\varphi_9(q_{42}, a) = q_{36}$ $\psi_9(q_{42}, a) = n$ za $a \in \{251, 243, 219, 211\}$,
$\varphi_9(q_{42}, a) = q_{42}$ $\psi_9(q_{42}, a) = e$ za $a \in \{b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_9(q_{42}, a) = q_{F_0}$ $\psi_9(q_{42}, a) = 0$ inače,

$\varphi_9(q_{43}, a) = q_{43}$ $\psi_9(q_{43}, a) = w$ za $a \in \{255, 223, 215, 214, 247, 246\}$,
$\varphi_9(q_{43}, a) = q_{44}$ $\psi_9(q_{43}, a) = w$ za $a \in \{222, 254\}$,
$\varphi_9(q_{43}, a) = q_{F_0}$ $\psi_9(q_{43}, a) = 0$ inače,

$\varphi_9(q_{44}, a) = q_{44}$ $\psi_9(q_{44}, a) = w$ za $a \in \{214, 215, 223, 255\}$,
$\varphi_9(q_{44}, a) = q_{34}$ $\psi_9(q_{44}, a) = w$ za $a \in \{127, 95, 86, 87\}$,
$\varphi_9(q_{44}, a) = q_{20}$ $\psi_9(q_{44}, a) = n$ za $a \in \{22, 23, 31, 150, 151, 159\}$,
$\varphi_9(q_{44}, a) = q_{F_0}$ $\psi_9(q_{44}, a) = 0$ inače,

$\varphi_9(q_{45}, a) = q_{36}$ $\psi_9(q_{45}, a) = n$ za $a \in \{210, 211, 216, 217, 219, 248, 249, 251\}$,
$\varphi_9(q_{45}, a) = q_{45}$ $\psi_9(q_{45}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_9(q_{45}, a) = q_{F_0}$ $\psi_9(q_{45}, a) = 0$ inače,

$\varphi_9(q_{46}, a) = q_{46}$ $\psi_9(q_{46}, a) = w$ za $a \in \{107, 111, 214, 223, 255, 127, 215, 95\}$,
$\varphi_9(q_{46}, a) = q_{47}$ $\psi_9(q_{46}, a) = e$ za $a \in \{11, 15, 7, 43, 47\}$,
$\varphi_9(q_{46}, a) = q_{48}$ $\psi_9(q_{46}, a) = n$ za $a \in \{22, 23, 31, 63\}$,
$\varphi_9(q_{46}, a) = q_{F_0}$ $\psi_9(q_{46}, a) = 0$ inače,

$\varphi_9(q_{47}, a) = q_{47}$ $\psi_9(q_{47}, a) = e$ za $a \in \{107, 111, 79\}$,
$\varphi_9(q_{47}, a) = q_{48}$ $\psi_9(q_{47}, a) = n$ za $a \in \{88, 89, 92, 93, 95, 125, 127, 120, 121, 124\}$,
$\varphi_9(q_{47}, a) = q_{F_0}$ $\psi_9(q_{47}, a) = 0$ inače,

$\varphi_9(q_{48}, a) = q_{48}$ $\psi_9(q_{48}, a) = e$ za $a \in \{246, 63, 30, 10, 14, 110, 111, 214, 66, 70, 86, 254, 126, 127, 106, 107, 43, 47, 62, 46, 42, 255, 31, 15, 11, 118, 98, 102\}$,
$\varphi_9(q_{48}, a) = q_{48}$ $\psi_9(q_{48}, a) = n$ za $a \in \{56, 60, 124, 120, 24, 28, 112, 116, 80, 84\}$,
$\varphi_9(q_{48}, a) = q_{49}$ $\psi_9(q_{48}, a) = w$ za $a \in \{208, 212, 240, 244, 248, 252\}$,

$\varphi_9(q_{48}, a) = q_{50}$ $\psi_9(q_{48}, a) = e$ za $a \in \{242, 247, 243, 119, 114, 115, 103, 99, 250, 251, 122, 123, 215, 210, 211, 67, 71, 87, 82, 83\}$,
$\varphi_9(q_{48}, a) = q_{F_0}$ $\psi_9(q_{48}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{49}, a) = q_{48}$ $\psi_9(q_{49}, a) = n$ za $a \in \{30, 31, 62, 63, 86, 118, 126, 127\}$,
$\varphi_9(q_{49}, a) = q_{49}$ $\psi_9(q_{49}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_9(q_{49}, a) = q_{F_0}$ $\psi_9(q_{49}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{50}, a) = q_{50}$ $\psi_9(q_{50}, a) = e$ za $a \in \{66, 67, 106, 107, 98, 99, 194, 195, 226, 227, 234, 235\}$,
$\varphi_9(q_{50}, a) = q_{51}$ $\psi_9(q_{50}, a) = s$ za $a \in \{223, 219, 216, 217, 200, 201, 203, 91, 95, 75, 79, 72, 73\}$,
$\varphi_9(q_{50}, a) = q_{F_0}$ $\psi_9(q_{50}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{51}, a) = q_{51}$ $\psi_9(q_{51}, a) = e$ za $a \in \{107, 66, 67, 75, 31, 22, 23, 235, 203, 194, 195, 27, 18, 19, 255, 251, 223, 219, 214, 210, 215, 211, 159, 151, 150, 155, 146, 147\}$,
$\varphi_9(q_{51}, a) = q_{51}$ $\psi_9(q_{51}, a) = s$ za $a \in \{24, 25, 72, 73, 152, 153, 216, 217, 200, 201, 184, 56\}$,
$\varphi_9(q_{51}, a) = q_{52}$ $\psi_9(q_{51}, a) = w$ za $a \in \{104, 105, 232, 233, 248, 249\}$,
$\varphi_9(q_{51}, a) = q_{53}$ $\psi_9(q_{51}, a) = e$ za $a \in \{63, 59, 187, 191\}$,
$\varphi_9(q_{51}, a) = q_{54}$ $\psi_9(q_{51}, a) = w$ za $a = 120$,
$\varphi_9(q_{51}, a) = q_{58}$ $\psi_9(q_{51}, a) = w$ za $a = 88$,
$\varphi_9(q_{51}, a) = q_{56}$ $\psi_9(q_{51}, a) = e$ za $a \in \{30, 158, 254, 62\}$,
$\varphi_9(q_{51}, a) = q_{F_0}$ $\psi_9(q_{51}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{52}, a) = q_{51}$ $\psi_9(q_{52}, a) = s$ za $a \in \{223, 219, 203, 75, 31, 159, 27, 155\}$,
$\varphi_9(q_{52}, a) = q_{52}$ $\psi_9(q_{52}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_9(q_{52}, a) = q_{F_0}$ $\psi_9(q_{52}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{53}, a) = q_{53}$ $\psi_9(q_{53}, a) = e$ za $a \in \{255, 251, 235, 214\}$,
$\varphi_9(q_{53}, a) = q_{54}$ $\psi_9(q_{53}, a) = s$ za $a \in \{248, 104, 232\}$,
$\varphi_9(q_{53}, a) = q_{F_0}$ $\psi_9(q_{53}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{54}, a) = q_{54}$ $\psi_9(q_{54}, a) = w$ za $a \in \{248, 255, 127, 111, 107\}$,
$\varphi_9(q_{54}, a) = q_{58}$ $\psi_9(q_{54}, a) = w$ za $a \in \{223, 79, 75, 95\}$,
$\varphi_9(q_{54}, a) = q_{55}$ $\psi_9(q_{54}, a) = e$ za $a \in \{31, 11, 15, 43, 47, 63\}$,
$\varphi_9(q_{54}, a) = q_{64}$ $\psi_9(q_{54}, a) = e$ za $a \in \{235, 239, 203, 207\}$,
$\varphi_9(q_{54}, a) = q_{F_0}$ $\psi_9(q_{54}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{55}, a) = q_{55}$ $\psi_9(q_{55}, a) = e$ za $a \in \{255, 127, 107, 111\}$,
$\varphi_9(q_{55}, a) = q_{54}$ $\psi_9(q_{55}, a) = s$ za $a \in \{120, 248\}$,
$\varphi_9(q_{55}, a) = q_{F_0}$ $\psi_9(q_{55}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{56}, a) = q_{56}$ $\psi_9(q_{56}, a) = e$ za $a \in \{247, 246, 223, 214, 215, 255\}$,
$\varphi_9(q_{56}, a) = q_{57}$ $\psi_9(q_{56}, a) = w$ za $a \in \{216, 248\}$,
$\varphi_9(q_{56}, a) = q_{F_0}$ $\psi_9(q_{56}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{57}, a) = q_{57}$ $\psi_9(q_{57}, a) = w$ za $a \in \{247, 246, 223, 214, 215, 255\}$,
$\varphi_9(q_{57}, a) = q_{61}$ $\psi_9(q_{57}, a) = s$ za $a \in \{62, 30, 158, 254\}$,
$\varphi_9(q_{57}, a) = q_{F_0}$ $\psi_9(q_{57}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{58}, a) = q_{58}$ $\psi_9(q_{58}, a) = w$ za $a \in \{111, 255, 127, 215, 87, 119, 247, 70, 102, 107, 71, 103, 67, 99, 214, 86, 246, 118, 110, 126, 254, 66, 98, 106\}$,
$\varphi_9(q_{58}, a) = q_{61}$ $\psi_9(q_{58}, a) = s$ za $a \in \{10, 42, 46, 14, 62, 30\}$,
$\varphi_9(q_{58}, a) = q_{59}$ $\psi_9(q_{58}, a) = e$ za $a \in \{43, 11, 47, 15, 31, 63\}$,
$\varphi_9(q_{58}, a) = q_{60}$ $\psi_9(q_{58}, a) = w$ za $a \in \{78, 94, 222, 74, 79, 223, 95, 75\}$,
$\varphi_9(q_{58}, a) = q_{64}$ $\psi_9(q_{58}, a) = e$ za $a \in \{235, 203, 207, 239, 194, 226, 202, 234, 198, 230, 206, 238, 199, 231, 195, 227\}$,
$\varphi_9(q_{58}, a) = q_{F_0}$ $\psi_9(q_{58}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{59}, a) = q_{61}$ $\psi_9(q_{59}, a) = s$ za $a \in \{110, 126, 254, 106\}$,
$\varphi_9(q_{59}, a) = q_{59}$ $\psi_9(q_{59}, a) = e$ za $a \in \{ b \in A \mid b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_9(q_{59}, a) = q_{F_0}$ $\psi_9(q_{59}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{60}, a) = q_{60}$ $\psi_9(q_{60}, a) = w$ za $a \in \{70, 66, 214, 86, 67, 71, 215, 87\}$,
$\varphi_9(q_{60}, a) = q_{64}$ $\psi_9(q_{60}, a) = e$ za $a \in \{194, 195, 198, 199\}$,
$\varphi_9(q_{60}, a) = q_{F_0}$ $\psi_9(q_{60}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{61}, a) = q_{61}$ $\psi_9(q_{61}, a) = w$ za $a \in \{246, 66, 98, 120, 80, 112, 106, 107, 255, 127, 254, 126, 214, 86, 118, 248, 240, 208, 70, 102, 110, 124, 116, 84, 252, 244, 212, 111\}$,
$\varphi_9(q_{61}, a) = q_{61}$ $\psi_9(q_{61}, a) = s$ za $a \in \{14, 46, 28, 60, 62, 30, 24, 56, 10, 42\}$,
$\varphi_9(q_{61}, a) = q_{62}$ $\psi_9(q_{61}, a) = e$ za $a \in \{11, 15, 31, 43, 47, 63\}$,
$\varphi_9(q_{61}, a) = q_{63}$ $\psi_9(q_{61}, a) = w$ za $a \in \{222, 78, 95, 223, 94, 74, 79, 75\}$,
$\varphi_9(q_{61}, a) = q_{64}$ $\psi_9(q_{61}, a) = e$ za $a \in \{235, 203, 226, 194, 202, 234, 198, 230, 206, 238, 207, 239\}$,
$\varphi_9(q_{61}, a) = q_{F_0}$ $\psi_9(q_{61}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{62}, a) = q_{61}$ $\psi_9(q_{62}, a) = s$ za $a \in \{126, 120, 106, 124, 252, 248, 110, 254\}$,

$\varphi_9(q_{62}, a) = q_{62}$ $\psi_9(q_{62}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1\}$,
$\varphi_9(q_{62}, a) = q_{F_0}$ $\psi_9(q_{62}, a) = 0$ inače,

$\varphi_9(q_{63}, a) = q_{63}$ $\psi_9(q_{63}, a) = w$ za $a \in \{215, 87, 67, 71, 214, 86, 70, 66\}$,
$\varphi_9(q_{63}, a) = q_{F_0}$ $\psi_9(q_{63}, a) = 0$ inače,

$\varphi_9(q_{64}, a) = q_{64}$ $\psi_9(q_{64}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_1 = 1, a_4 = 0\}$,
$\varphi_9(q_{64}, a) = q_{64}$ $\psi_9(q_{64}, a) = n$ za $a \in \{ b \in A |\ 24 \le b \le 31$ ili $56 \le b \le 63$ ili $80 \le b \le 95$ ili $112 \le b \le 127\}$,
$\varphi_9(q_{64}, a) = q_{65}$ $\psi_9(q_{64}, a) = n$ za $a \in \{b \in A |\ 144 \le b \le 159$ ili $184 \le b \le 191\}$,
$\varphi_9(q_{64}, a) = q_{F_0}$ $\psi_9(q_{64}, a) = 0$ inače,

$\varphi_9(q_{65}, a) = q_{65}$ $\psi_9(q_{65}, a) = w$ za $a \in \{ b \in A |\ 64 \le b \le 103$ ili $112 \le b \le 119$ ili $192 \le b \le 231$ ili $240 \le b \le 247\}$,
$\varphi_9(q_{65}, a) = q_{65}$ $\psi_9(q_{65}, a) = n$ za $a \in \{ b \in A |\ 16 \le b \le 29$ ili $b = 31$ili $144 \le b \le 159\}$,
$\varphi_9(q_{65}, a) = q_{66}$ $\psi_9(q_{65}, a) = w$ za $a \in \{106, 110, 122, 126, 234, 250, 254\}$,
$\varphi_9(q_{65}, a) = q_{69}$ $\psi_9(q_{65}, a) = e$ za $a \in \{10, 42\}$,
$\varphi_9(q_{65}, a) = q_{67}$ $\psi_9(q_{65}, a) = e$ za $a \in \{14, 30, 46, 62\}$,
$\varphi_9(q_{65}, a) = q_{F_0}$ $\psi_9(q_{65}, a) = 0$ inače,

$\varphi_9(q_{66}, a) = q_{66}$ $\psi_9(q_{66}, a) = w$ za $a \in \{107, 111, 127, 123, 235, 251, 255\}$,
$\varphi_9(q_{66}, a) = q_{67}$ $\psi_9(q_{66}, a) = e$ za $a \in \{15, 31, 63, 47\}$,
$\varphi_9(q_{66}, a) = q_{69}$ $\psi_9(q_{66}, a) = e$ za $a \in \{11, 43\}$,
$\varphi_9(q_{66}, a) = q_{F_0}$ $\psi_9(q_{66}, a) = 0$ inače,

$\varphi_9(q_{67}, a) = q_{68}$ $\psi_9(q_{67}, a) = e$ za $a \in \{254, 255, 246, 247, 214, 215, 126, 127, 118, 119, 86, 87\}$,
$\varphi_9(q_{67}, a) = q_{68}$ $\psi_9(q_{67}, a) = e$ za $a \in \{122, 123, 114, 115, 82, 83, 250, 251, 242, 243, 210, 211\}$,
$\varphi_9(q_{67}, a) = q_{70}$ $\psi_9(q_{67}, a) = e$ za $a \in \{95, 223\}$,
$\varphi_9(q_{67}, a) = q_{71}$ $\psi_9(q_{67}, a) = e$ za $a \in \{91, 219\}$,
$\varphi_9(q_{67}, a) = q_{75}$ $\psi_9(q_{67}, a) = n$ za $a \in \{216, 217\}$,
$\varphi_9(q_{67}, a) = q_{F_0}$ $\psi_9(q_{67}, a) = 0$ inače,

$\varphi_9(q_{68}, a) = q_{68}$ $\psi_9(q_{68}, a) = e$ za $a \in \{234, 235, 226, 227, 194, 195, 106, 107, 98, 99, 66, 67\}$,
$\varphi_9(q_{68}, a) = q_{71}$ $\psi_9(q_{68}, a) = e$ za $a \in \{203, 75\}$,
$\varphi_9(q_{68}, a) = q_{74}$ $\psi_9(q_{68}, a) = w$ za $a \in \{200, 201, 72, 73\}$,
$\varphi_9(q_{68}, a) = q_{F_0}$ $\psi_9(q_{68}, a) = 0$ inače,

$\varphi_9(q_{69}, a) = q_{69}$ $\psi_9(q_{69}, a) = e$ za $a \in \{66, 67, 98, 99, 106, 107\}$,
$\varphi_9(q_{69}, a) = q_{67}$ $\psi_9(q_{69}, a) = e$ za $a \in \{110, 111, 102, 103, 70, 71\}$,
$\varphi_9(q_{69}, a) = q_{F_1}$ $\psi_9(q_{69}, a) = \mathbf{0}$ za $a \in \{72, 73\}$,
$\varphi_9(q_{69}, a) = q_{70}$ $\psi_9(q_{69}, a) = e$ za $a = 79$,
$\varphi_9(q_{69}, a) = q_{72}$ $\psi_9(q_{69}, a) = e$ za $a = 75$,
$\varphi_9(q_{69}, a) = q_{F_0}$ $\psi_9(q_{69}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{70}, a) = q_{75}$ $\psi_9(q_{70}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_9(q_{70}, a) = q_{70}$ $\psi_9(q_{70}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_9(q_{70}, a) = q_{71}$ $\psi_9(q_{70}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_9(q_{70}, a) = q_{F_0}$ $\psi_9(q_{70}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{71}, a) = q_{74}$ $\psi_9(q_{71}, a) = w$ za $a \in \{72, 73, 104, 105, 232, 233\}$,
$\varphi_9(q_{71}, a) = q_{71}$ $\psi_9(q_{71}, a) = e$ za $a \in \{107, 235\}$,
$\varphi_9(q_{71}, a) = q_{F_0}$ $\psi_9(q_{71}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{72}, a) = q_{72}$ $\psi_9(q_{72}, a) = 1$ za $a \in \{104, 105\}$,
$\varphi_9(q_{72}, a) = q_{72}$ $\psi_9(q_{72}, a) = e$ za $a = 107$,
$\varphi_9(q_{72}, a) = q_{73}$ $\psi_9(q_{72}, a) = e$ za $a = 111$,
$\varphi_9(q_{72}, a) = q_{F_0}$ $\psi_9(q_{72}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{73}, a) = q_{73}$ $\psi_9(q_{73}, a) = e$ za $a \in \{127, 255\}$,
$\varphi_9(q_{73}, a) = q_{75}$ $\psi_9(q_{73}, a) = n$ za $a \in \{248, 249\}$,
$\varphi_9(q_{73}, a) = q_{71}$ $\psi_9(q_{73}, a) = e$ za $a \in \{123, 251\}$,
$\varphi_9(q_{73}, a) = q_{F_0}$ $\psi_9(q_{73}, a) = \mathbf{0}$ inače.

$\varphi_9(q_{74}, a) = q_{75}$ $\psi_9(q_{74}, a) = n$ za $a \in \{210, 114, 115, 122, 123, 82, 242, 243, 250, 251, 219, 83, 211, 91\}$,
$\varphi_9(q_{74}, a) = q_{74}$ $\psi_9(q_{74}, a) = w$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7, a_6 = 1\}$,
$\varphi_9(q_{74}, a) = q_{F_0}$ $\psi_9(q_{74}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{75}, a) = q_{75}$ $\psi_9(q_{75}, a) = n$ za $a = 123$,
$\varphi_9(q_{75}, a) = q_{75}$ $\psi_9(q_{75}, a) = w$ za $a \in \{104, 105, 107, 232, 233, 235\}$,
$\varphi_9(q_{75}, a) = q_{76}$ $\psi_9(q_{75}, a) = w$ za $a \in \{248, 249, 251\}$,
$\varphi_9(q_{75}, a) = q_{79}$ $\psi_9(q_{75}, a) = s$ za $a = 41$,
$\varphi_9(q_{75}, a) = q_{F_1}$ $\psi_9(q_{75}, a) = \mathbf{0}$ za $a \in \{11, 43\}$,
$\varphi_9(q_{75}, a) = q_{F_0}$ $\psi_9(q_{75}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{76}, a) = q_{76}$ $\psi_9(q_{76}, a) = w$ za $a = 255$,
$\varphi_9(q_{76}, a) = q_{78}$ $\psi_9(q_{76}, a) = e$ za $a \in \{31, 63\}$,
$\varphi_9(q_{76}, a) = q_{77}$ $\psi_9(q_{76}, a) = w$ za $a = 127$,
$\varphi_9(q_{76}, a) = q_{F_0}$ $\psi_9(q_{76}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{77}, a) = q_{77}$ $\psi_9(q_{77}, a) = w$ za $a \in \{107, 111\}$,
$\varphi_9(q_{77}, a) = q_{78}$ $\psi_9(q_{77}, a) = e$ za $a \in \{11, 15, 43, 47\}$,
$\varphi_9(q_{77}, a) = q_{F_0}$ $\psi_9(q_{77}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{78}, a) = q_{75}$ $\psi_9(q_{78}, a) = n$ za $a \in \{248, 249, 251\}$,
$\varphi_9(q_{78}, a) = q_{78}$ $\psi_9(q_{78}, a) = e$ za $a \in \{ b \in A |\ b = a_0+a_1 2+a_2 2^2+a_3 2^3+a_4 2^4+a_5 2^5+a_6 2^6+a_7 2^7$, $a_1 = 1\}$,
$\varphi_9(q_{78}, a) = q_{F_0}$ $\psi_9(q_{78}, a) = \mathbf{0}$ inače,

$\varphi_9(q_{79}, a) = q_{79}$ $\psi_9(q_{79}, a) = w$ za $a \in \{82, 83, 91, 114, 115, 122, 123, 70, 71, 79, 102, 103, 110, 111, 66, 67, 75, 98, 99, 106, 107\}$,
$\varphi_9(q_{79}, a) = q_{F_1}$ $\psi_9(q_{79}, a) = \mathbf{0}$ za $a \in \{10, 11, 14, 15, 42, 43, 46, 47\}$,
$\varphi_9(q_{79}, a) = q_{F_0}$ $\psi_9(q_{79}, a) = \mathbf{0}$ inače,

Neka je $M = \{194, 195, 198, 199, 202, 203, 206, 207, 226, 227, 230, 231, 234, 235, 238, 239\} \subseteq A$. Tada,
$\psi_{k9}(q_{k9}, (\{q_i\}, a)) = \psi_9(q_i, (\{q_{k9}\}, a))$ za $i \in \{1, 2, \ldots, 22\}$, $a \in A$,

$\psi_{k9}(q_{k9}, (\{q_{23}\}, a)) = \mathbf{0}$ $a \in M_1 = \{203, 207, 194, 195, 198, 199, 235, 239\} \subset M$,
$\psi_{k9}(q_{k9}, (\{q_{23}\}, a)) = \psi_9(q_{23}, (\{q_{k9}\}, a))$ za $a \notin M_1$,

$\psi_{k9}(q_{k9}, (\{q_i\}, a)) = \psi_9(q_i, (\{q_{k9}\}, a))$ za $i \in \{24, 25, \ldots, 31\}$, $a \in A$,

$\psi_{k9}(q_{k9}, (\{q_{32}\}, a)) = \mathbf{0}$ $a \in M_1 = \{202, 206, 194, 198, 234, 238, 226, 230\} \subset M$,
$\psi_{k9}(q_{k9}, (\{q_{32}\}, a)) = \psi_9(q_{32}, (\{q_{k9}\}, a))$ za $a \notin M_1$,

$\psi_{k9}(q_{k9}, (\{q_{33}\}, a)) = \mathbf{0}$ $a \in M_1 = \{195, 194, 203, 239, 207, 235\} \subset M$,
$\psi_{k9}(q_{k9}, (\{q_{33}\}, a)) = \psi_9(q_{33}, (\{q_{k9}\}, a))$ za $a \notin M_1$,

$\psi_{k9}(q_{k9}, (\{q_{34}\}, a)) = \mathbf{0}$ $a \in M_1 = \{195, 194, 203, 239, 207, 235, 198, 199\} \subset M$,
$\psi_{k9}(q_{k9}, (\{q_{34}\}, a)) = \psi_9(q_{34}, (\{q_{k9}\}, a)) = \psi_9(q_{34}, a)$ za $a \notin M_1$,

$\psi_{k9}(q_{k9}, (\{q_i\}, a)) = \psi_9(q_i, (\{q_{k9}\}, a)) = \psi_9(q_i, a)$ za $i \in \{37, 38, 43, 44\}$, $a \in A$,

$\psi_{k9}(q_{k9}, (\{q_{39}\}, a)) = \mathbf{0}$ $a \in M$,
$\psi_{k9}(q_{k9}, (\{q_{39}\}, a)) = \psi_9(q_{39}, (\{q_{k9}\}, a))$ za $a \notin M$,

$\psi_{k9}(q_{k9}, (\{q_{54}\}, a)) = \mathbf{0}$, $a \in A$,
$\varphi_9(q_{54}, (\{q_{k9}\}, a)) = q_{64}$ $\psi_9(q_{54}, (\{q_{k9}\}, a)) = e$ za $a \in M_1 = \{235, 239, 203, 207\}$,
$\varphi_9(q_{54}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_9(q_{54}, (\{\lambda\}, a)) = \mathbf{0}$ za $a \in M_1$, tj. ako se automati $\boldsymbol{A}_9$, $\boldsymbol{K}_9$ ne susretnu,

$\psi_{k9}(q_{k9}, (\{q_{58}\}, a)) = \mathbf{0}$, $a \in A$,
$\varphi_9(q_{58}, (\{q_{k9}\}, a)) = q_{64}$ $\psi_9(q_{58}, (\{q_{k9}\}, a)) = e$ za $a \in M$
$\varphi_9(q_{58}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_9(q_{58}, (\{\lambda\}, a)) = \mathbf{0}$ za $a \in M$, tj. ako se automati $\boldsymbol{A}_9$, $\boldsymbol{K}_9$ ne susretnu,

$\psi_{k9}(q_{k9}, (\{q_{60}\}, a)) = \mathbf{0}$, $a \in A$,
$\varphi_9(q_{60}, (\{q_{k9}\}, a)) = q_{64}$ $\psi_9(q_{60}, (\{q_{k9}\}, a)) = e$ za $a \in M_1 = \{194, 195, 198, 199\}$,
$\varphi_9(q_{60}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_9(q_{60}, (\{\lambda\}, a) = \mathbf{0}$ za $a \in M_1$, tj. ako se automati $\boldsymbol{A}_9$, $\boldsymbol{K}_9$ ne susretnu,

$\psi_{k9}(q_{k9}, (\{q_{61}\}, a)) = \mathbf{0}$, $a \in A$,
$\varphi_9(q_{61}, (\{q_{k9}\}, a)) = q_{64}$ $\psi_0(q_{61}, (\{q_{k9}\}, a)) = e$ za $a \in M \setminus \{227, 231\}$
$\varphi_9(q_{61}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_9(q_{61}, (\{\lambda\}, a) = \mathbf{0}$ za $a \in M \setminus \{227, 231\}$, tj. ako se automati $\boldsymbol{A}_9$, $\boldsymbol{K}_9$ ne susretnu,

$\psi_{k9}(q_{k9}, (\{q_{63}\}, a)) = \mathbf{0}$, $a \in A$,
$\varphi_9(q_{63}, (\{q_{k9}\}, a)) = q_{25}$ $\psi_9(q_{63}, (\{q_{k9}\}, a)) = e$ za $a \in \{194, 195, 198, 199\} \subset M$,
$\varphi_9(q_{63}, (\{\lambda\}, a)) = q_{F_0}$ $\psi_9(q_{63}, (\{\lambda\}, a) = \mathbf{0}$ za $a \in \{194, 195, 198, 199\}$, tj. ako se automati $\boldsymbol{A}_9$, $\boldsymbol{K}_9$ ne susretnu.

□

VI Složenost i implementacija

Označimo sa $T(A_q; L_v, n)$ vrijeme obilaska automatom A_q lavirinta L_v, gdje je $n = \|V(L)\|$ i sa $\|Q(A_q)\|$ broj stanja automata A_q. Tada važi sljedeća lema:

Lema 3: Ako su A_i, $i \in \{0, 1, ..., 9\}$ automati konstruisani u **Teoremi 3** i **Teoremi 5** tada važi:

a) $n + 4 \le T(A_1; L_{DN}, n) \le 4n - 11$, $n \ge 5$, $\|Q(A_1)\| = 14$.

b) $n + 4 \le T(A_2; L_{DN}, n) \le \begin{cases} 17, & n = 11, \\ 5n - 37, & n \ge 12. \end{cases}$, $n \ge 11$, $\|Q(A_2)\| = 37$.

c) $n + 8 \le T(A_3; L_{DN}, n) \le \begin{cases} 24, & n = 14, \\ 5n - 45, & n \ge 15. \end{cases}$, $n \ge 14$, $\|Q(A_3)\| = 53$.

d) $n + 5 \le T(A_4; L_{ND}, n) \le \begin{cases} 15, & n = 10, \\ \frac{5}{2}(n-7)+6, & n = 4k+7, \\ \frac{5}{2}n - 12, & n = 4k+8, \\ \frac{5}{2}(n-1)-10, & n = 4k+9, \\ \frac{5}{2}n - 13, & n = 4k+10. \end{cases}$, $k \ge 1$; $\|Q(A_4)\| = 33$.

e) $n + 10 \le T(A_5; L_{DN}, n) \le \begin{cases} 29, & n = 17, \\ 5n - 55, & n \ge 18 \end{cases}$, $n \ge 17$, $\|Q(A_5)\| = 51$.

f) $n + 13 \le T(A_6; L_{LN}, n) \le 4n - 26$, $n \ge 14$, $\|Q(A_6)\| = 83$.

g) $$n \le T(\mathbf{A}_7; L_{ND}, n) \le \begin{cases} 6, & n = 6, \\ \frac{7}{5}(n-2), & n = 5k+2, \\ \frac{7}{5}(n-3), & n = 5k+3, \\ \frac{7}{5}(n-4)+1, & n = 5k+4, \\ \frac{7}{5}n-3, & n = 5k+5, \\ \frac{7}{5}(n-6)+5, & n = 5k+6. \end{cases}, k \ge 1; \ \|Q(\mathbf{A}_7)\| = 12.$$

h) $$\left.\begin{array}{ll} n = 2k+11, & \frac{3}{2}(n-11)+29, \\ n = 2k+12, & \frac{3}{2}(n-12)+31, \end{array}\right\} \le T(\mathbf{A}_8; L_{ND}, n) \le \begin{cases} \frac{9}{2}(n-12)+15, & n = 2k+12, \\ \frac{9}{2}(n-13)+19, & n = 2k+13, \end{cases}$$
$k \ge 5, \ \|Q(\mathbf{A}_8)\| = 91.$

i) $$n+11 \le T(\mathbf{A}_9; L_{DN}, n) \le \begin{cases} 25, & n = 14, \\ \frac{7}{2}(n-9)+8, & n = 2k+9, \\ \frac{7}{2}(n-10)+9, & n = 2k+10. \end{cases} \quad k \ge 3; \ \|Q(\mathbf{A}_9)\| = 81.$$

j) $$\left.\begin{array}{ll} n = 2k+2, & \frac{3}{2}(n-2)+7, \\ n = 2k+3, & \frac{3}{2}(n-3)+9, \end{array}\right\} \le T(\mathbf{A}_0; L_{ND}, n) \le \begin{cases} 16, & n = 8, \\ 20, & n = 9, \\ 4n-18, & n = 2k+4, \\ 4n-20, & n = 2k+5. \end{cases}, k \ge 3;$$
$\|Q(\mathbf{A}_0)\| = 42.$

Dokaz: Dokaz slijedi neposredno iz načina obilaska automatom $\mathbf{A}_i$ lavirinta $L_v \in \mathbf{C}_i$, i činjenice da za dato n, uvijek možemo konstruisati lavirint $L \in \mathbf{C}_i$, takav da $V(L) = n$ (za koje n je to moguće dato je u formulaciji **Leme 3**), a da vrijeme obilaska bude najmanje, odnosno najveće, $i \in \{0, 1, ..., 9\}$. □

Javila se potreba za programskom implementacujom, koja bi na neki način simulirala rad automata iz **Teoreme 3**, odnosno kolektiva automata iz **Teoreme 5**.

Programska realizacija koja simulira rad automata $\mathbf{A}_i$, slijedi iz samog opisa tog automata, $i \in \{1,2,3,5,7\}$.

Međutim, kako obilazak kolektiva automata ($\mathbf{A}_i$, $\mathbf{K}_i$) predstavlja parelelan rad automata $\mathbf{A}_i$ i automata kamena $\mathbf{K}_i$, to je izvršena programska realizacija koja simulira rad automata $\mathbf{A}_i$ uz programsku pomoć, promjenljiva u programu pamti tačku na kojoj je "postavljen" automat kamen $\mathbf{K}_i$, $i \in \{0, 4, 6, 8, 9\}$.

Implementacija je izvršena na programskom jeziku C++.

Zaključak

U radu su razmotrene mogućnosti automatnog prepoznavanja specijalnih klasa mozaičnih lavirinata, koje u geometrijskom smislu predstavljaju cifre. Treba primjetiti da je u radu data i teorijska osnova automatnog prepoznavanja ne samo cifara, već i ćiriličnih slova naše azbuke. U trećem poglavlju je definisana familija **Step**, čiji su elementi pravougli lavirinti, za koje znamo da ne postoji automat koji ih prepoznaje. Ova familija je definisana ne samo kao primjer familije čije je elemente nemoguće prepoznati automatom, već da bi kasnije mogli dokazati ne postojanje automata koji prepoznaje klasu mozaičnih lavirinata koja predstavlja cifru s "rupom". Na isti način se može dokazati nepostojanje automata koji prepoznaje klasu mozaičnih lavirinata koja bi predstavljala ćirilično slovo s "rupom" (familija **Step** obuhvata i ove pravougaone lavirinte, osim onog koji predstavlja ćirilično slovo V). Jednopovezana ćirilična slova se mogu definisati koristeći familije Φ_i, $1 \geq i \leq 9$, definisane u drugom poglavlju. Za ovako definisane klase mozaičnih lavirinata postoji automat koji ih prepoznaje. Zbog obimnosti, nijesu definisane i klase koje bi predstavljale ćirilična slova.

U radu su pokazane ograničene mogućnosti automata u prepoznavanju geometrijskih figura. Međutim, primjetimo da se programska realizacija kolektiva automata tipa (1, 1) ne usložnjava. Dovoljno je uvesti promjenljivu koja će pamtiti položaj automata kamena. Prema tome, praktična primjena automatnog prepoznavanja se ne umanjuje.

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Sadržaj