

$$\lambda_{\text{MOORE}} : S \rightarrow Z$$

$$\delta : X \times S \rightarrow S$$

$$\lambda_{\text{MEALY}} : X \times S \rightarrow Z$$

Primer: Realiziraj Mooreov avtomat z uporabo RS pomnilnih celic in poljubne kombinatorne logike.

Izvedba avtomatov

- ↳ abecede so imele abstraktno predstavitev
- ↳ črke in stanja moramo pred realizacijo zakodirati s prelopnimi spremenljivkami
- ↓
KODIRNE Tabele
- ↳ stanja bomo uvedli s pomnilnimi celicami
- ↓
sekvencijske vezje

1) kodirne tabele

2) Pravilnostna tabela

3) Določitev vhodov v pomnilne celice ($Q \rightarrow D'Q$ + vselijevalna tabela)

4) Realizacija funkcij

Mooreov avtomat:

	Z_1	Z_2	Z_3
	S_1	S_2	S_3
X_1	S_1	S_1	S_1

Mooreov avtomat:

	S_1	S_2	S_3
X_1	S_1	S_1	S_1
X_2	S_2	S_3	S_2

↳ vrednosti →

$\lceil \log_2 k \rceil$ spremenljivk

vhodne
črke

1) Kodirne tabele

	X
X_1	0
X_2	1

→ osnovno kodiranje:

n spremenljivk → 2^n vrednosti

ALTERNATIVE: one-hot-encoding
(ena uenobit)

primer:

	a_1	a_2
X_1	1	0
X_2	0	1

stanja

	g_1	g_2
S_1	0	0
S_2	0	1
S_3	1	0

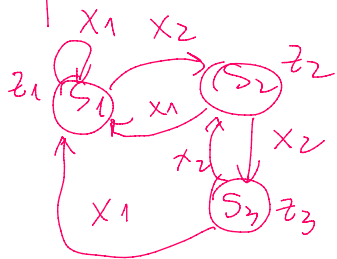
izhodne
črke

	y_1	y_2
Z_1	0	0
Z_2	0	1
Z_3	1	0

2) Pravilnostna tabela

Tabela preključijev stanj

	Z_1	Z_2	Z_3
	S_1	S_2	S_3
X_1	S_1	S_1	S_1
X_2	S_2	S_3	S_2



	g_1	g_2	X	$D^1 g_1$	$D^1 g_2$	y_1	y_2
S_1	0	0	X_1	0	0	0	0
	0	0	X_2	0	1	0	0
S_2	0	1	X_1	0	0	0	1
	0	1	X_2	1	0	0	1
S_3	1	0	X_1	0	0	1	0
	1	0	X_2	0	1	1	0
Z_1	1	1	0	?	?	?	?
Z_2	1	1	1	?	?	?	?

3) Določitev vhodov

v pomnilne celice (RS)

izbižovalna tabela

q	$D^1 q$	S	R
0	0	0	?
0	1	1	0

g	D ₁	S	π
0	0	0	2
0	1	1	0
1	0	0	1
1	1	2	0

	g ₁	g ₂	X		D ¹ g ₁	D ¹ g ₂	y ₁	y ₂	S ₁	π ₁	S ₂	π ₂
S ₁	0	0	0	x ₁	0	0	0	0	0	2	0	2
	0	0	1	x ₂	0	1	0	0	0	2	1	0
S ₂	0	1	0	x ₁	0	0	0	1	0	2	0	1
	0	1	1	x ₂	1	0	0	1	1	0	0	1
S ₃	1	0	0	x ₁	0	0	1	0	0	1	0	2
	1	0	1	x ₂	0	1	1	0	0	1	1	0
Z	1	1	0		?	?	?	?	?	?	?	?
	1	1	1		?	?	?	?	?	?	?	?

4) Določitev funkcij

	g ₁	g ₂	X		D ¹ g ₁	D ¹ g ₂	y ₁	y ₂	S ₁	π ₁	S ₂	π ₂
S ₁	0	0	0	x ₁	0	0	0	0	0	2	0	2
	0	0	1	x ₂	0	1	0	0	0	2	1	0
S ₂	0	1	0	x ₁	0	0	0	1	0	2	0	1
	0	1	1	x ₂	1	0	0	1	1	0	0	1
S ₃	1	0	0	x ₁	0	0	1	0	0	1	0	2
	1	0	1	x ₂	0	1	1	0	0	1	1	0
Z	1	1	0		?	?	?	?	?	?	?	?
	1	1	1		?	?	?	?	?	?	?	?

S₁:

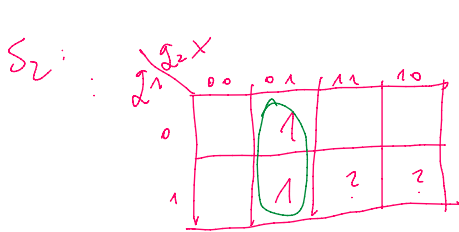
g ₁ \ g ₂ X	00	01	11	10
0			1	
1			2	?

$$S_1 = g_2 x$$

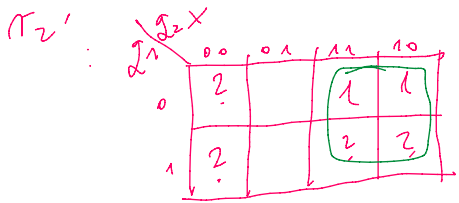
π₁:

g ₁ \ g ₂ X	00	01	11	10
0	?	?		?
1	1	1	?	?

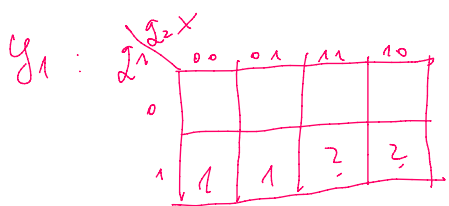
$$\pi_1 = g_1$$



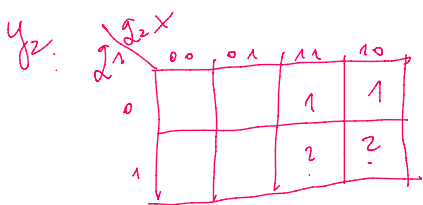
$$S_2 = \overline{q_2}x$$



$$\pi_2 = q_2$$



$$y_1 = q_1$$



$$y_2 = \overline{q_2}$$

Primer: Medyjev avtomat

Realiziraj avtomat, ki predstavlja kontrolno enoto eljucavnice, ki izhod y aktivira, ko imamo na vhodu sekvenco 1101!!

vhod: $x \in \{0, 1\}$

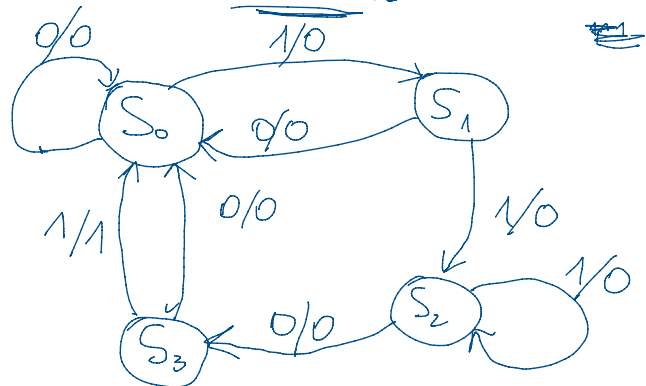
izhod: $y \in \{0, 1\}$

x	S_0	S_1	S_2	S_3
0	$S_0/0$	$S_0/0$	$S_2/0$	$S_0/0$
1	$S_1/0$	$S_2/0$	$S_2/0$	$S_0/1$

	q_1	q_2
S_0	0	0
S_1	0	1
S_2	1	0
S_3	1	1

1 x 1 x 1 0 0 1 1 1 0 1 1 1

uporabi D pomnilne celice



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$S_3 \mid 1 \ 1$

$g_1 g_2 x$	f_{g_1}	f_{g_2}	g	d_1	d_2
S_0 000	0	0	0	0	0
001	0	1	0	0	1
010	0	0	0	0	0
S_1 011	1	0	0	1	0
100	1	1	0	1	1
S_2 101	1	0	0	1	0
110	0	0	0	0	0
S_3 111	0	0	1	0	0

g	Dg	d
0	0	0
0	1	1
1	0	0
1	1	1

x	S_0	S_1	S_2	S_3
0	$S_0/0$	$S_0/0$	$S_2/0$	$S_0/1$
1	$S_1/0$	$S_2/0$	$S_2/0$	$S_0/0$

$$y = g_1 g_2 x$$

$d_1: g_1 \begin{matrix} g_2 x \\ 00 & 01 & 11 & 10 \\ 0 & & \textcircled{1} & \\ 1 & \textcircled{1} & \textcircled{1} & \end{matrix}$

$$d_1 = g_1 \overline{g_2} \vee \overline{g_1} g_2 x$$

$g_1 \begin{matrix} g_2 x \\ 00 & 01 & 11 & 10 \\ 0 & & 1 & \\ 1 & 1 & & \end{matrix}$

$$\begin{aligned} d_2 &= g_1 \overline{g_2} \overline{x} \vee \overline{g_1} \overline{g_2} x = \\ &= \overline{g_2} (g_1 \overline{x} \vee \overline{g_1} x) = \\ &= \overline{g_2} (g_1 \vee x) \end{aligned}$$