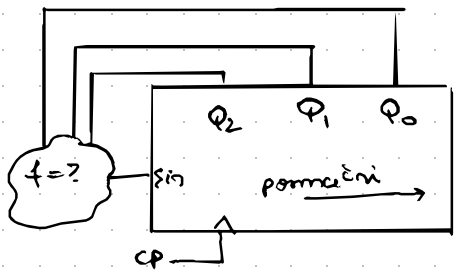
ZADACI

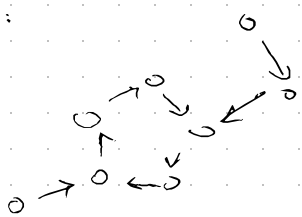
1.

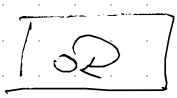
- brojilo koje broji $0 \to 4 \to 2 \to 5 \to 6 \to 3 \to 1$

- sigurran start - ulazem zad stanju da se sklop zatekne pri uključenju, nakon maksimalno dva koraka ide u radni ciklus



npr:



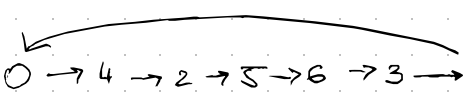
* nesiguran sklop 

↳ nikada ne ulazi u radni ciklus

ili 

SIGURAN START

- kod nakon konačnog broja koraka sklop ulazi u radni ciklus



* $0 \to 4$

	Q_2	Q_1	Q_0	Q_2	Q_1	Q_0	Sin
0	0	0	0	1	0	0	1
1	0	0	1	0	0	0	0
2	0	1	0	1	0	1	1
3	0	1	1	0	0	1	0
4	1	0	0	0	1	0	0
5	1	0	1	1	1	0	1
6	1	1	0	0	1	1	0
7	1	1	1	0	1	1	0

TS | SS

Zadnja dva se trebaju poklapati prva dva od TS

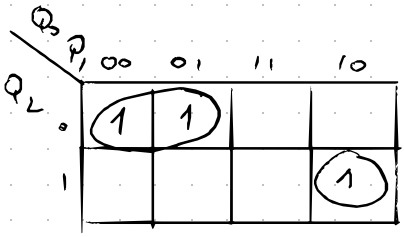
→ što želim da se prenese u Q_2 je Sin

nemamo definirano 7!

iz stanja (11)X di ići?

011 (ovisno o Sin) 111

→ u ovom zad nemamo slobodu izbora jer moramo imati siguran start što znači da se 7 ne smije zadržavati u samu sebe (ne smije se dovesti 1 na Sin da postane opet 7 (111))



$$Sin = Q_0 \cdot \overline{Q}_2 + Q_0 \overline{Q}_1 \cdot Q_2$$

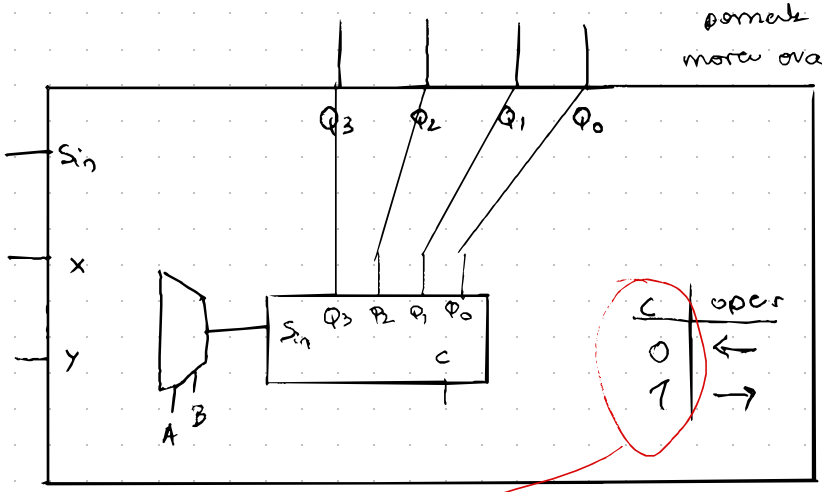
$$= Q_0 \left(\overline{Q}_2 + \overline{Q}_1 \cdot Q_2 \right)$$

$$= Q_0 \left(\overline{Q}_2 + \overline{Q}_1 \right)$$

$$= Q_0 \overline{Q}_2 + Q_0 \overline{Q}_1$$

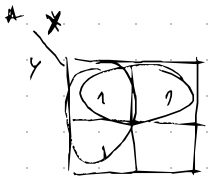
2.

ako ona kutija mora napraviti pomak u →, onda mora ovaj unutra napraviti isti pomak



X	Y	operacija	A	B	C
0	0	← , Sin	1	0	0
0	1	← , 1	1	1	0
1	0	→ , Sin	1	0	1
1	1	→ , A	0	0	1

aritmetički pomak → preslonk o Q_3 se miče u Q_2, ali kopira ponovno u Q_3



$A(x,y) = \Sigma(0,1,2)$

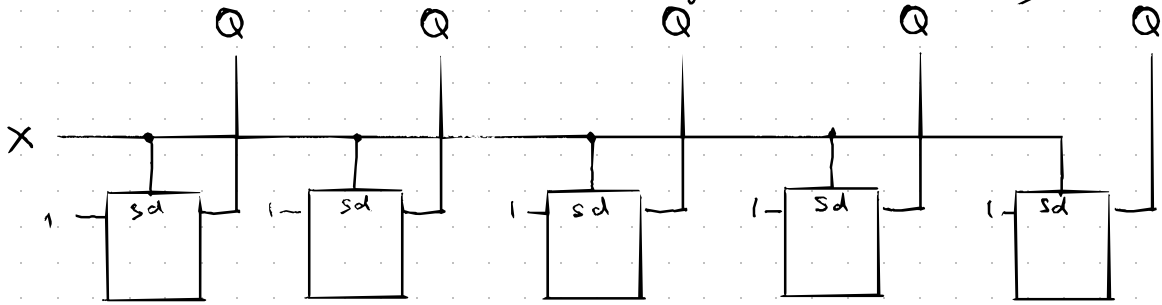
$B(x,y) = \Sigma(1)$

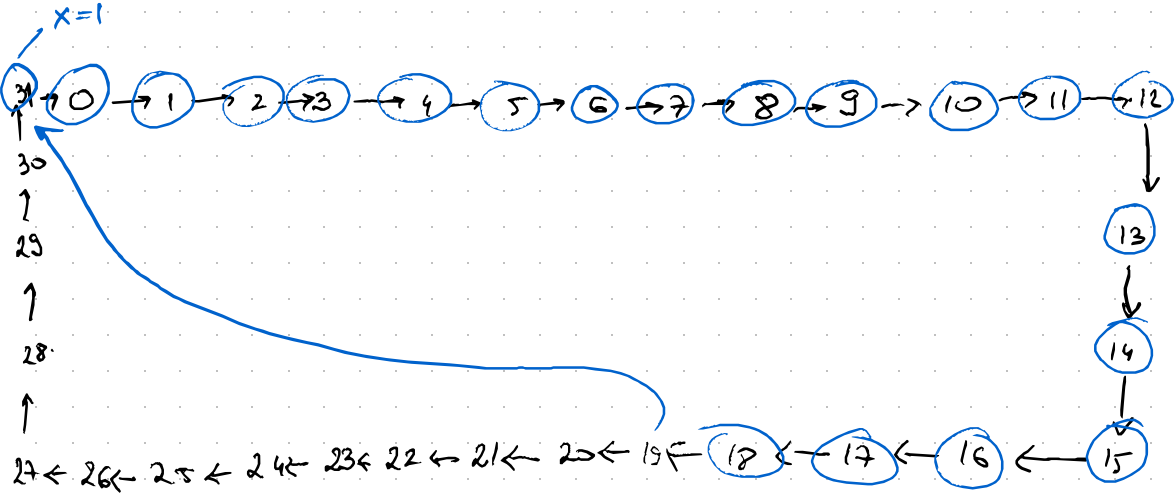
$c(x,y) = \Sigma(2,3)$

$A = \overline{x} + \overline{y}$

(3.) Asinkrono bin brojilo

- uzastopno
- T bistabil
- ciklus 20 stanja → 5 bistabila jer 4 je 16, a sljedeći je 5 (ili 32)





$$99_{10} = 10011_{2}$$

$q_4 q_3 q_2 q_1 q_0$

* kraćenje ciklusa asinkronog brojila

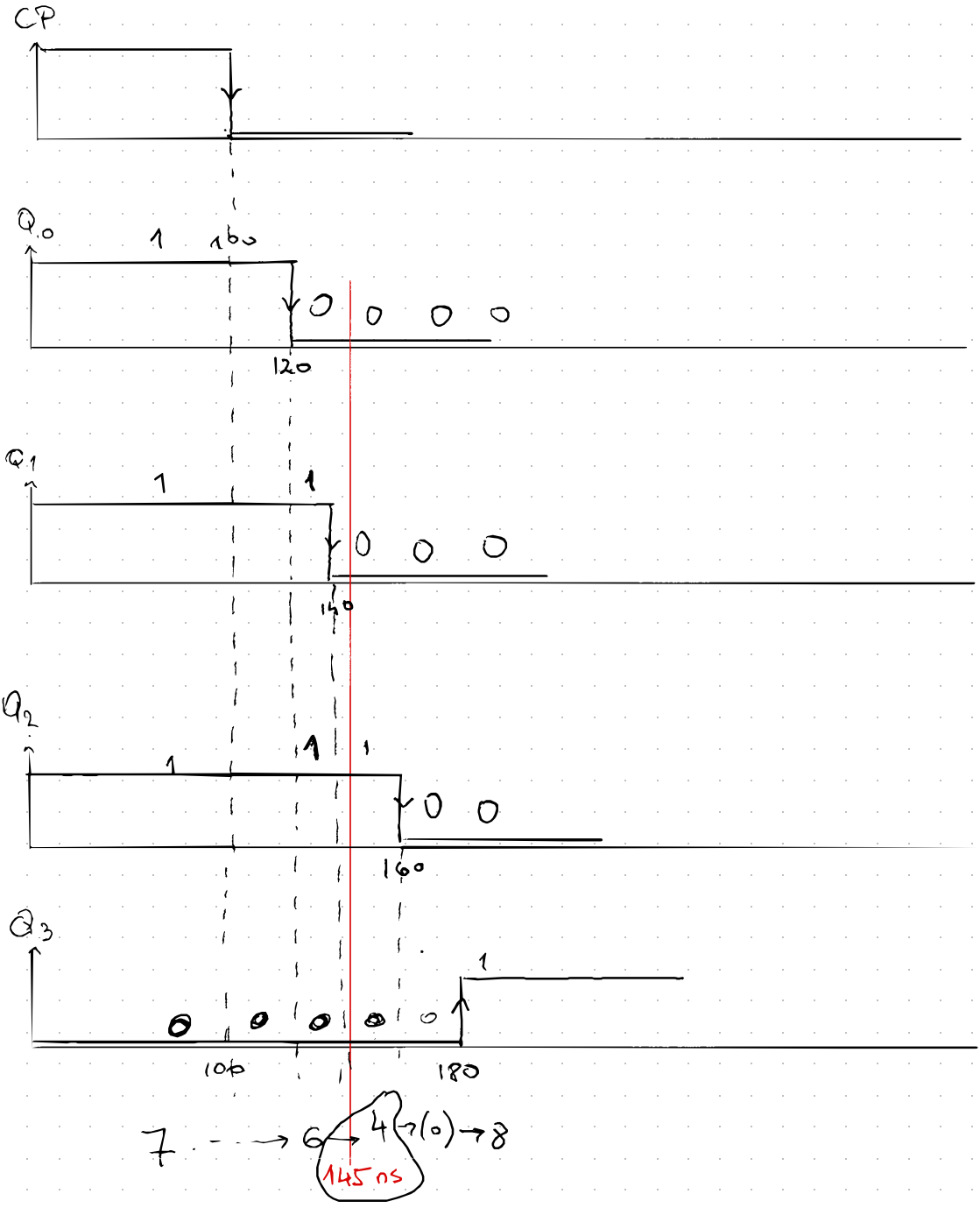
4. 4 bit asink bin br. unaprijed

- T bistabili
- CP ↓

$t_{db} = 20_{ns}$

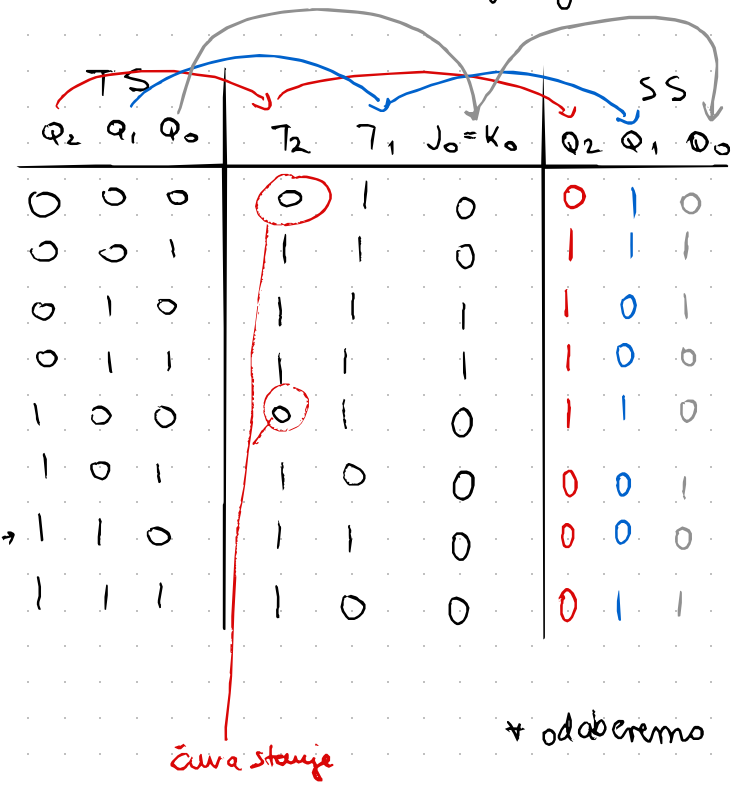
$t_{setup} = 10ns$

$t_{hold} = 10ns$



5. D7 +7,8

6. max 8 stanja (jer je 8 bistabila)



$T_2 = Q_1 + Q_0$

$T_1 = \bar{Q}_2 + \bar{Q}_0$

$J_0 = Q_1 \cdot \bar{Q}_2$

$K_0 = Q_1 \cdot \bar{Q}_2$

* odaberemo broj (B)

6 → 0 → 2 → 5 → 1 → 7 → 3 → 4 ← 6

*otkud god smo krenuli išlo bi dalje u istom redu