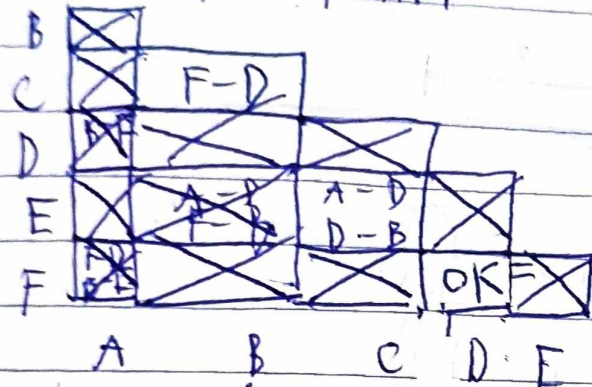


Sequential Circuit

Prob 5 1, FSM, JKFF



\Rightarrow $u_0 = \{A\}$
 $u_1 = \{B, C\}$
 $u_2 = \{D, E\}$
 $u_3 = \{F\}$
 Moore machine

using straight forward encoding \Rightarrow

$u_0 = 00$ A
 $u_1 = 01$ (B, C)
 $u_2 = 10$ (D, E)
 $u_3 = 11$ (F)

New state table

| Current state | Next state | | Output z |
|---------------|------------|-----|----------|
| | X=0 | X=1 | |
| 00 | 10 | 01 | 0 |
| 01 | 00 | 10 | 1 |
| 10 | 10 | 11 | 0 |
| 11 | 10 | 01 | 1 |

KLONG

| Current state (Q_1, Q_0) | Next state & (Q_1', Q_0') | | | | | | Output z |
|---------------------------------|-------------------------------|-----------|-----------|-------------|-----------|-----------|------------|
| | $X=0$ | | | $X=1$ | | | |
| | $Q_1' Q_0'$ | $J_1 K_1$ | $J_0 K_0$ | $Q_1' Q_0'$ | $J_1 K_1$ | $J_0 K_0$ | |
| 00 | 10 | 1d | 0d | 01 | 0d | 1d | 0 |
| 01 | 00 | 0d | d1 | 10 | 1d | d1 | 1 |
| 10 | 10 | d0 | 0d | 11 | d0 | d1 | 0 |
| 11 | 10 | d0 | d1 | 01 | d1 | d0 | 1 |

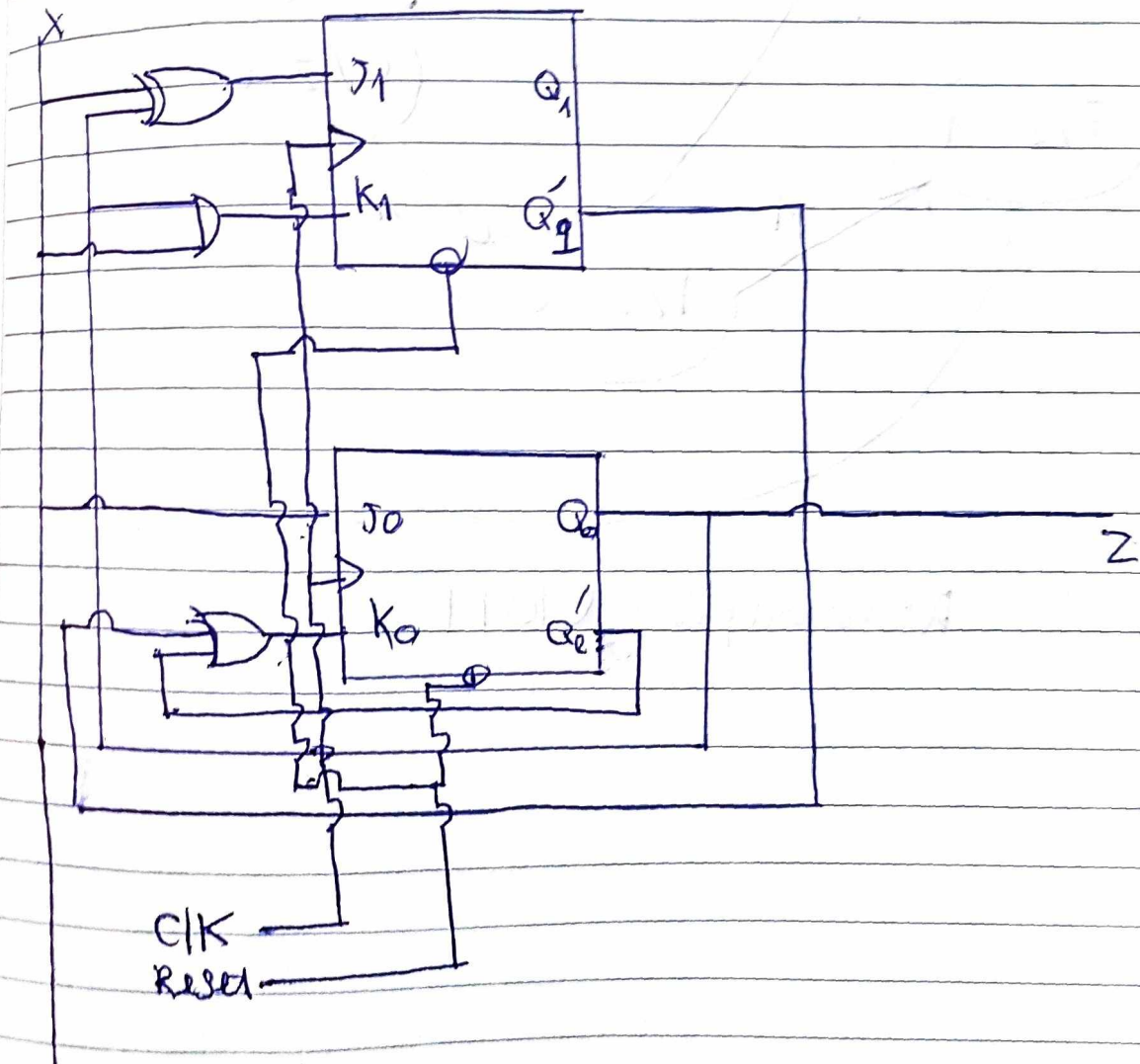
| J_1 | | $J_1 = Q_0 X + Q_0' X'$ | |
|-------|-----------|-------------------------|---|
| | | $= Q_0 \oplus X$ | |
| X | $Q_1 Q_0$ | 0 | 1 |
| 0 | 00 | 0 | 0 |
| 0 | 01 | 0 | 1 |
| 1 | 11 | d | d |
| 1 | 10 | d | d |

| K_1 | | J_0 | | K_0 | |
|-------|-----------|-------|---|-------|-----------|
| | | | | | |
| X | $Q_1 Q_0$ | 0 | 1 | X | $Q_1 Q_0$ |
| 0 | 00 | d | d | 0 | 00 |
| 0 | 01 | d | d | 0 | 01 |
| 1 | 11 | 0 | 0 | 1 | 11 |
| 1 | 10 | 0 | 0 | 1 | 10 |

$\Rightarrow K_1 = Q_0 X$
 $\Rightarrow J_0 = X$
 $\Rightarrow K_0 = Q_1' + Q_0'$

$$\Rightarrow Z = Q_0$$

| Z | X | 0 | 1 |
|-------------------------------|---|---|---|
| Q ₁ Q ₀ | | | |
| 00 | 0 | 0 | 1 |
| 01 | 1 | 1 | 1 |
| 11 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 |



2) Output is 01011

Where

A: 0

B: 01

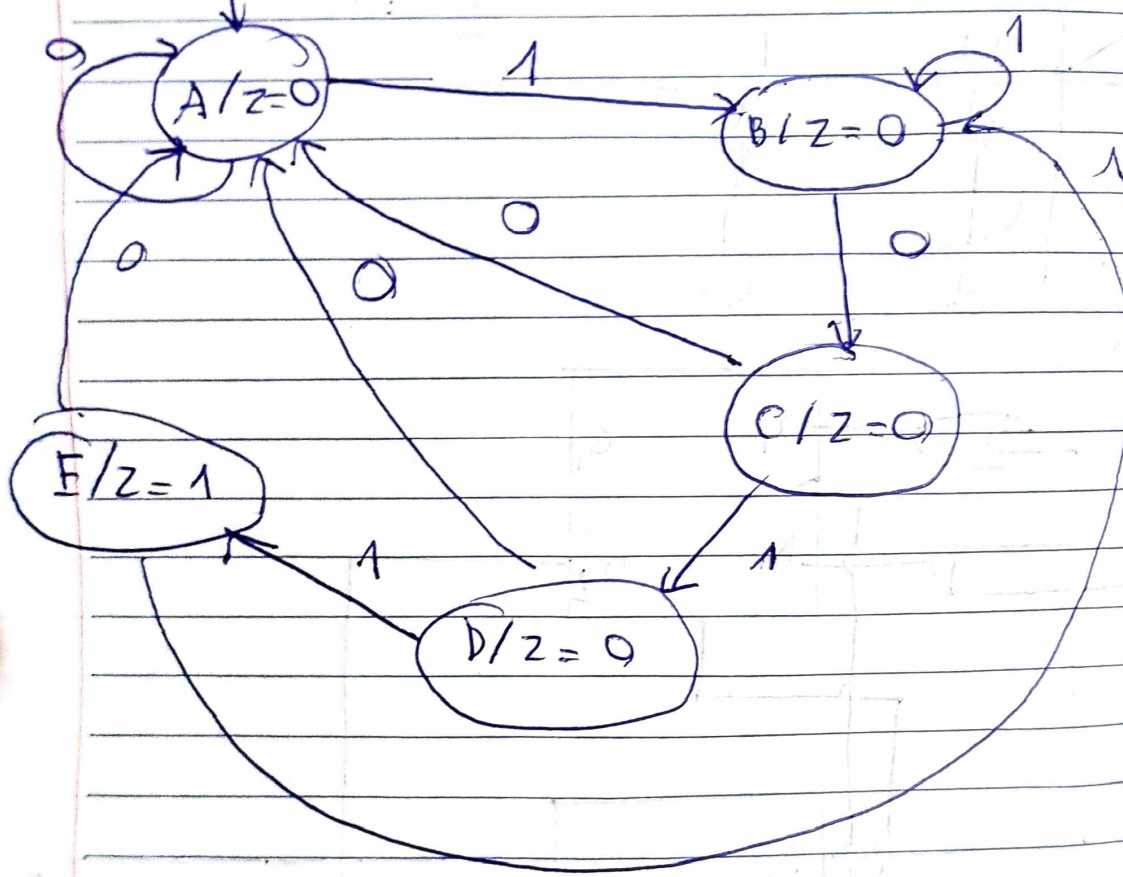
C: 010

D: 0101

E: 01011

Moore machine

Num Enter (0/1)



Desired output : 01011

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