

Next State Table for Mealy Design

| Present State Q_1, Q_0 | | Input I | Next State Q_1, Q_0 | Output Y | D FF inputs D_1, D_0 | JK FF inputs J_1, K_1, J_0, K_0 |
|-----------------------------|----|--------------|--------------------------|---------------|---------------------------|--------------------------------------|
| A | 00 | 0 | 00 | 0 | 00 | 0X 0X |
| | 00 | 1 | 01 | 0 | 01 | 0X 1X |
| B | 01 | 0 | 00 | 0 | 00 | 0X 1X |
| | 01 | 1 | 11 | 0 | 11 | 1X 0X |
| C | 11 | 0 | 10 | 0 | 10 | X0 1X |
| | 11 | 1 | 11 | 0 | 11 | X0 0X |
| D | 10 | 0 | 00 | 0 | 00 | X1 0X |
| | 10 | 1 | 01 | 1 | 01 | X1 1X |

D FF.

| Y | I | |
|-----|-----|---|
| | 0 | 1 |
| 00 | 0 | 0 |
| 01 | 0 | 0 |
| 11 | 0 | 0 |
| 10 | 0 | 1 |

$$Y = I Q_1 \bar{Q}_0$$

| D_1 | I | |
|-------|-----|---|
| | 0 | 1 |
| 00 | 0 | 0 |
| 01 | 0 | 1 |
| 11 | 1 | 1 |
| 10 | 0 | 0 |

$$D_1 = I Q_0 + Q_1 Q_0$$

| D_0 | I | |
|-------|-----|---|
| | 0 | 1 |
| 00 | 0 | 1 |
| 01 | 0 | 1 |
| 11 | 0 | 1 |
| 10 | 0 | 1 |

$$D_0 = I$$

Mealy Design: Use ^{present} states & inputs:

| | | |
|-------------------------|---|---|
| $Q_1, Q_0 \backslash I$ | 0 | 1 |
| 00 | 0 | 0 |
| 01 | 0 | 0 |
| 11 | x | 0 |
| 10 | x | x |

$$J_1 = I Q_0$$

| | | |
|-------------------------|---|---|
| $Q_1, Q_0 \backslash I$ | 0 | 1 |
| 00 | x | x |
| 01 | x | x |
| 11 | 0 | 0 |
| 10 | 0 | 0 |

$$K_1 = Q_0'$$

Q, Q_0 \ I

| | 0 | 1 |
|----|---|---|
| 00 | 0 | 1 |
| 01 | x | x |
| 11 | x | x |
| 10 | 0 | 1 |

$J_0 = I$

Q, Q_0 \ I

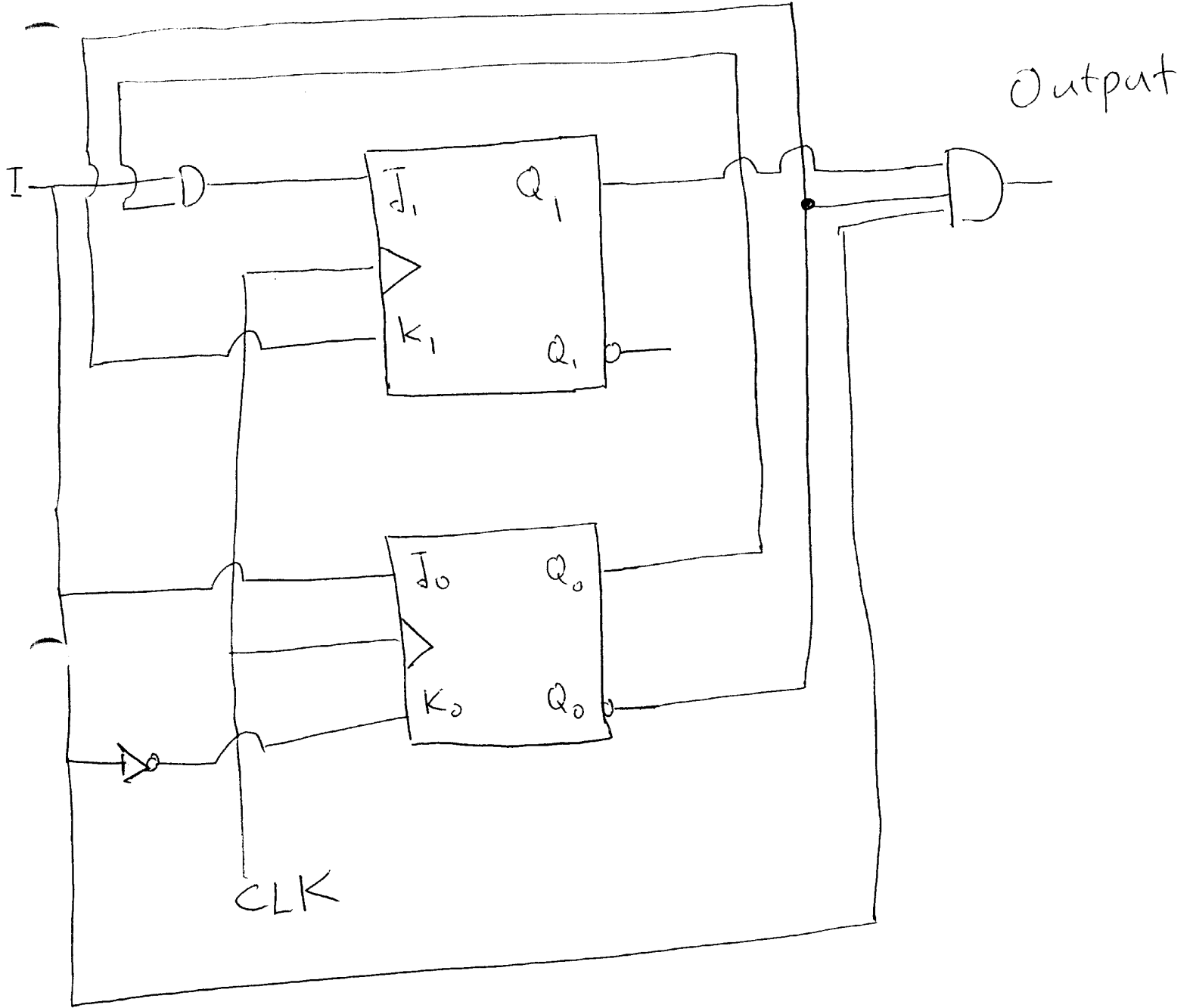
| | 0 | 1 |
|----|---|---|
| 00 | x | x |
| 01 | 1 | 0 |
| 11 | 1 | 0 |
| 10 | x | x |

$K_0 = I'$

Q, Q_0 \ I

| | 0 | 1 |
|----|---|---|
| 00 | | |
| 01 | | |
| 11 | | |
| 10 | | 1 |

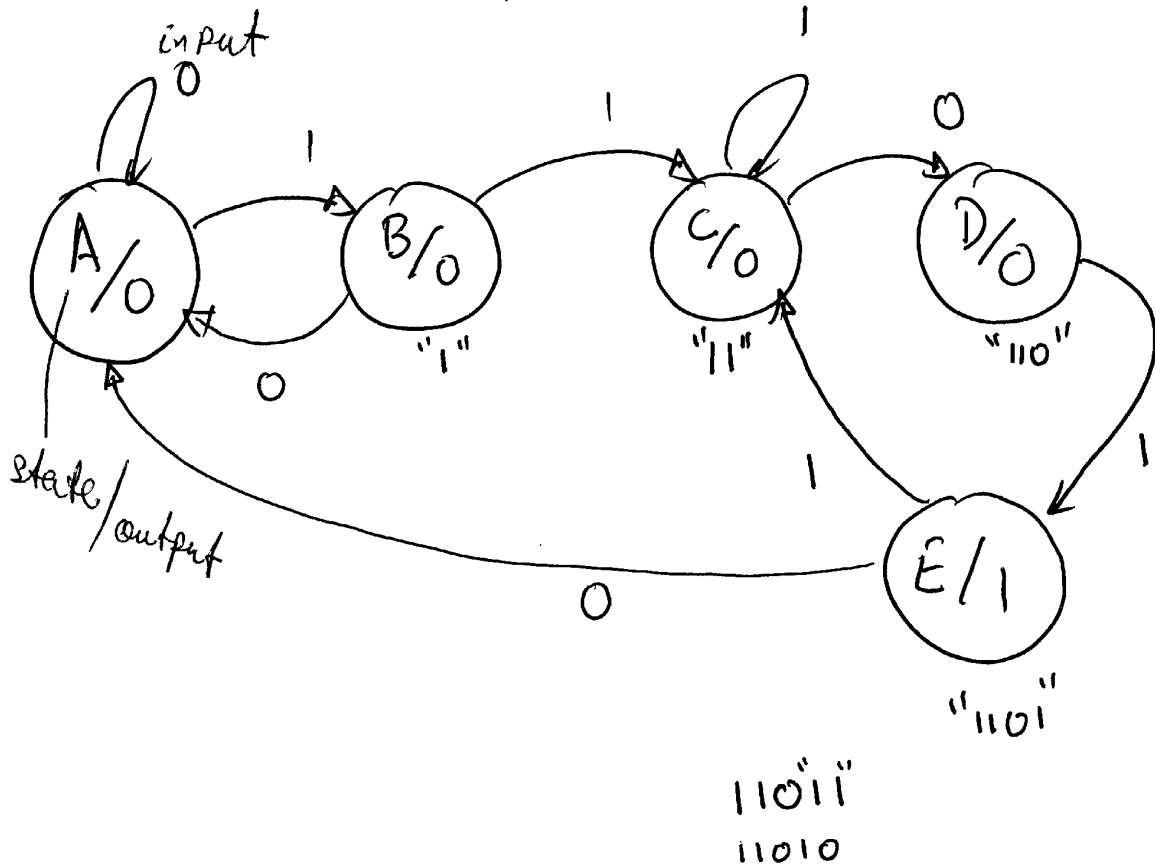
Output = $I Q_1 Q_0'$



Moore Design

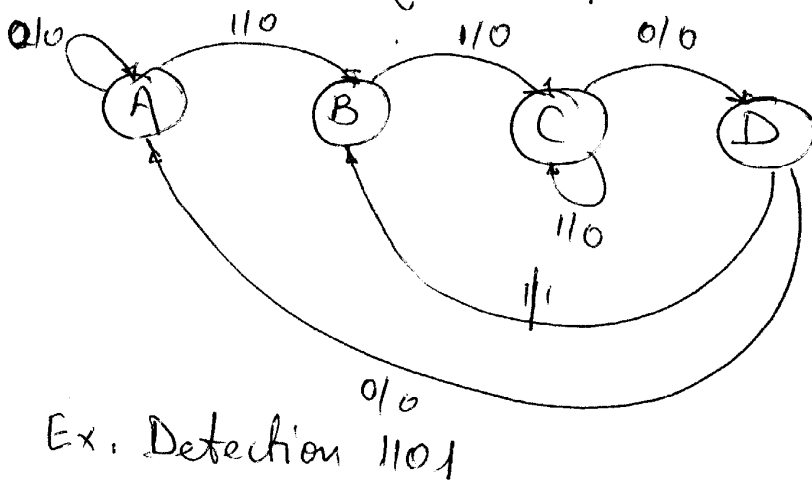
- Associate Output with states only.

Ex. Detection of 1101



Mealy Design

Associate output with states & inputs



- Mealy Circuits:

Outputs depend on states & inputs

Moore Circuits

Outputs depend on states only