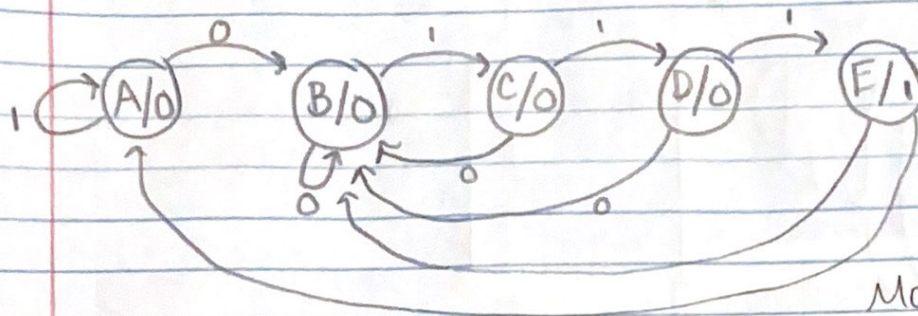


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Elec 2200

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## Hw 28

One hot finite state machine Sequence: 0111



Moore State Machine

| State | 0 | 1 | Z |
|-------|---|---|---|
| A     | B | A | 0 |
| B     | B | C | 0 |
| C     | B | D | 0 |
| D     | B | E | 0 |
| E     | B | A | 1 |

A → A, input 1

E, input 1

B → A, input 0

B, input 0

C, input 0

D, input 0

E, input 0

C → B, input 1

D → C, input 1

E → D, input 1

$$D_A = Q_A X + Q_E X = X(Q_A + Q_E)$$

$$D_B = Q_A \bar{X} + Q_B \bar{X} + Q_C \bar{X} + Q_D \bar{X} + Q_E \bar{X} = \bar{X}(Q_A + Q_B + Q_C + Q_D + Q_E)$$

$$D_C = Q_B X$$

$$D_D = Q_C X$$

$$D_E = Q_D X$$

$$Z = Q_E \rightarrow \text{only state to output 1}$$



|                |   |   |  |
|----------------|---|---|--|
|                | 0 | 1 |  |
| Q <sub>A</sub> | 0 | 1 |  |
| Q <sub>B</sub> | 0 | 0 |  |
| Q <sub>C</sub> | 0 | 0 |  |
| Q <sub>D</sub> | 0 | 0 |  |
| Q <sub>E</sub> | 0 | 1 |  |

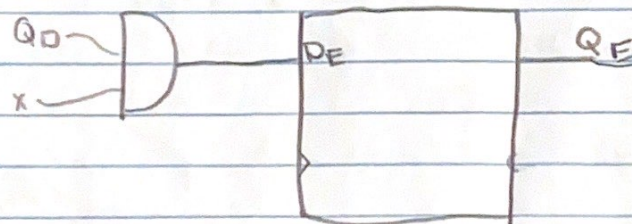
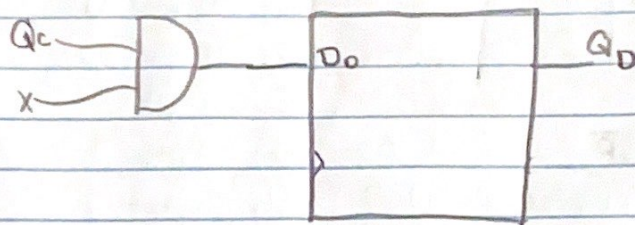
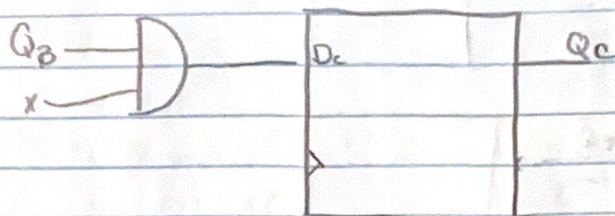
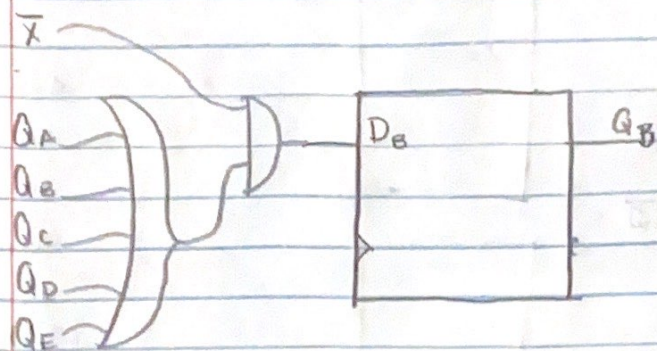
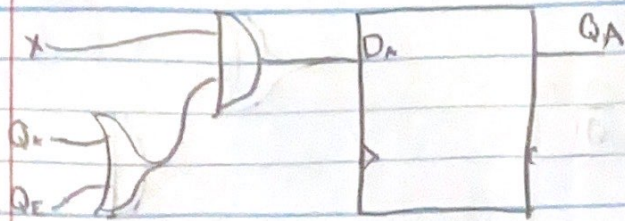
|                |   |   |  |
|----------------|---|---|--|
|                | 0 | 1 |  |
| Q <sub>A</sub> | 1 | 0 |  |
| Q <sub>B</sub> | 1 | 0 |  |
| Q <sub>C</sub> | 1 | 0 |  |
| Q <sub>D</sub> | 1 | 0 |  |
| Q <sub>E</sub> | 1 | 0 |  |

|                |   |   |  |
|----------------|---|---|--|
|                | 0 | 1 |  |
| Q <sub>A</sub> | 0 | 0 |  |
| Q <sub>B</sub> | 0 | 1 |  |
| Q <sub>C</sub> | 0 | 0 |  |
| Q <sub>D</sub> | 0 | 0 |  |
| Q <sub>E</sub> | 0 | 0 |  |

|                |   |   |  |
|----------------|---|---|--|
|                | 0 | 1 |  |
| Q <sub>A</sub> | 0 | 0 |  |
| Q <sub>B</sub> | 0 | 0 |  |
| Q <sub>C</sub> | 0 | 1 |  |
| Q <sub>D</sub> | 0 | 0 |  |
| Q <sub>E</sub> | 0 | 0 |  |

|                |   |   |  |
|----------------|---|---|--|
|                | 0 | 1 |  |
| Q <sub>A</sub> | 0 | 0 |  |
| Q <sub>B</sub> | 0 | 0 |  |
| Q <sub>C</sub> | 0 | 0 |  |
| Q <sub>D</sub> | 0 | 1 |  |
| Q <sub>E</sub> | 0 | 0 |  |





Z