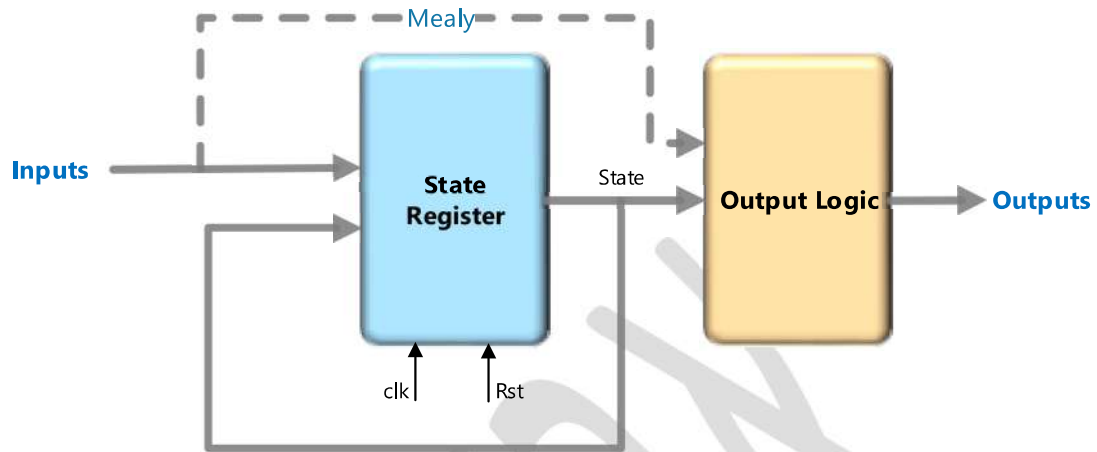
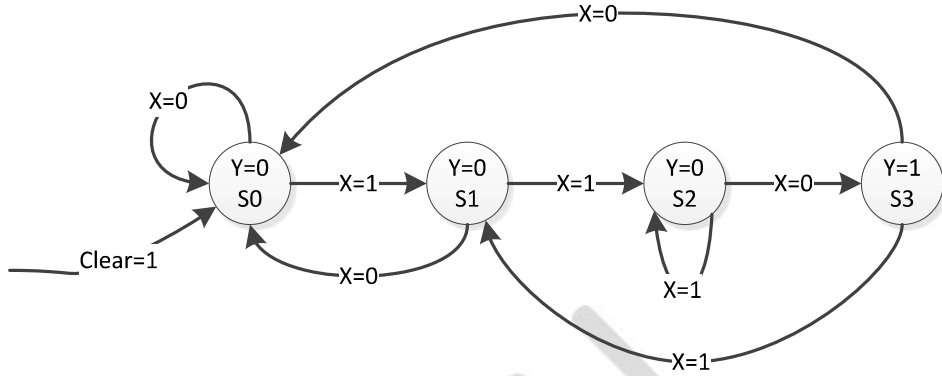


מכונת מצבים MOORE ו- MEALY



- מצב המכונה Current State ועובר למצב הבא Next State בסנכרון השעון.
- המצב הבא תלוי במצב הנוכחי ובכניסת המערכת.
- מוצא תלוי במצב הנוכחי של המכונה במכונה מסוג Moore ואילו ב-Mealy גם בכניסת המערכת.

דוגמה- מכונת MOORE המגלה סדרה 110



טבלת מצבים

| PS | NS X=0 | NS X=1 | Y out |
|----|-----------|-----------|-------|
| S0 | S0 | S1 | 0 |
| S1 | S0 | S2 | 0 |
| S2 | S3 | S2 | 0 |
| S3 | S0 | S1 | 1 |

| state | Q1 | Q0 |
|-------|----|----|
| S0 | 0 | 0 |
| S1 | 0 | 1 |
| S2 | 1 | 1 |
| S3 | 1 | 0 |

מימוש באמצעות DFF

| PS Q1 Q0 | NS X=0 Q1 Q0 | NS X=1 Q1 Q0 | Y out |
|-------------|--------------------|--------------------|-------|
| 0 0 | 0 0 | 0 1 | 0 |
| 0 1 | 0 0 | 1 1 | 0 |
| 1 1 | 1 0 | 1 1 | 0 |
| 1 0 | 0 0 | 0 1 | 1 |

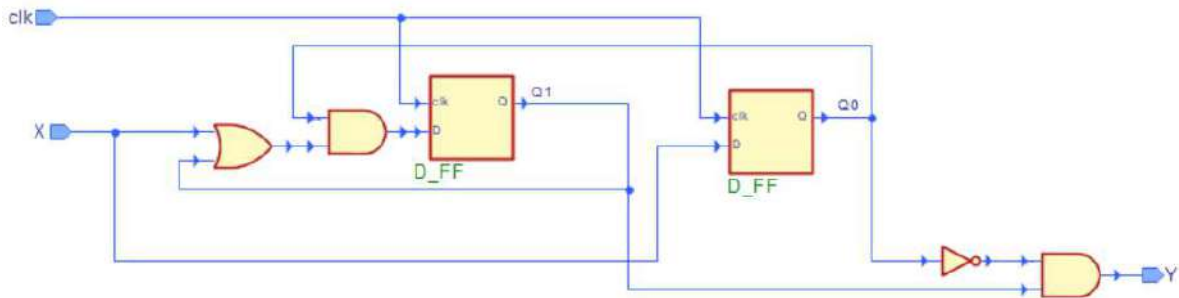
| | | Q1Q0 | | | |
|---|---|----------------|----------------|----------------|----------------|
| | | 00 | 01 | 11 | 10 |
| X | 0 | 0 ⁰ | 0 ² | 1 ⁶ | 0 ⁴ |
| | 1 | 0 ¹ | 1 ³ | 1 ⁷ | 0 ⁵ |
| | | Q1 | | | |

| | | Q1Q0 | | | |
|---|---|----------------|----------------|----------------|----------------|
| | | 00 | 01 | 11 | 10 |
| X | 0 | 0 ⁰ | 0 ² | 0 ⁶ | 0 ⁴ |
| | 1 | 1 ¹ | 1 ³ | 1 ⁷ | 1 ⁵ |
| | | Q0 | | | |

$$D_0 = X$$

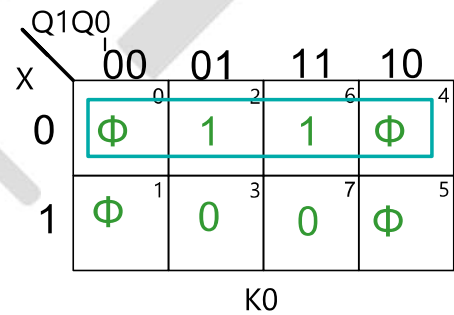
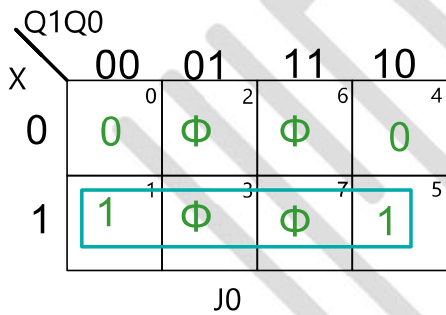
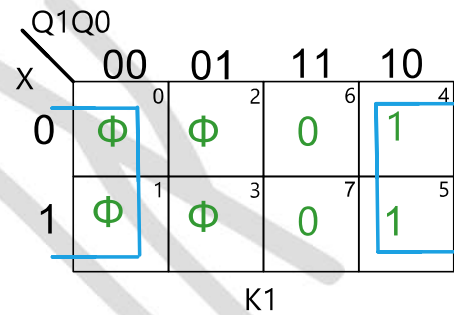
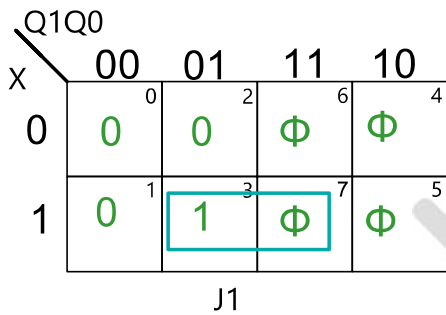
$$D_1 = Q_1 Q_0 + X Q_0 = Q_0 (Q_1 + X)$$

$$Y = Q_1 \overline{Q_0}$$



מימוש באמצעות JKFF

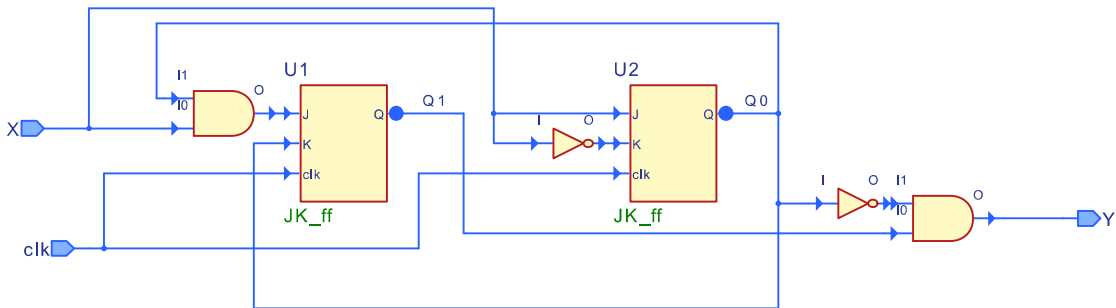
| PS | NS X=0 | | NS X=1 | | X=0 | | X=1 | | X=0 | | X=1 | | Y out |
|-------|-----------|----|-----------|----|-----|----|-----|----|-----|----|-----|----|-------|
| Q1 Q0 | Q1 | Q0 | Q1 | Q0 | Q1 | Q0 | J1 | K1 | J0 | K0 | J0 | K0 | |
| 0 0 | 0 | 0 | 0 | 1 | 0 | Φ | 0 | Φ | 0 | Φ | 1 | Φ | 0 |
| 0 1 | 0 | 0 | 1 | 1 | 0 | Φ | 1 | Φ | Φ | 1 | Φ | 0 | 0 |
| 1 1 | 1 | 0 | 1 | 1 | Φ | 0 | Φ | 0 | Φ | 1 | Φ | 0 | 0 |
| 1 0 | 0 | 0 | 0 | 1 | Φ | 1 | Φ | 1 | 0 | Φ | 1 | Φ | 1 |



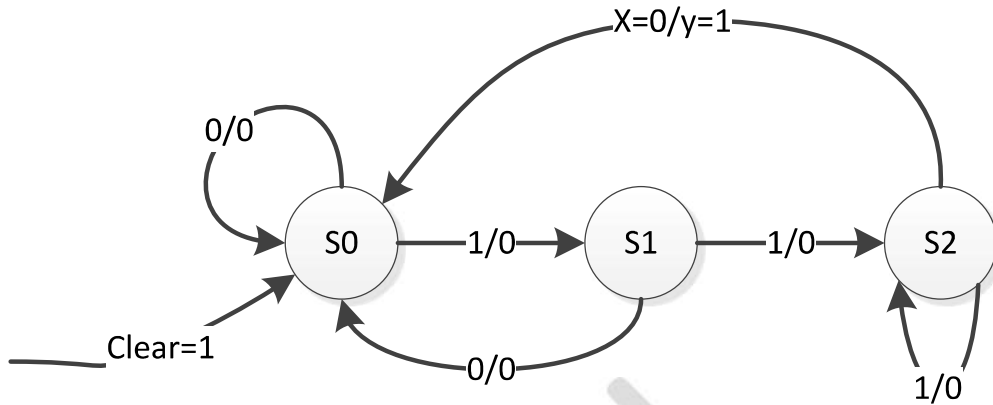
$$J_1 = XQ_0 \quad K_1 = Q_1$$

$$J_0 = X \quad K_0 = \bar{X}$$

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



מכונת mealy המגלה סדרה 110



טבלת מצבים

| PS | NS X=0 | NS X=1 | Y out X=0 | Y out X=1 |
|----|-----------|-----------|--------------|--------------|
| S0 | S0 | S1 | 0 | 0 |
| S1 | S0 | S2 | 0 | 0 |
| S2 | S0 | S2 | 1 | 0 |

| state | Q1 | Q0 |
|-------|----|----|
| S0 | 0 | 0 |
| S1 | 0 | 1 |
| S2 | 1 | 1 |
| S3 | 1 | 0 |

מימוש באמצעות DFF

| PS | | NS | | NS | | Y out | | Y out | |
|----|----|--------|--------|--------|--------|--------|--|--------|--|
| Q1 | Q0 | X=0 | | X=1 | | X=0 | | X=1 | |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | | 0 | |
| 0 | 1 | 0 | 0 | 1 | 1 | 0 | | 0 | |
| 1 | 1 | 0 | 0 | 1 | 1 | 1 | | 0 | |
| 1 | 0 | Φ | Φ | Φ | Φ | Φ | | Φ | |

Q1Q0

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

Q1

Q1Q0

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

Q0

Q1Q0

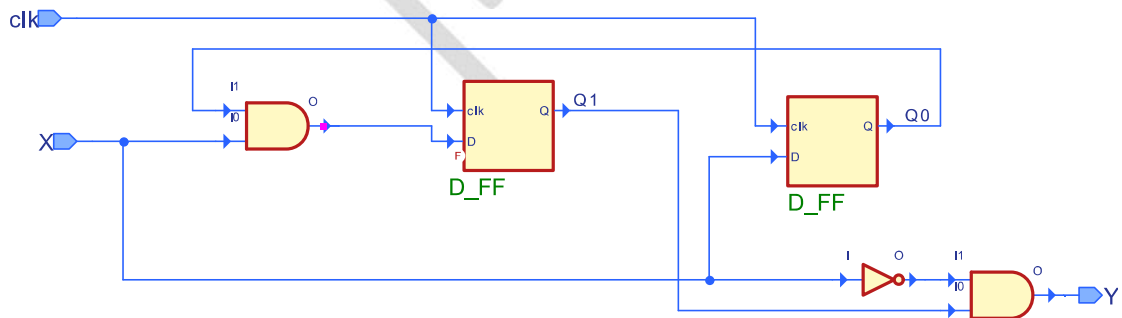
| X | 00 | 01 | 11 | 10 |
|---|----|----|----|--------|
| 0 | 0 | 0 | 1 | Φ |
| 1 | 0 | 0 | 0 | Φ |

Y

$$D_0 = X$$

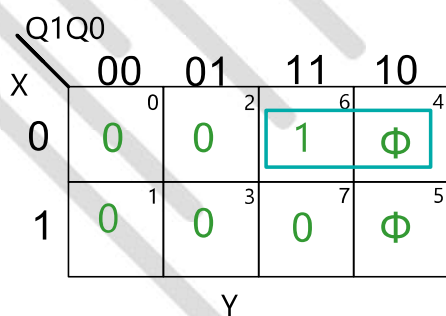
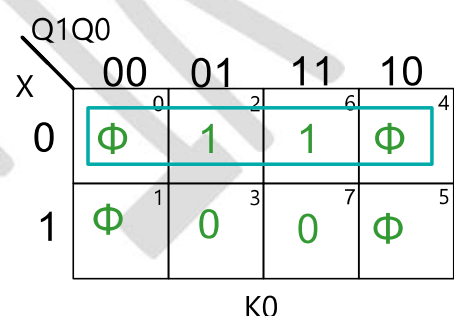
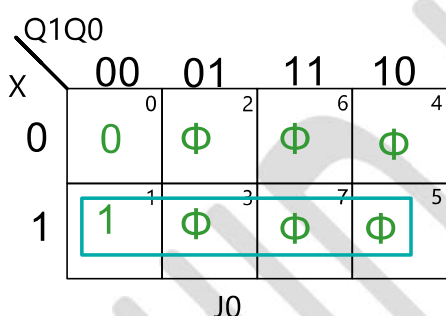
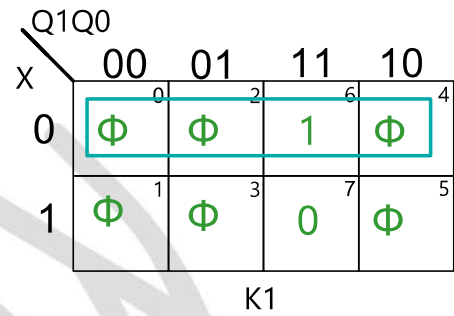
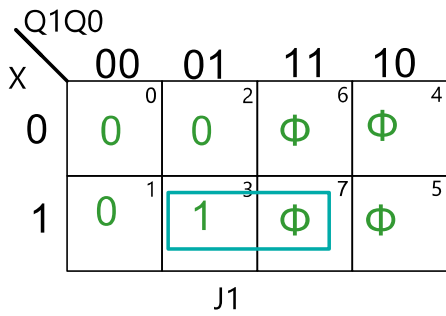
$$D_1 = XQ_0$$

$$Y = Q_1 \bar{X}$$



מימוש באמצעות JKFF

| PS | NS | NS | X=0 | X=1 | X=0 | X=1 | Y out | Y out |
|-------|---------------|---------------|---------------|---------------|---------------|---------------|--------|--------|
| Q1 Q0 | X=0 | X=1 | | | | | X=0 | X=1 |
| Q1 Q0 | Q1 Q0 | Q1 Q0 | J1 K1 | J1 K1 | J0 K0 | J0 K0 | | |
| 0 0 | 0 0 | 0 1 | 0 Φ | 0 Φ | 0 Φ | 1 Φ | 0 | 0 |
| 0 1 | 0 0 | 1 1 | 0 Φ | 1 Φ | Φ 1 | Φ 0 | 0 | 0 |
| 1 1 | 0 0 | 1 1 | Φ 1 | Φ 0 | Φ 1 | Φ 0 | 1 | 0 |
| 1 0 | Φ Φ | Φ Φ | Φ Φ | Φ Φ | Φ Φ | Φ Φ | Φ | Φ |



$$J_1 = XQ_0 \quad K_1 = \bar{X} \quad Y = Q_1\bar{X}$$

$$J_0 = X \quad K_0 = \bar{X}$$

