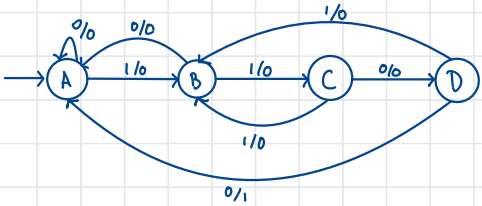
| Materia: Organización y Arquitectura de Computadoras | | Tarea 2 |
|---|---|---|
| Alumno: Becerril Olivar Axel Daniel | No. Cuenta: 317137888 | Fecha: 22-Feb-2025 |

Diseñar una máquina que detecte la secuencia de entrada 0011 empezando por el bit menos significativo.

## MEALY

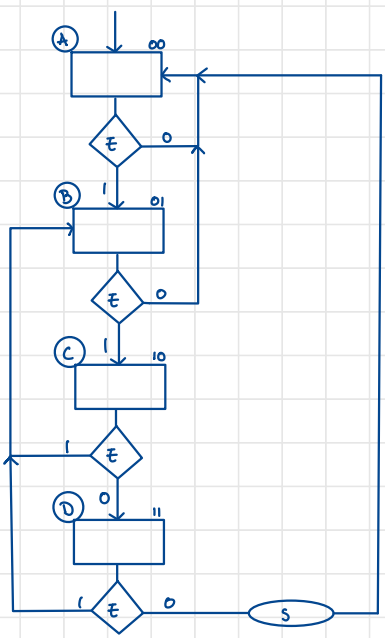
### Máquina de estados




### Tabla de verdad para Flip-Flop D

| | $Q_1$ | $Q_0$ | E | $D_1$ | $D_0$ | S |
|---|---|---|---|---|---|---|
| (A) | 0 | 0 | 0 | 0 | 0 | 0 |
| (A) | 0 | 0 | 1 | 0 | 1 | 0 |
| (B) | 0 | 1 | 0 | 0 | 0 | 0 |
| (B) | 0 | 1 | 1 | 1 | 0 | 0 |
| (C) | 1 | 0 | 0 | 1 | 1 | 0 |
| (C) | 1 | 0 | 1 | 0 | 1 | 0 |
| (D) | 1 | 1 | 0 | 0 | 0 | 1 |
| (D) | 1 | 1 | 1 | 0 | 1 | 0 |

### Carta ASM




### Mapa de Karnaugh

**$D_1$**

| E \ $Q_1Q_0$ | 00 | 01 | 11 | 10 |
|---|---|---|---|---|
| 0 | | | | 1 |
| 1 | | 1 | | |

$$D_1 = \bar{Q}_1 Q_0 E + Q_1 \bar{Q}_0 \bar{E}$$

**$D_0$**

| E \ $Q_1Q_0$ | 00 | 01 | 11 | 10 |
|---|---|---|---|---|
| 0 | | | | 1 |
| 1 | 1 | | 1 | 1 |

$$D_0 = \bar{Q}_0 E + Q_1 \bar{Q}_0 + Q_1 \bar{E}$$

**S**

| E \ $Q_1Q_0$ | 00 | 01 | 11 | 10 |
|---|---|---|---|---|
| 0 | | | 1 | |
| 1 | | | | |

$$S = Q_1 Q_0 \bar{E}$$

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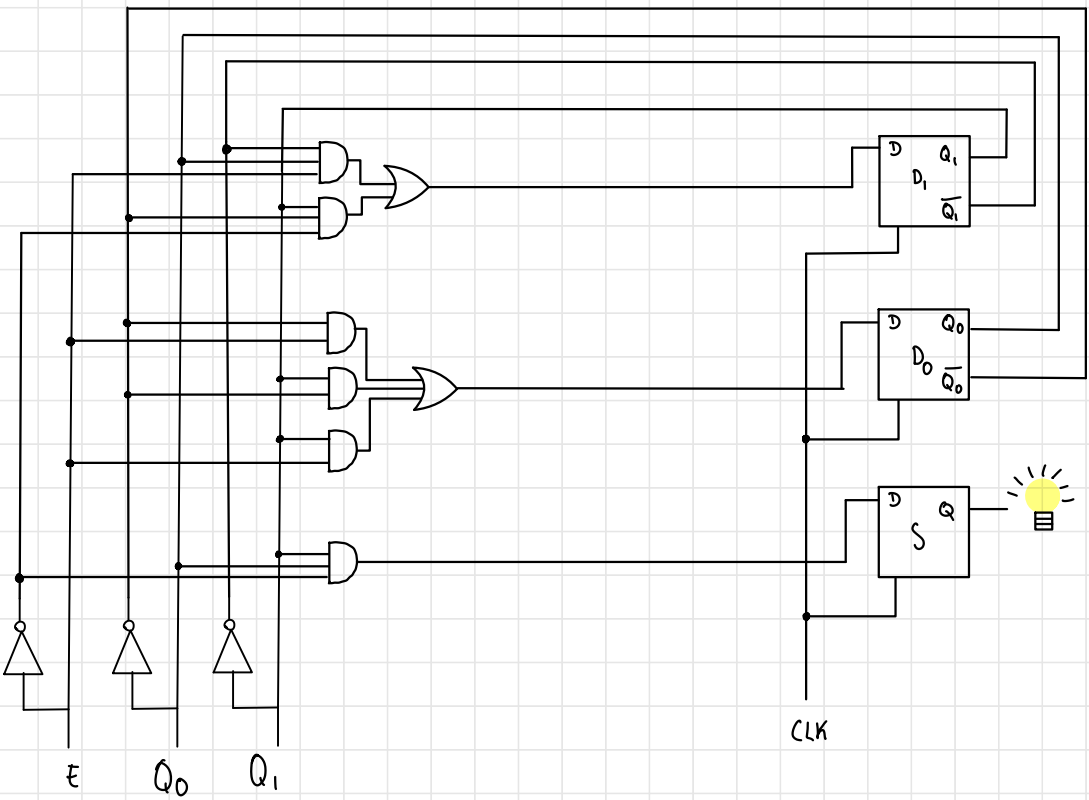
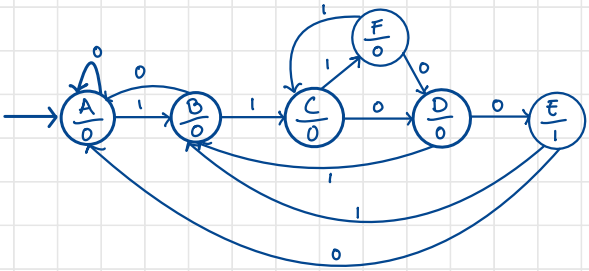
## Circuito para máquina Mealy




## Moore

### Máquina de estados



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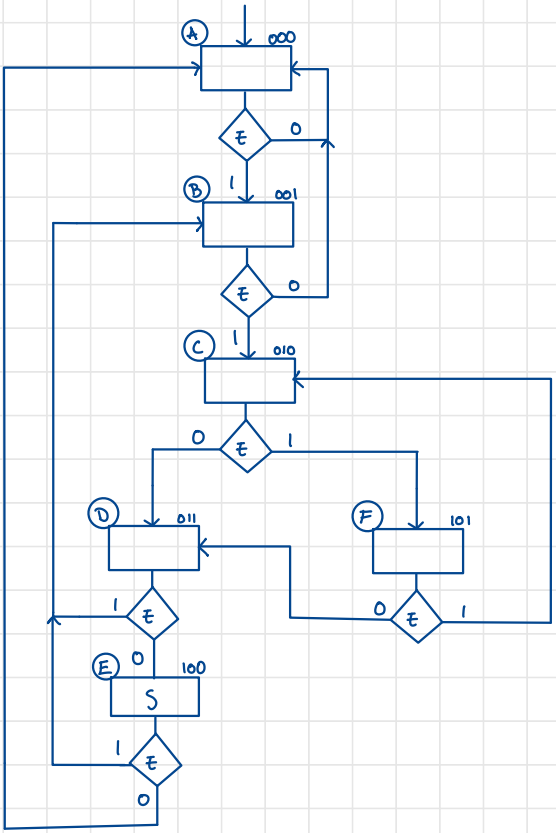
## Carta ASM




## Tabla de verdad para Flip-Flop D

| | $Q_0$ | $Q_1$ | $Q_2$ | E | $D_0$ | $D_1$ | $D_2$ | S |
|---|---|---|---|---|---|---|---|---|
| A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| B | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| B | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| C | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| C | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| D | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| D | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| E | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| E | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| F | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| F | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |

## Mapas de Karnaugh

$D_0$

| $Q_2E$ \ $Q_0Q_1$ | 00 | 01 | 11 | 10 |
|---|---|---|---|---|
| 00 | | | | |
| 01 | | 1 | | |
| 11 | | | | |
| 10 | | 1 | | |

$$D_0 = \bar{Q}_0 Q_1 \bar{Q}_2 E + \bar{Q}_0 Q_1 Q_2 \bar{E}$$

$D_1$

| $Q_2E$ \ $Q_0Q_1$ | 00 | 01 | 11 | 10 |
|---|---|---|---|---|
| 00 | | 1 | | |
| 01 | | | | |
| 11 | 1 | | | 1 |
| 10 | | | | 1 |

$$D_1 = \bar{Q}_0 Q_1 \bar{Q}_2 \bar{E} + \bar{Q}_0 \bar{Q}_1 Q_2 E + Q_0 \bar{Q}_1 Q_2$$

$S$

| $Q_2E$ \ $Q_0Q_1$ | 00 | 01 | 11 | 10 |
|---|---|---|---|---|
| 00 | | | | 1 |
| 01 | | | | 1 |
| 11 | | | | |
| 10 | | | | |

$$S = Q_0 \bar{Q}_1 \bar{Q}_2$$

$D_2$

| $Q_2E$ \ $Q_0Q_1$ | 00 | 01 | 11 | 10 |
|---|---|---|---|---|
| 00 | | 1 | | |
| 01 | 1 | 1 | | 1 |
| 11 | | 1 | | |
| 10 | | | | 1 |

$$D_2 = Q_0 \bar{Q}_1 Q_2 \bar{E} + \bar{Q}_1 \bar{Q}_2 E + \bar{Q}_0 Q_1 \bar{Q}_2 + \bar{Q}_0 Q_1 E$$

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## Circuito para máquina Moore