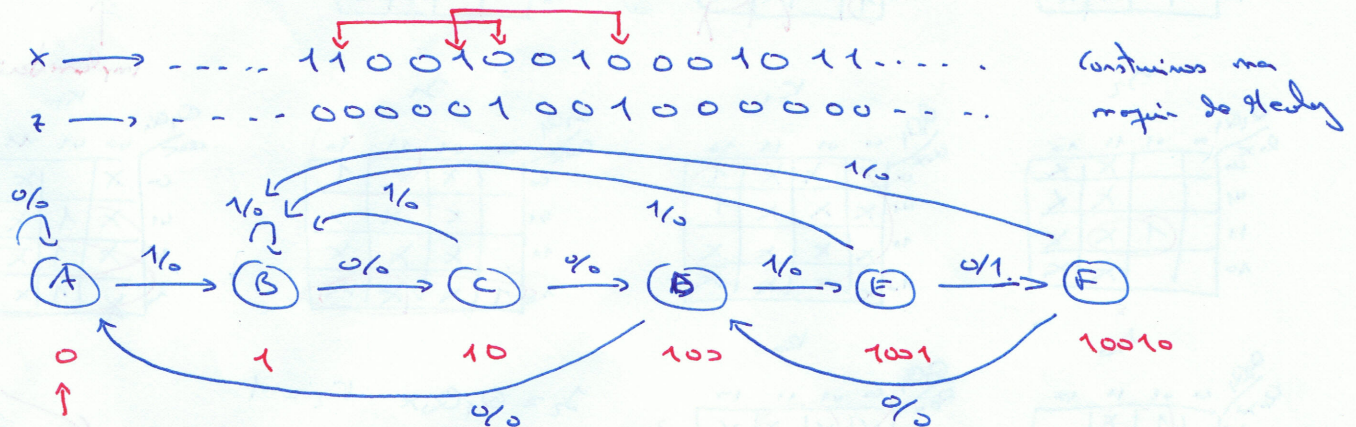


3 Dissenyau un detector per la seqüència ..10010.. que pot estar solapada.  
La sortida ha de ser 1 en el moment de rebre el darrer 0.



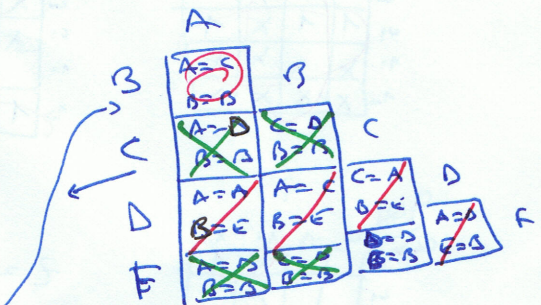
no ha començat la seqüència  
per tant li ve que ve un 0

$Q_{t+1/2}$

| $Q_t$ | $x=0$ | $x=1$ |
|-------|-------|-------|
| A     | A/0   | B/0   |
| B     | C/0   | b/0   |
| C     | D/0   | B/0   |
| D     | A/0   | E/0   |
| E     | F/1   | B/0   |
| F     | D/0   | B/0   |

$C \equiv F$

5 estats  
111  
3 FF



$E \neq \text{al cost} \rightarrow D \neq \text{al cost}$   
 $C \neq A \rightarrow C \equiv F$

A=000  
B=001  
C=010  
D=011  
E=100

elecció arbitrària  
(puede haber me mejor)

no sabem 3 estats

Ara veim també en les FF que  
quien, la vegada que ve 'D' y m  
lyk)

$Q_t Q_{t+1} K$

|   |   |   |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 0 |

|    | $Q_2$ | $Q_1$ | $Q_0$ | $x$ | $Q_2^+$ | $Q_1^+$ | $Q_0^+$ | $z$ | $D_2$ | $D_1$ | $D_0$ | $K_2$ | $K_1$ | $K_0$ |
|----|-------|-------|-------|-----|---------|---------|---------|-----|-------|-------|-------|-------|-------|-------|
| 0  | A     | 0     | 0     | 0   | 0       | 0       | 0       | 0   | 0     | 0     | 0     | 0     | x     | x     |
| 1  | A     | 0     | 0     | 1   | 0       | 0       | 1       | 0   | 0     | 0     | 1     | x     | x     | x     |
| 2  | B     | 0     | 0     | 1   | 0       | 0       | 1       | 0   | 0     | 1     | 0     | x     | x     | 1     |
| 3  | B     | 0     | 0     | 1   | 1       | 0       | 1       | 1   | 0     | 0     | 1     | x     | x     | 0     |
| 4  | C     | 0     | 1     | 0   | 0       | 0       | 1       | 1   | 0     | 0     | 1     | x     | x     | x     |
| 5  | C     | 0     | 1     | 0   | 1       | 0       | 1       | 1   | 0     | 0     | 1     | x     | x     | 1     |
| 6  | D     | 0     | 1     | 1   | 0       | 0       | 0       | 0   | 1     | 0     | 0     | x     | x     | 1     |
| 7  | D     | 0     | 1     | 1   | 1       | 1       | 0       | 0   | 0     | 0     | 0     | 1     | x     | 1     |
| 8  | E     | 1     | 0     | 0   | 0       | 0       | 1       | 0   | 0     | 1     | 0     | x     | 1     | x     |
| 9  | E     | 1     | 0     | 0   | 1       | 0       | 0       | 1   | 0     | 0     | 1     | x     | 1     | x     |
| 10 |       | 1     | 0     | 1   | 0       | x       | x       | x   | x     | x     | x     | x     | x     | x     |
| 11 |       | 1     | 0     | 1   | 1       | x       | x       | x   | x     | x     | x     | x     | x     | x     |
| 12 |       | 1     | 1     | 0   | 0       | x       | x       | x   | x     | x     | x     | x     | x     | x     |
| 13 |       | 1     | 1     | 0   | 1       | x       | x       | x   | x     | x     | x     | x     | x     | x     |
| 14 |       | 1     | 1     | 1   | 0       | x       | x       | x   | x     | x     | x     | x     | x     | x     |
| 15 |       | 1     | 1     | 1   | 1       | x       | x       | x   | x     | x     | x     | x     | x     | x     |

u can also use the Karnaugh map for 2 cases



$Q_2 Q_1$

| $Q_2 \backslash Q_1$ | 00 | 01 | 11 | 10 |
|----------------------|----|----|----|----|
| 1                    |    |    | X  |    |
| 0                    |    | X  |    |    |
| 1                    |    |    | X  | X  |
| 0                    |    | X  | X  | X  |

$Q_2 Q_1$

| $Q_2 \backslash Q_1$ | 00 | 01 | 11 | 10 |
|----------------------|----|----|----|----|
| 1                    |    | 1  | 1  | 1  |
| 0                    |    |    | X  |    |
| 1                    |    |    | X  | X  |
| 0                    |    |    | X  | X  |

$Q_2 Q_1$

| $Q_2 \backslash Q_1$ | 00 | 01 | 11 | 10 |
|----------------------|----|----|----|----|
| 1                    |    | 1  | 1  | 1  |
| 0                    |    | 1  | 1  | 1  |
| 1                    |    |    | X  | X  |
| 0                    |    |    | X  | X  |

$$D_2 = Q_1 Q_0 x$$

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

$$D_0 = \bar{Q}_1 x + Q_1 \bar{Q}_0$$

implementation - simplify

$Q_2 Q_1$

| $Q_2 \backslash Q_1$ | 00 | 01 | 11 | 10 |
|----------------------|----|----|----|----|
| 1                    |    |    | X  | X  |
| 0                    |    | X  | X  | X  |
| 1                    |    |    | X  | X  |
| 0                    |    | X  | X  | X  |

$Q_2 Q_1$

| $Q_2 \backslash Q_1$ | 00 | 01 | 11 | 10 |
|----------------------|----|----|----|----|
| 1                    |    | X  | X  | 1  |
| 0                    |    | X  | X  | 1  |
| 1                    |    | X  | X  | X  |
| 0                    |    | X  | X  | X  |

$Q_2 Q_1$

| $Q_2 \backslash Q_1$ | 00 | 01 | 11 | 10 |
|----------------------|----|----|----|----|
| 1                    |    | X  | X  | 1  |
| 0                    |    | X  | X  | X  |
| 1                    |    | X  | X  | X  |
| 0                    |    | X  | X  | X  |

$Q_2 Q_1$

| $Q_2 \backslash Q_1$ | 00 | 01 | 11 | 10 |
|----------------------|----|----|----|----|
| 1                    | X  |    | X  | X  |
| 0                    | X  | 1  | X  | X  |
| 1                    | X  | 1  | X  | X  |
| 0                    | X  | 1  | X  | X  |

$Q_2 Q_1$

| $Q_2 \backslash Q_1$ | 00 | 01 | 11 | 10 |
|----------------------|----|----|----|----|
| 1                    | 1  | 1  | X  | X  |
| 0                    | 1  | 1  | X  | X  |
| 1                    | X  | X  | X  | X  |
| 0                    | X  | X  | X  | X  |

$Q_2 Q_1$

| $Q_2 \backslash Q_1$ | 00 | 01 | 11 | 10 |
|----------------------|----|----|----|----|
| 1                    | X  | X  | X  | X  |
| 0                    | X  | X  | X  | X  |
| 1                    | X  | X  | X  | X  |
| 0                    | X  | X  | X  | X  |

$$J_2 = Q_1 Q_0 x \quad K_2 = 1$$

$$J_1 = Q_0 \bar{x} + Q_2 \bar{x}, \quad K_1 = Q_0 + x$$

$$J_0 = Q_1 + x, \quad K_0 = Q_1 + \bar{x}$$

implementation result

$Q_2 Q_1$

| $Q_2 \backslash Q_1$ | 00 | 01 | 11 | 10 |
|----------------------|----|----|----|----|
| 1                    |    |    | X  | 1  |
| 0                    |    |    | X  | 1  |
| 1                    |    |    | X  | X  |
| 0                    |    |    | X  | X  |

$$Z = Q_2 \bar{x}$$

