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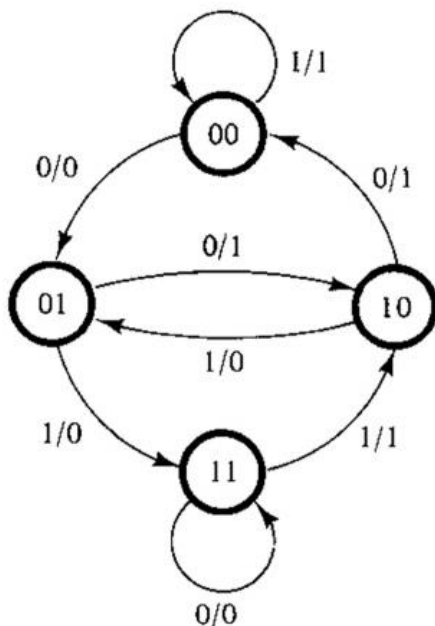
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From the given STD, we will take inputs.

No of Flip-Flops to be used= $\text{ceil}(\log_2 n)$ where n is no of states

We will understand further algorithm with the help of an example.

Given State Diagram



Here $n=4$, So no of flip-flop we will use is $\text{ceil}(\log_2 4)=2$

Let's say we use D-flip flop.

Excitation Table for D-flip-flop :-

Q_n	Q_{n+1}	D
0	0	0
0	1	1
1	0	0
1	1	1

I (Input)	Y0 (present state)	Y1 (present state)	X0 (next state)	X1 (next state)	Z (Output)	D0	D1
0	0	0	0	1	0	0	1
1	0	0	0	0	1	0	0
0	0	1	1	0	1	1	0
1	0	1	1	1	0	1	1
0	1	1	1	1	0	1	1
1	1	1	1	0	1	1	0
1	1	0	0	1	0	0	1
0	1	0	0	0	1	0	0

Now, We want Equation for Z, D0 and D1. We will use k-map.

Handwritten Karnaugh maps and equations for D0, D1, and Z:

For D0:

	00	01	11	10
0		1	1	
1		1	1	

$$D_0 = y_1$$

For D1:

	00	01	11	10
0	1		1	
1		1		1

$$D_1 = \bar{x}_0 \bar{y}_1 + \bar{x}_0 y_1 + \bar{x}_1 y_0 + x_1 y_0$$

For Z:

	00	01	11	10
0		1		1
1	1		1	

$$Z = \bar{x}_0 \bar{y}_1 + \bar{x}_1 y_0 + x_0 y_1 + x_1 y_0$$

Now, we will make the circuit using the above Equations.