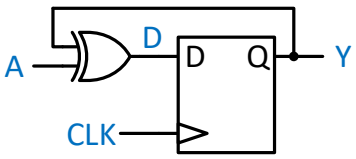
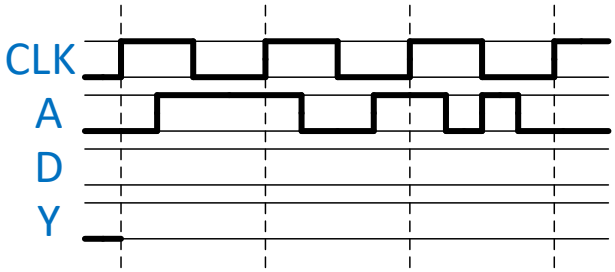
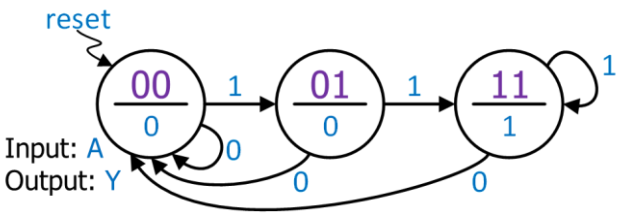
Sequential Circuit Waveform





State Machine Analysis



Input signals?

Output signals?

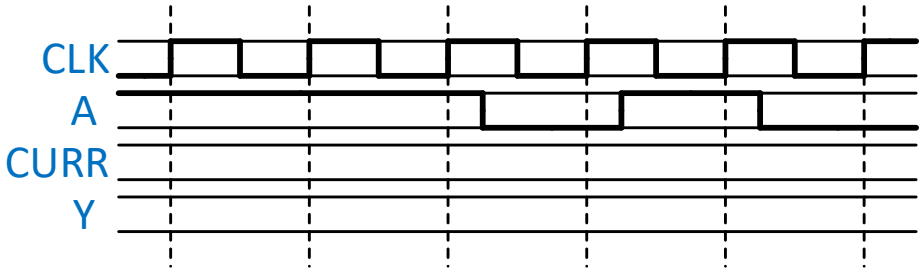
What are the states?

How many flip-flops?

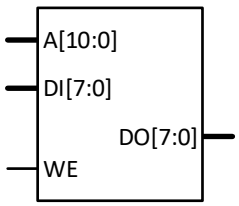
State Table

CURR STATE		INPUT A	NEXT STATE	OUTPUT Y
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

Waveform



Memory



How many address bits?

How many unique address values?

How many locations?

How many bits per location?

What is the word size?

What is the memory's capacity?

How do you write to a location?

How do you read from a location?

FSM Design

Draw a state diagram for an FSM that will flash a light in two repeating sequences, either OFF-**ON**-... or OFF-OFF-OFF-**ON**-... (i.e., ½ or ¼ time)

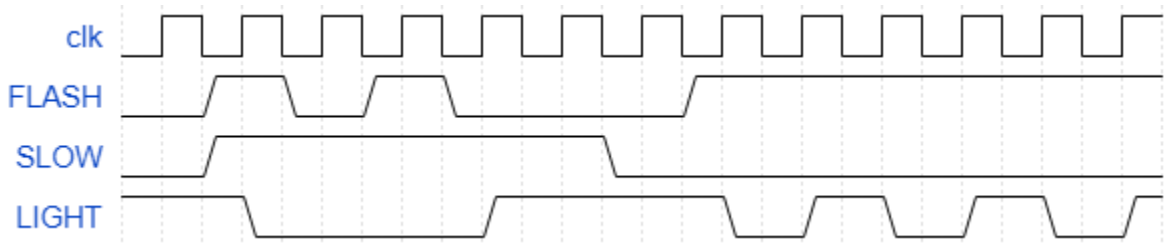
Inputs:

- **FLASH** – flash light if 1, leave light ON constantly otherwise (always finish current flash sequence)
- **SLOW** – flash ¼ time if 1, ½ time otherwise (ignore SLOW except when starting a flash sequence)

Output:

- **LIGHT** – light is ON if 1, OFF if 0

Example Waveform



State Diagram