NEC 304

STLD

Transformation between Mealy and Moore Machines

Rajeev Pandey

Department Of ECE

rajeevvce2007@gmail.com

Outlines

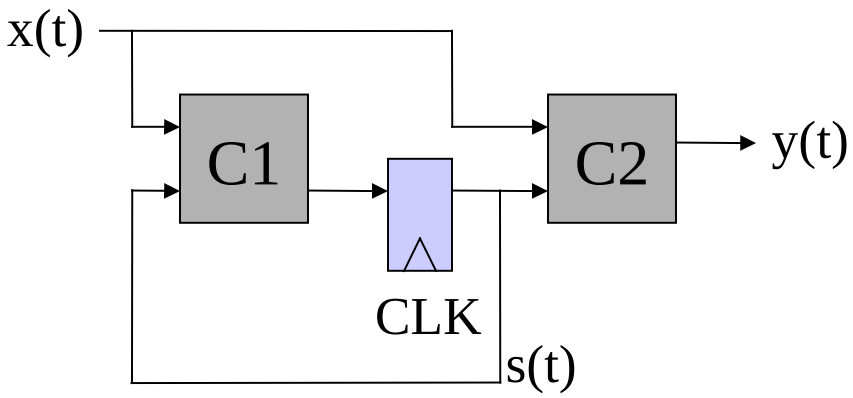
- Framework
- Procedure
- Example: Transform
- Example: State Diagram
- Example: Output Sequence

Transform from Mealy to Moore Machine

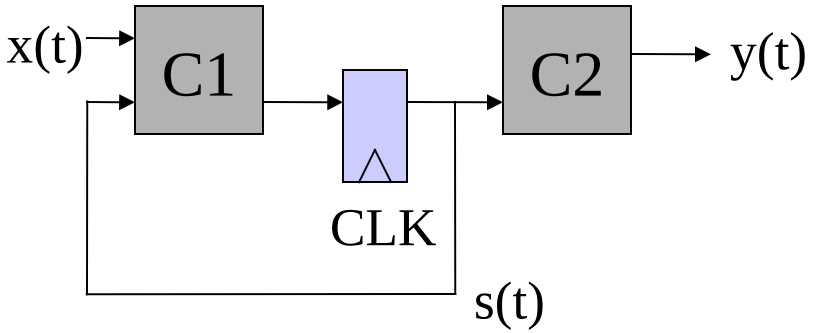
Mealy Machine: $y(t) = f(x(t), s(t))$

Moore Machine: $y(t) = f(s(t))$

$$s(t+1) = g(x(t), s(t))$$



Mealy Machine



Moore Machine

Transform from Mealy to Moore Machine

Algorithm
Input: State Table of Mealy machine

1) For each NS, z = S_i,y_j create a state $S_i^{(j)}$

2) For each new state $S_i^{(j)}$, repeat the row PS = S_i

3) Replace NS, z = S_i,y_j with state $S_i^{(j)}$.

Set output z = y_j for row PS = $S_i^{(j)}$

Example

Mealy Machine:

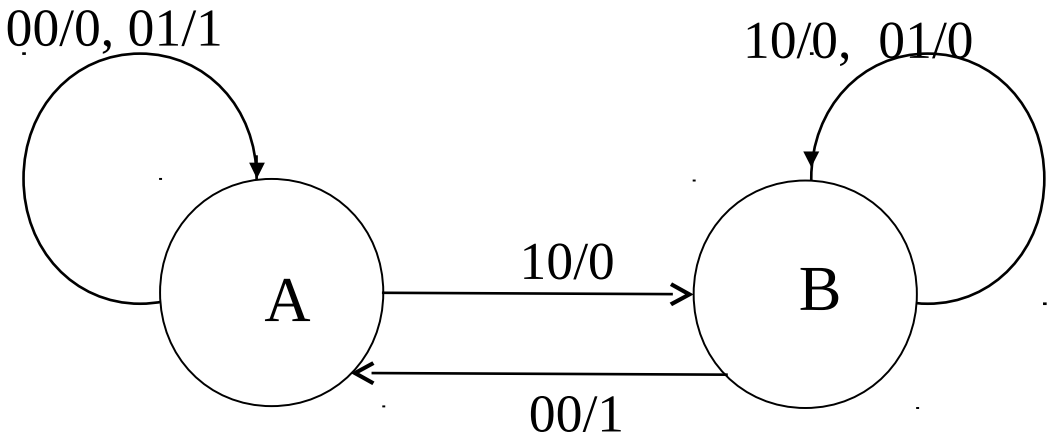
PS	00	01	10	(x,y)
A	A,0	A,1	B,0	
B	A,1	B,0	B,0	(NS, z)

Moore Machine:

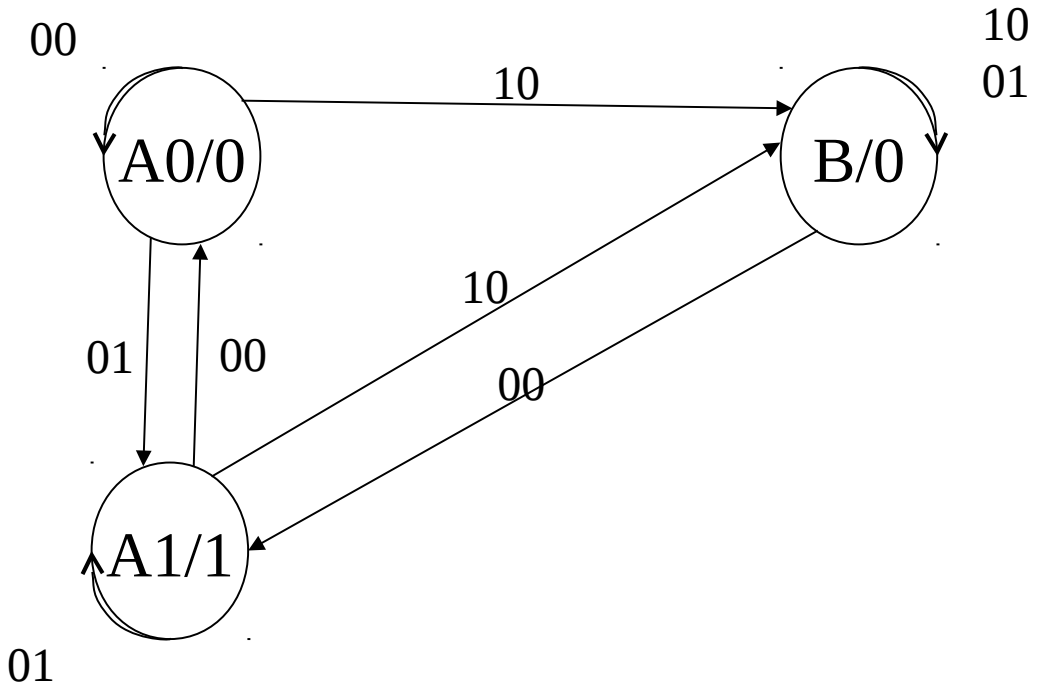
PS	00	01	10	(x,y)	z
A0	A0	A1	B		0
A1	A0	A1	B		1
B	A1	B	B		0

State Diagram

Mealy Machine



Moore Machine



Timing Diagrams

	Time step	0	1	2	3	4	5	
	x	0	0	1	0	0	0	
	y	0	1	0	0	1	1	
Mealy	S	A	A	A	B	A	A	A
	z	0	1	0	1	1	1	
Moore	S	A0	A0	A1	B	A1	A1	A1
	z	0	0	1	0	1	1	1

The output shifts by one clock from Mealy to Moore machine