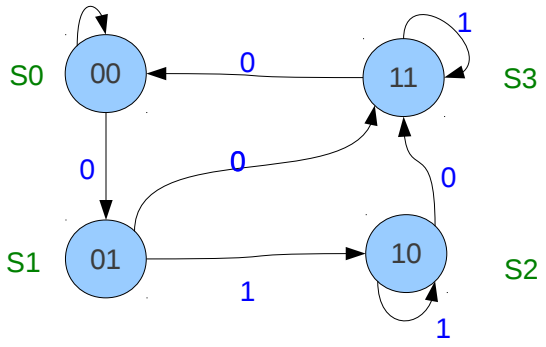


Table 5.4

present State		input	next State		FF Inputs			
A	B	x	A	B	JA	KA	JB	KB
0	0	0	0	1	0	0	1	0
0	0	1	0	0	0	0	0	1
0	1	0	1	1	1	1	1	0
0	1	1	1	0	1	0	0	1
1	0	0	1	1	0	0	1	1
1	0	1	1	0	0	0	0	0
1	1	0	0	0	1	1	1	1
1	1	1	1	1	1	0	0	0

pres	next		
A(t)	A(t+1)	JA	KA
0	0	0	X
0	0	0	X
0	1	1	X
0	1	1	X
1	1	X	0
1	1	X	0
1	0	X	1
1	1	X	0

pres	next		
B(t)	B(t+1)	JB	KB
0	1	1	X
0	0	0	X
1	1	X	0
1	0	X	1
0	1	1	X
0	0	0	X
1	0	X	1
1	1	X	0

JK FlipFlop Characteristic Tables

JK FF

J	K	Q(t+1)	
0	0	Q(t)	hold
0	1	0	reset
1	0	1	set

1	1	Q'(t)	toggle

clock

	Q(t)	Q(t+1)
output	Q(t)	Q(t)
output	X	0
output	X	1
output	Q(t)	Q'(t)

JK FF Excitation Table

Q(t)	Q(t+1)		J	K	J	K	
0	1	set toggle	1 1	0 1	1	X	J=1 makes Q change to 1
1	0	reset toggle	0 1	1 1	X	1	K=1 makes Q change to 0
0	0	hold reset	0 0	0 1	0	X	J=0 maintains Q to 0
1	1	hold set	0 1	0 0	X	0	K=0 maintains Q to 1

present State		input	FF Inputs			
A	B	x	JA	KA	JB	KB
0	0	0	0	X	1	X
0	0	1	0	X	0	X
0	1	0	1	X	X	0
0	1	1	1	X	X	1
1	0	0	X	0	1	X
1	0	1	X	0	0	X
1	1	0	X	1	X	1
1	1	1	X	0	X	0

x'	x	x'

	B'		B	
A'	0	1	3	2
A	4	5	7	6

JA = B

	x'		x	x'
	B'		B	
A'	0	0	1	1
A	x'	X	X	X

KA = Bx'

	x'		x	x'
	B'		B	
A'	X	X	X	X
A	0	0	0	1

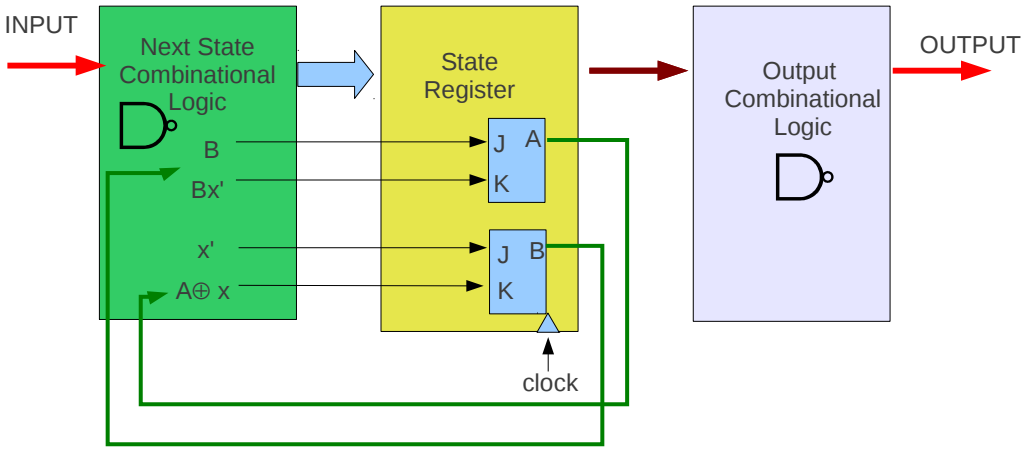
JB = x'

	x'		x	x'
	B'		B	
A'	1	0	X	X
A	1	0	X	X

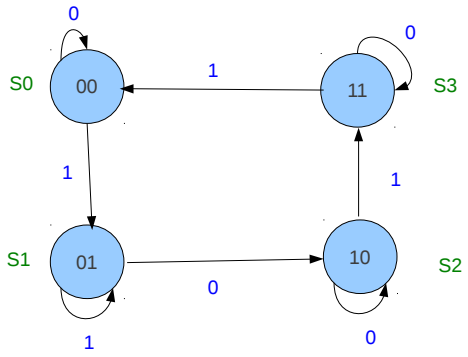
KB = A'x + Ax' = A ⊕ x

	x'		x	x'
	B'		B	
A'	X	X	1	0
A	X	X	0	1

Moore Machine



State Diagram from Table 5.13



present State		input	next State		FF Inputs			
A	B	x	A	B	JA	KA	JB	KB
0	0	0	0	0				
0	0	1	0	1				
0	1	0	1	0				
0	1	1	0	1				
1	0	0	1	0				
1	0	1	1	1				
1	1	0	1	1				
1	1	1	0	0				

A(t)	A(t+1)	JA	KA
0	0	0	X
0	0	0	X
0	1	1	X
0	0	0	X
1	1	X	0
1	1	X	0
1	1	X	0
1	0	X	1

B(t)	B(t+1)	JB	KB
0	0	0	X
0	1	1	X
1	0	X	1
1	1	X	0
0	0	0	X
0	1	1	X
1	1	X	0
1	0	X	1

present State		input	next State		FF Inputs			
A	B	x	A	B	JA	KA	JB	KB
0	0	0	0	0	0	X	0	X
0	0	1	0	1	0	X	1	X
0	1	0	1	0	1	X	X	1
0	1	1	0	1	0	X	X	0
1	0	0	1	0	X	0	0	X
1	0	1	1	1	X	0	1	X
1	1	0	1	1	X	0	X	0

1	1	1	0	0	X	1	X	1

JA=Bx'

	x'	x		x'
	B'		B	
A'	0	0	0	1
A	X	X	X	X

KA = Bx

	x'	x		x'
	B'		B	
A'	X	X	X	X
A	0	0	1	0

JB = x

	x'	x		x'
	B'		B	
A'	0	1	X	X
A	0	1	X	X

KB = A'x' + Ax = (A ⊕ x)'

	x'	x		x'
	B'		B	
A'	X	X	0	1
A	X	X	1	0

Output = B

	x'	x		x'
	B'		B	
A'	0	0	0	0
A	0	0	1	1

present State		input	next State		FF Inputs		
A	B	x	A	B	TA	TB	output
0	0	0	0	0			0
0	0	1	0	1			0
0	1	0	0	1			0
0	1	1	1	0			0
1	0	0	1	0			0
1	0	1	1	1			0
1	1	0	1	1			1
1	1	1	0	0			1

A(t)	A(T+1)	TA
0	0	0
0	0	0
0	0	0
0	1	1
1	1	0
1	1	0
1	1	0
1	0	1

B	B	TB
0	0	0
0	1	1
1	1	0
1	0	1
0	0	0
0	1	1
1	1	0
1	0	1

TA=Bx

	x'	x		x'
	B'		B	
A'	0	0	1	0
A	0	0	1	0

TB=x

	x'	x		x'
	B'		B	
A'	0	1	1	0
A	0	1	1	0