King Fahd University of Petroleum & Minerals

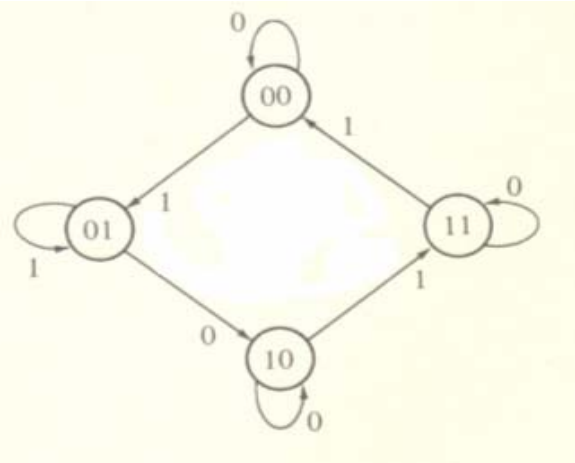
College of Computer Sciences and Engineering

Department of Computer Engineering

COE 202: Fundamentals of Computer Engineering (071)

Assignment 5

1. Implement the following state diagram using SR and T flip flops.



2. Re-solve the following table by using

A → JK flip-flop
B → D flip-flop
C → T flip-flop

Present state			Input	Next state			Flip-flop inputs						Output
A	*B*	*C*	*x*	*A*	*B*	*C*	*SA*	*RA*	*SB*	*RB*	*SC*	*RC*	*y*
0	0	1	0	0	0	1	0	*X*	0	*X*	*X*	0	0
0	0	1	1	0	1	0	0	*X*	1	0	0	1	0
0	1	0	0	0	1	1	0	*X*	*X*	0	1	0	0
0	1	0	1	1	0	0	1	0	0	1	0	*X*	0
0	1	1	0	0	0	1	0	*X*	0	1	*X*	0	0
0	1	1	1	1	0	0	1	0	0	1	0	1	0
1	0	0	0	1	0	1	*X*	0	0	*X*	1	0	0
1	0	0	1	1	0	0	*X*	0	0	*X*	0	*X*	1
1	0	1	0	0	0	1	0	1	0	*X*	*X*	0	0
1	0	1	1	1	0	0	*X*	0	0	*X*	0	1	1

3. A sequential circuit has one input and one output. The state diagram is shown below. Design the sequential circuit using D flip-flops and ROM.