

EE2000 Assignment 2

- Use (i) implication table and (ii) partitioning methods to obtain a reduced state table with minimum number of states from the state table shown in Fig. Q1.
- Find the state diagram and the function of this circuit shown in Fig. Q2. (Show all the steps involved solving this question.)

PS	NS/Output	
	x=0	x=1
A	D/0	F/0
B	D/0	A/1
C	D/1	B/0
D	C/1	E/0
E	D/0	F/1
F	C/0	G/0
G	D/0	F/0
H	E/0	G/1

Fig. Q1

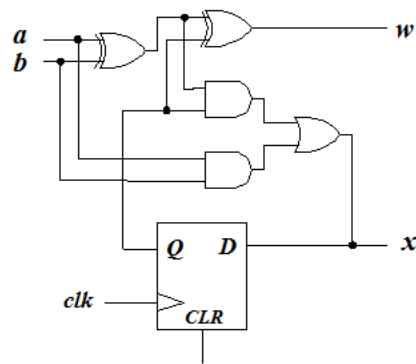


Fig. Q2

- Use JK FFs to design a sequential circuit that follows the operation as described below:
 - For current output-count is (0,2,4,6), its next count will be its next odd count when E=0, otherwise, its next count will be its next even count.
 - For current output-count is (1,3,5,7), its next count will be its next even count when E=0, otherwise, its next count will be its next odd count.
- A sequential logic circuit with one input and one output is used to stretch the first two bits of a 4-bit sequence as follows:

Input, x	Output, y
00XX	0000
01XX	0011
10XX	1100
11XX	1111

The circuit will ignore the third and fourth bits of the input sequence. After every four bits, the circuit resets.

- Draw a Mealy machine to describe the behavior of this sequential circuit.
 - Obtain a state table for the circuit (minimum of 7 states).
- A sequential data a is fed a monitoring circuit with 2 output w and x . w will set to 1 if a pattern of 1100 is detected; and x will be set 1 to if a pattern of 1011. Draw a state diagram to illustrate the operation of this monitoring circuit (a single state diagram to cover both detections). Use state reduction technique to obtain a minimal state diagram.