Assignment 1

Problem 1 : Design Combinational Circuit

Simplify the following functions using Karnaugh Maps, draw the circuit.

1. $F(W, X, Y, Z) = \sum m(0, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15)$

$$\Rightarrow F = W + X'Z' + X'Y$$

2. $F(W, X, Y, Z) = \sum m(3, 9, 11, 12, 13, 14, 15) + \sum d(1, 4, 6)$

3. $F(A, B, C, D) = AC'D' + A'C + ABC + AB'C + A'C'D'$

4. $F(A, B, C, D) = A'B'C'D + CD + AC'D$

Promblem 2 : Design Sequential Circuit

Current State (S)	Next State (S')		Output (Z)
	X=0	X=1	
A	F	B	0
B	A	F	1
C	A	D	1
D	F	E	0
E	D	B	1
F	D	E	0

For the given state table, design the circuit for FSM using JK Flip-Flop.

Promblem 3 : ModelSim

1. Install ModelSim

2. Read ModelSim Tutorial book: *Chapter 1: Introduction, Chapter 2: Conceptual Overview*

3. Step by step do *Chapter 3: Basic Simulation, Chapter 4: Projects in ModelSim Tutorial book*