

## **CSE 234 Logic Circuits and Digital Design**

### **Lab 1**

#### **Lab Session (Exact Duration: 60min):**

A 4-bit code sequence (eg 0110, 1010 ..) is wanted to be transmitted securely and it is necessary to check whether the sequence is received correctly by the receiver. For this, a bit that provides the error code is added to the array.

Design a circuit that can add 0 to the end of the array when the number of 1s in the array is odd, and 1 when it is even.

1. Create a truth table for the F function.
2. Express the function F using the sum of products method.
3. Express the function F using the product of sum method.
4. Simplify the F function using the Boolean algebra properties if it is possible.
5. Verify the truth table by running the circuit of the simplified function in the simulation program.

#### **Demo Session:**

During demo, explain and simulate each step of your design. Do not forget you only have at most 4 minutes for that. Also you will answer any questions asked by the TA.