Digital Logic Design Lab

Spring 2018

FAST-NU Peshawar
Campus

Lab Report # 6-12: Weightage: 7
Due Date: 27 April 2018

A note of warning: Start work on assignments as soon as they are given. Do not underestimate the demanding nature of this course. Expect the system to crash the night before your program is due. Aim to have it done the day before.

Submit the assignment on **slate.** Do not email me assignments after due date. It will not be accepted in any case. Students are required to submit actual content written in MS word or Pdf. Hand written/ Scanned assignments will not be accepted.

Use Logic.ly to design circuit diagrams.

Lab: 6-8

- Design Half Adder and Full Adder along with truth tables.
- Design Half Subtractor and Full Subtractor along with truth tables.
- Design BCD to Excess-3 Code Converter.
- Design Excess to BCD Code Converter.
- Design BCD to Gray-code Code Converter.
- Design Gray-code to BCD Code Converter.

Lab: 9-10

- Design a combinational circuit that generates the 9's complement of a BCD digit.
- Design BCD-to-decimal decoder to give an output all 0's when any invalid input occurs.
- Design a BCD-to-Excess-3 code converter with a BCD-to-decimal decoder and four OR gates.
- A combinational circuit is defined by the following functions, Design the circuit with the decoder and external gates.
- A combinational circuit is defined by the following functions, Design the circuit with the multiplexers and external gates.

    - F1 = A'B'+AB'C+A'BC+AB'+C+AB'+C'+AB
    - F2 = AB'C'D+AC'D+C'D+C'D+A'B+AD
    - F3=AB+A'C'D+A'BD+AB'C'

Lab: 9-13

- Design all possible latches and flip-flops using basic gates (RS flip flop/latch, T type flip flop, D type flip flop/latch, JK flip flop and JK master slave flip flop)

Good Luck ☺!