COMP 300 Section B

FORMAN CHRISTIAN COLLEGE

(A CHARTERED UNIVERSITY)

COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE

LAB 1

ROLL No. **Time Allowed: 80 min**

This lab should be done in complete isolation. No group formation is allowed.

It's an open books and open notes lab session. You CANNOT share your code/work with each other. Any such attempt will result in a straight ZERO grade in this lab.

Use of Internet is allowed for this lab.

Rubric

Correct simulation	**50%**
Proper labelling of simulation diagram	**10%**
Neat paper work	**10%**
Well formatted report	**30%**

Lab Task [100 Marks]

This lab is designed to make you comfortable with Logisim. Most of you have used this tool in Digital Logic and Design course. In this lab you need to design a combinational circuit that should accept a 4 bit binary number as input and generate its 2's complement on the output. For example if the input is 1101 in binary then the output should be 0011 in binary.

Make sure you first perform all the design steps on paper before you simulate the circuit on LOGISIM.

For your convenience design steps are as follows:

1. Identify number of inputs and outputs.
2. List down the truth table.
3. From the truth table deduce the output function/s as SOP format.
4. Now simplify the output function/s using appropriate k-map.
5. Once you have the simplified version of output function/s, draw the circuit diagram on paper.
6. Now simulate the circuit that you have drawn on paper using LOGISIM.

Submission Format

You are required to submit following before the time of lab elapses.

- Logisim design file,
- the paper work that you have done before working on Logisim. (you can take image of the paper/s)

Make sure you submit your files in a zip format. Follow this naming convention for your zip file:

<your roll number>_COMP300A21_<lab number>

You also need to submit lab report. Lab report must be according to the template already communicated to all students. Lab submission is separate from the Logisim file/s submission. You will be given ample time to write a decent report of the lab in hand.