



CSE332L Computer Organization & Architecture Lab

North South University

Mid Assignment

Lab Instructor: Tanvir Tazul Islam

Marks: 10

(All the **inputs** and **outputs** must be **labelled properly**)

In Experiment 1, you designed a 2-bit ALU capable of **logical operations**. In Experiment 3, the 2-bit ALU was able to perform **arithmetic operations** only.

Your assignment is to combine the operations of both the ALUs and make a single 4-bit ALU in LOGISIM.

Create a table in LOGISIM showing necessary control selections required for the execution of each instructions/operations.

So, your designed circuit will be a **4-bit ALU**, which can perform **both logical and arithmetic operations** –

- AND
- OR
- XOR
- NOT
- Add
- Add with carry
- Subtract
- Subtract with borrow
- Increment
- Decrement
- Transfer

Make sure your ALU works perfectly for all the operations.

Good Luck!

Rename the logisim file with your name & id before submission