North South University

Department of Electrical & Computer Engineering

LAB REPORT

Course Name: **CSE332L- Computer Organization and Architecture Lab**

Experiment Number: 02

Experiment Name: Design of a 4 bit logic unit

Experiment Date: 24.10.21

Report Submission Date: 24.10.21

Section: 07

Group Number:

Student Name: Riaz Mehadi	Score
Student ID: **1931746042**	
Remarks:	

Exp: Lab 02 – Design a 4 Bit Arithmetic Unit

Objectives:

1. 1 -bit full Adder
2. 1-bit Arithmetic Unit 3.
3. 4 - bit AU with (Addition, SUbtraction, transfer, Inc, Dec)

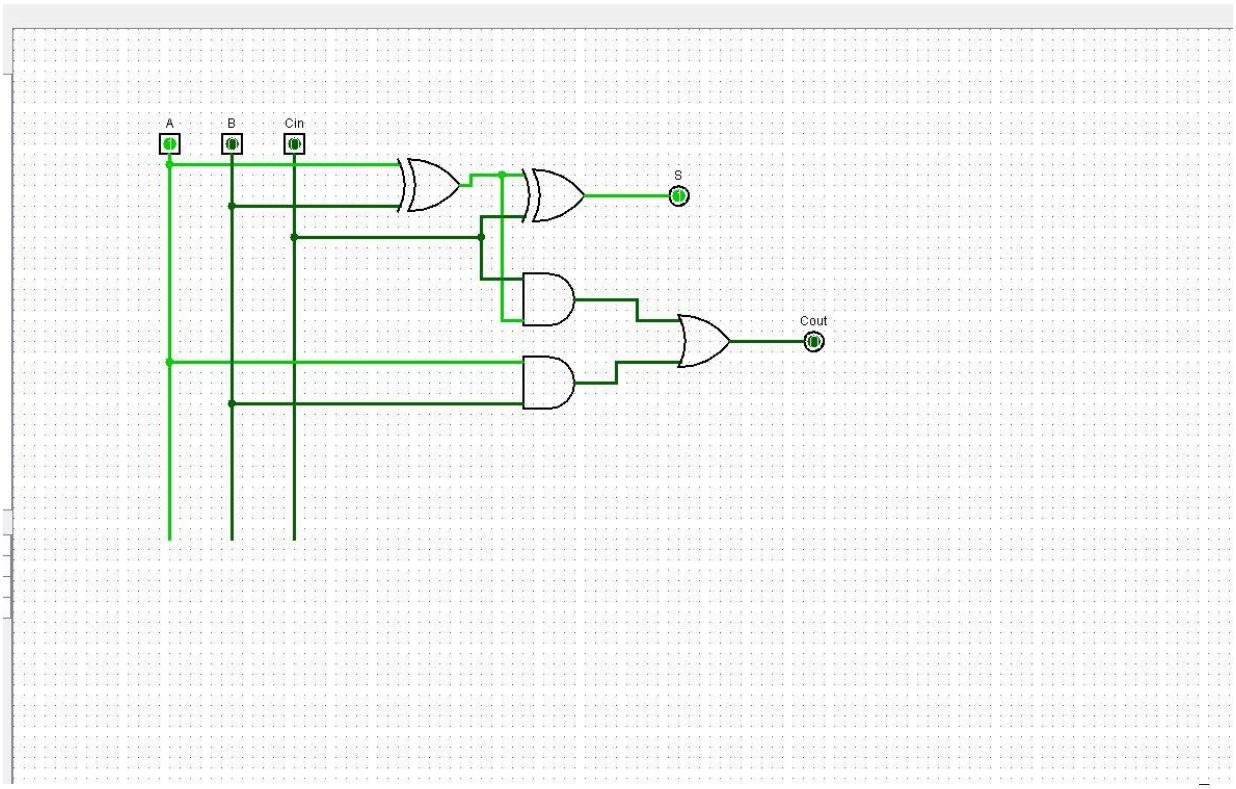
Equipment List:

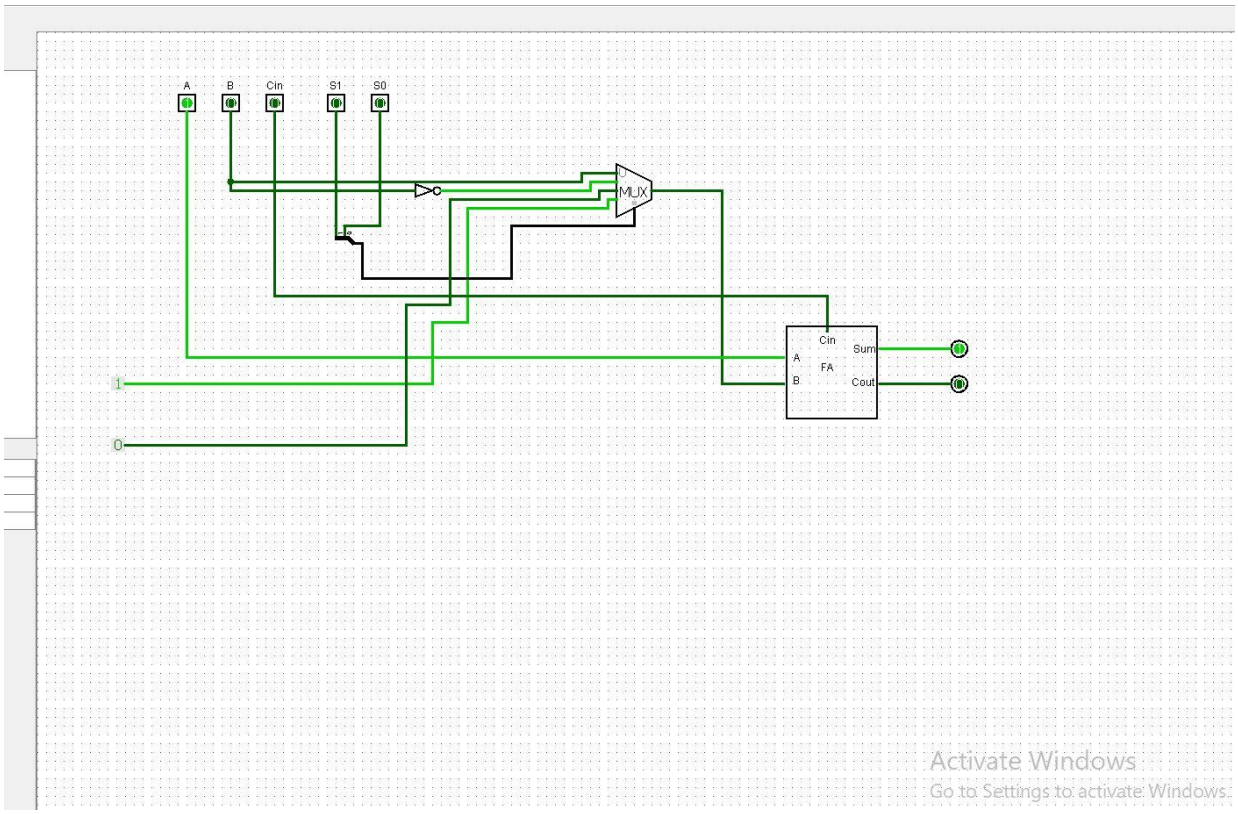
1.Tranier board.
2.IC 7404,7483 or 74283,74LS153.
3.wires for conection.

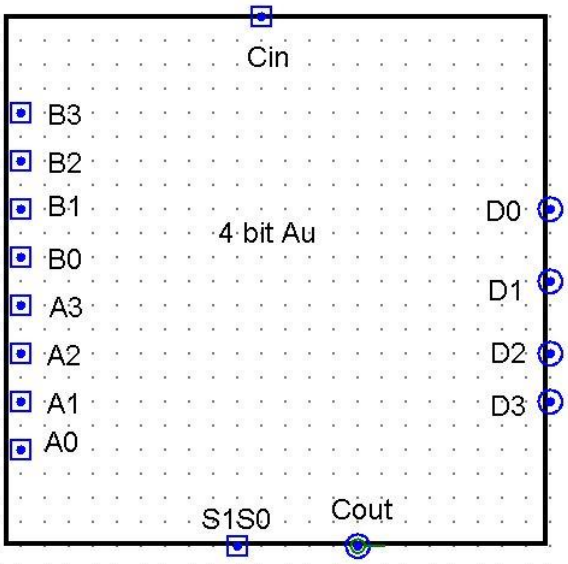
Data Table:

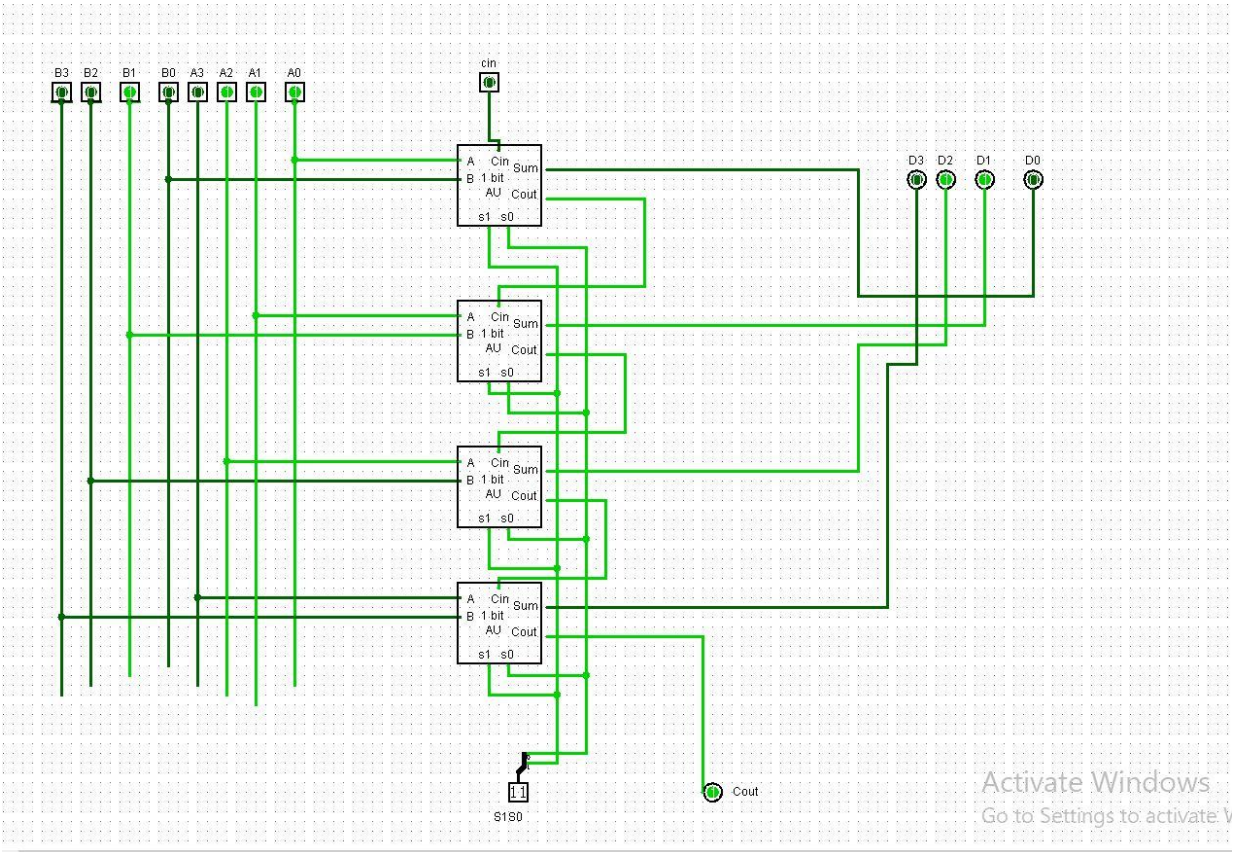
S1	S0	Cin	A3	A2	A1	A0	B3	B2	B1	B0	Cout	D3	D2	D1	D0	Micro operation
0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	Add
0	0	1	0	0	1	1	0	1	0	0	0	1	0	0	0	Add with Carry
0	1	0	0	0	1	0	1	1	0	0	0	0	1	0	1	Subtract with Borrow
0	1	1	0	1	1	1	0	1	0	0	1	0	0	1	1	Subtract
1	0	0	1	0	1	1	0	1	0	0	0	1	0	1	1	Transfer A
1	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1	Increment A
1	1	0	1	0	1	0	1	0	0	0	1	1	0	0	1	Decrement A
1	1	1	1	0	0	1	0	1	1	1	1	1	0	0	1	Transfer A

Logic Circuit Diagram:









Discussion:

In this expriment,i gather knowledge about 1 bit and 4 bit of Arithmetic logic unit .Firstly,i make 1 bit logic unit which is comparatively easier than 4 bit Arithmetic logic unit .I also gather knowledge about multiplexer which I used for making Arithmetic logic unit.I also use And,OR,X-OR gate for makingAdder.I learn how to make a ic by our own circit .It is very helpful but I do not have to make same circuit again and again.I also learn how to make 4 or more bit logic unit by using 1 or more bit ic.

For making 4 bit Arithmetic logic unit,I use four 1 bit Arithmetic logic unit ic.Firstly,I take one copy of 1 bit ic from 1 bit Arithmetic logic unit ic's part.Then I take rest of the three 1 bit ic in the same process.I use two splitter for taking the input of 4 ic's input.One splitter use for take input of A and another one use for taking input of B and I use 2 bit selector for selecting which gates output,I want to show.This part was very interesting for me.

During the experiment,I face a problem,like my circuit output is showing wrong output .By the help of my lab instructor ,I solve the problem.Then I do the all thing successfully.