North South University

Department of Electrical & Computer Engineering

LAB REPORT

Course Name: CSE332L

Experiment Number: **03**

Experiment Name: **Design of a 4-bit Universal Shift Register**

Experiment Date: 22/03/2021

Report Submission Date: 17/03/2021

Faculty: SFM

Submitted to: Md Saidur Rahman

Section: 06

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Remarks:	

Title: Design of a 4-bit Universal Shift Register

Objectives:

- Designing a Design of a 4-bit Universal Shift Register by using Logisim software.
- Learn how to work with Shift Register.

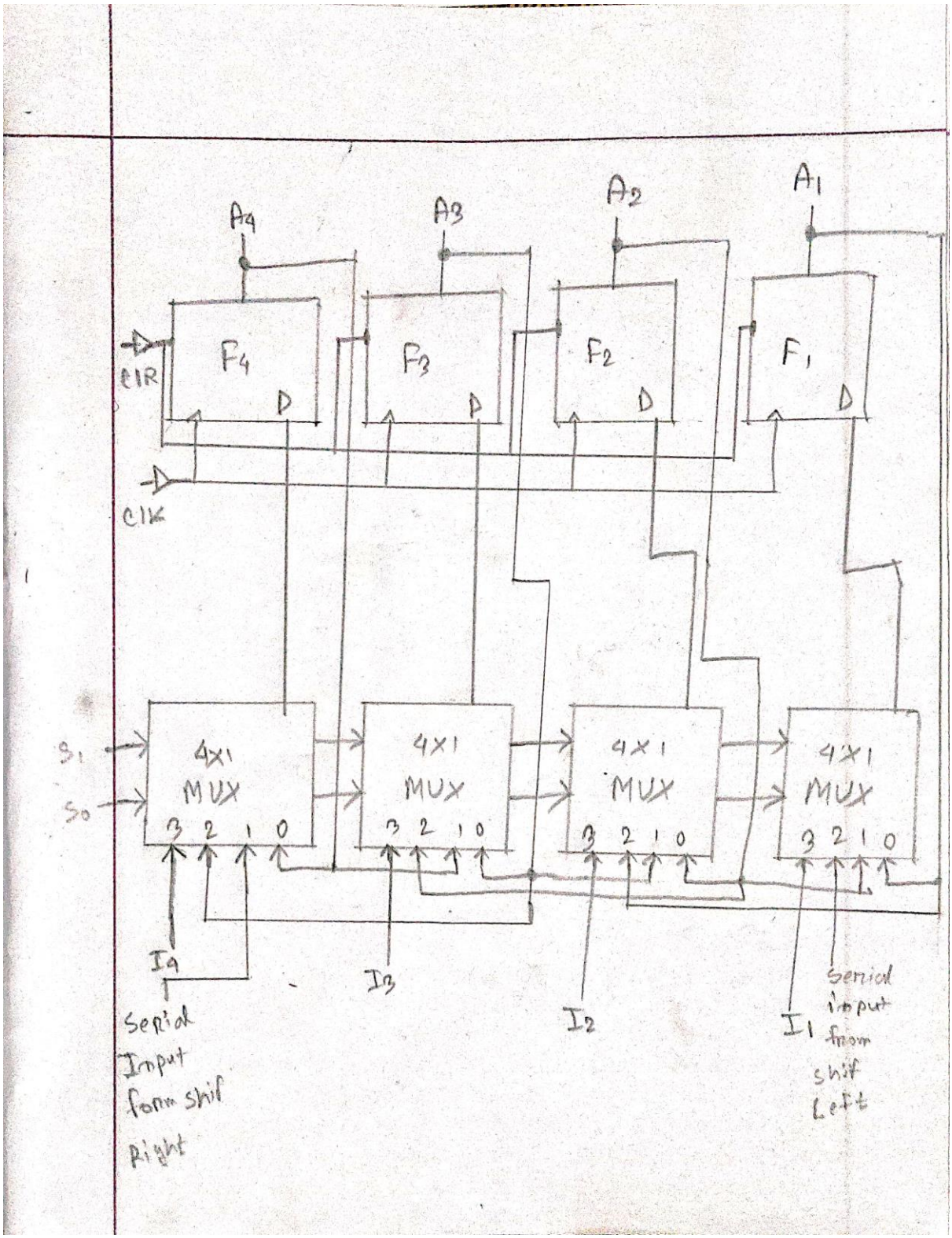
Types of equipment:

*Four D Flip Flops (Two 7474 ICs)
* Four 4X1 MUX (Two 74153 ICs)
* Trainer Board
* Wires
* Power Supply

Function Table:

S1	S0	Operation	I4	I3	I2	I1	A4	A3	A2	A1
0	0	No change	0	1	1	0	A4	A3	A2	A1
0	1	SHR	1	1	0	0	S1(R)	A4	A3	A2
1	0	SHL	1	1	0	0	A3	A2	A1	S1(L)
1	1	Parallel load	1	1	0	0	1	1	0	0

Logic Diagram:



Procedure:

1) Place the ICs on the trainer board.

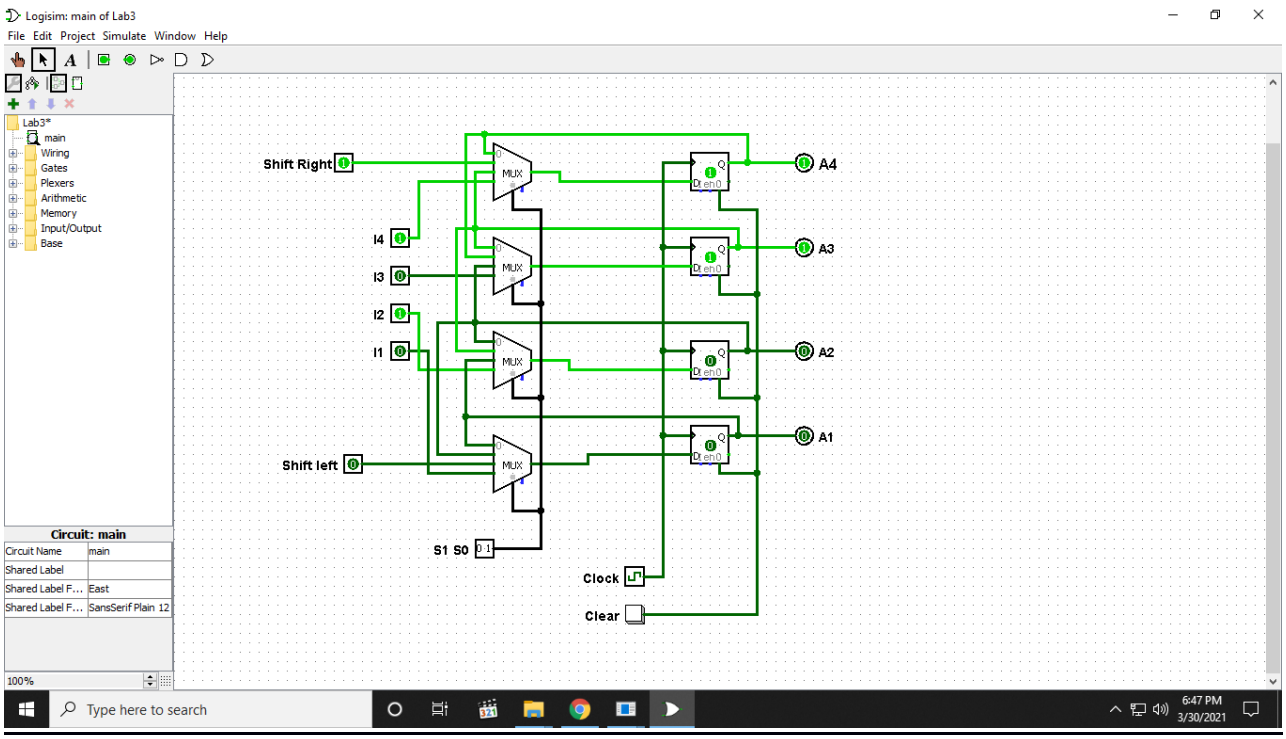
2) Connect Vcc and ground to the respective pins of IC.

3) Connect the inputs with the switches and the outputs (A1-A4) with LEDs.

4) Apply various combinations of inputs and observe the outputs.

5) Verify the experimental outputs with the Function Table.

Logisim works screenshot(s):



Discussion:

In lab 3, I construct a 4-bit Universal Shift Register. In Universal shift register there have an option to perform Shift Right when select bits are 01. When we do shift right it actually dividing by 2^n. When we shift three times present bits are dividing by 2^3. For left shift the current bits are multiplying by 2^n. If we shift left 3 times, it means current bits multiplying by 2^3. In this lab I face some theoretical problem. After understanding how this circuit works, I figure out how to do it. It took some time but finally I found out where the problem was fix the circuit and then solved it properly. By the help of our class lab instructor I fix that problem also.