Kathmandu University

Department of Electrical and Electronics Engineering

Digital logic laboratory experiments

Experiment: Study and design of 4 to 1 MUX

Components Required:

- IC 7411
- IC 7432
- Breadboard
- Resistor (1k)
- LED
- Multimeter
- Power Source (5V DC)

Theory:

A device that selects one of several analog or digital signals and forwards the selected input signal into a single line output is multiplexer (hereafter MUX). A multiplexer of 2^n inputs require n selection lines to select among the available input values. A MUX is also called data selector and cane be considered as multiple input single output switch.

The multiplexer we will be fabricating in lab is 4 to 1 MUX. It will have 4 different in put values or 2^2 values and hence, will require n=2 selection lines.

Truth Table:

Selection Line		Input Lines			
S1	**S2**	**I0**	**I1**	**I2**	**I3**
0	**0**	**1**	**0**	**0**	**0**
0	**1**	**0**	**1**	**0**	**0**
1	**0**	**0**	**0**	**1**	**0**
1	**1**	**0**	**0**	**0**	**1**

Figure: Truth Table of 4 to 1 MUX

Procedure:

1. Collect required components.
2. Test the power source using multimeter.
3. Test components using multi meter, IC tester, power source, bread board and some wires.
4. Consider +5Volts DC as Logic high value (1) and Ground as Logic low value (0).
5. Connect components on breadboard as per Boolean expression.
6. Connect led to validate output

Logic Circuit:

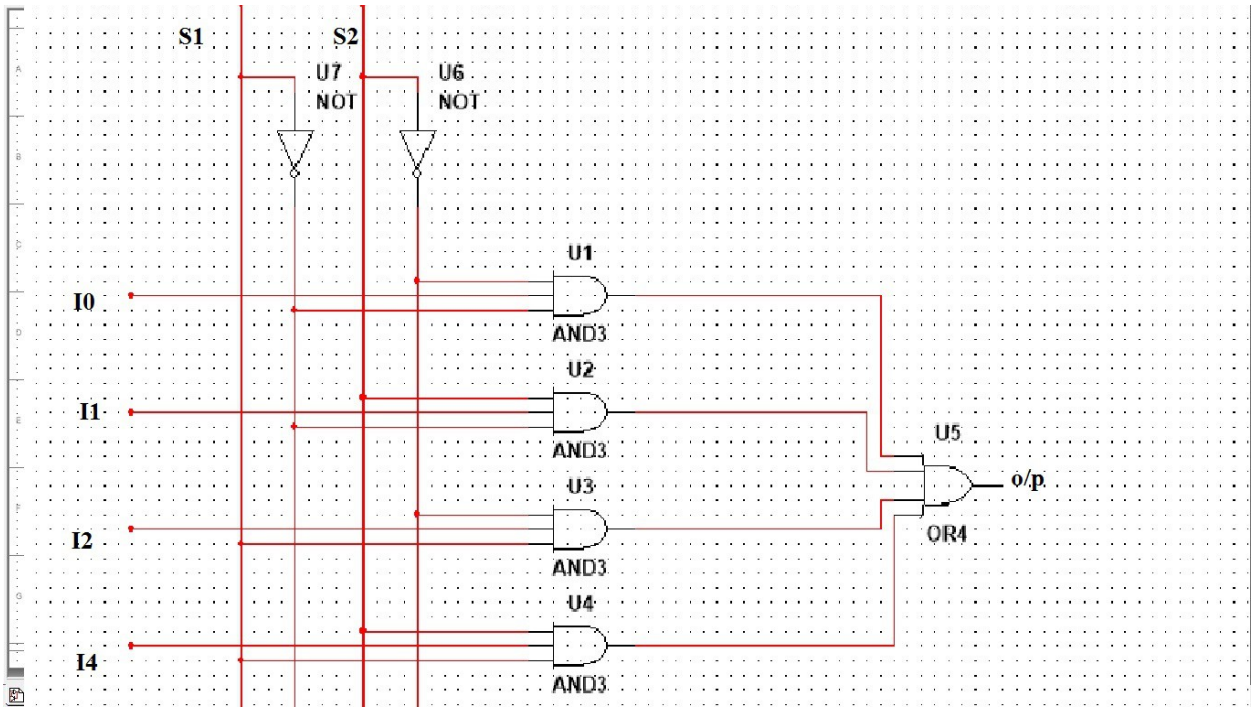

Figure: Logic Circuit for 4 to 1 MUX

Discussion and conclusion

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