

Lab-1 Report

Introduction to IC circuits

Aim: Study of Digital ICs and identification of ICs by analysis of its behaviour when subjected to different inputs.

Components used:

1. 7404(NOT)
2. 7408(AND)
3. 7432(OR)
4. 7486(XOR)
5. 1K Ω resistor array
6. DIP switches
7. LED displays
8. Breadboard
9. Power supply

Design Procedure:

- Implemented each of the 7 gates using the relevant ICs required
- Usage of DIP switches for the input signals where ON position indicates 1 and OFF position indicates 0 & output from the gate has been connected to an LED display for identification of output.
- Logic tables of IC's :

NOT GATE

INPUT	OUTPUT
0	1
1	0

AND GATE

INPUT 1	INPUT 2	OUTPUT
0	0	0
0	1	0
1	0	0
1	1	1

OR GATE

INPUT 1	INPUT 2	OUTPUT
0	0	0
0	1	1
1	0	1
1	1	1

XOR GATE

INPUT 1	INPUT 2	OUTPUT
0	0	0
0	1	1
1	0	1
1	1	0

NAND GATE

INPUT 1	INPUT 2	OUTPUT
0	0	1
0	1	1
1	0	1
1	1	0

NOR GATE

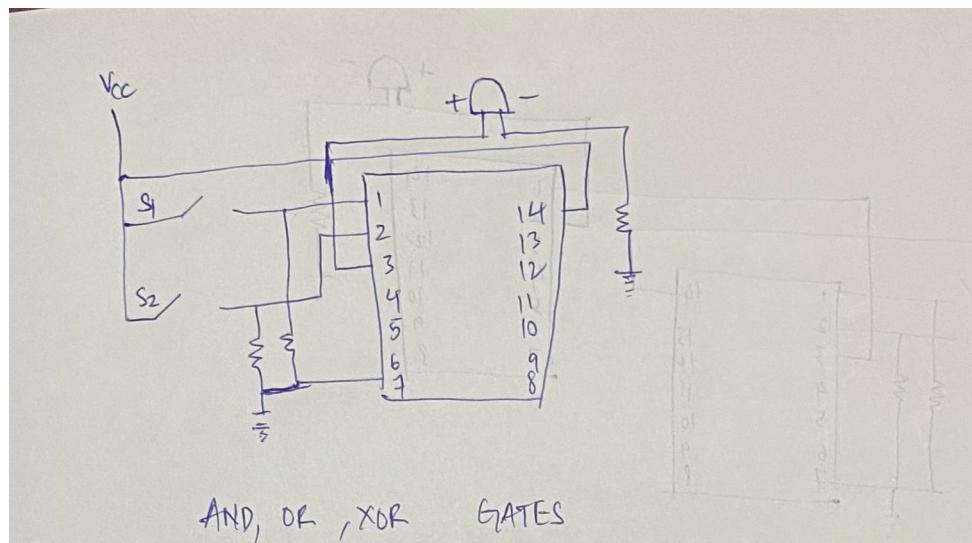
INPUT 1	INPUT 2	OUTPUT
0	0	1
0	1	0
1	0	0
1	1	0

XNOR GATE

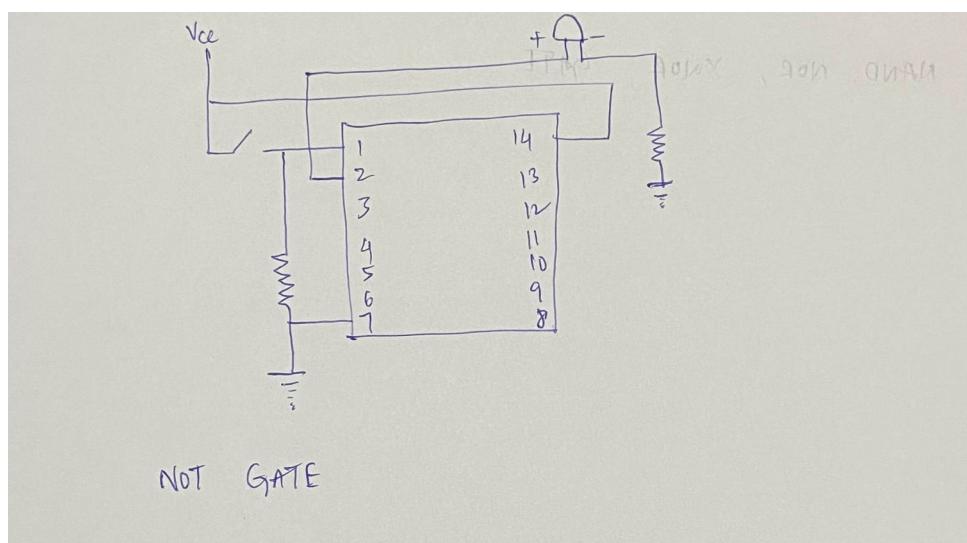
INPUT 1	INPUT 2	OUTPUT
0	0	1
0	1	0
1	0	0
1	1	1

- Circuit diagrams for these circuits will look like:

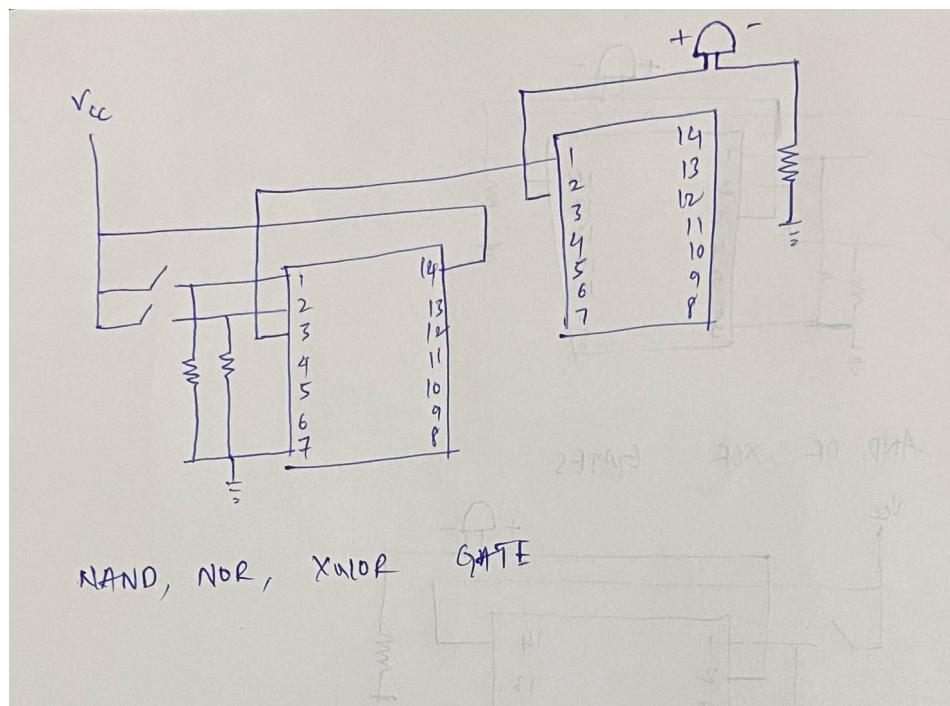
And, Or and Xor gates connection:-



Not gate connection:-

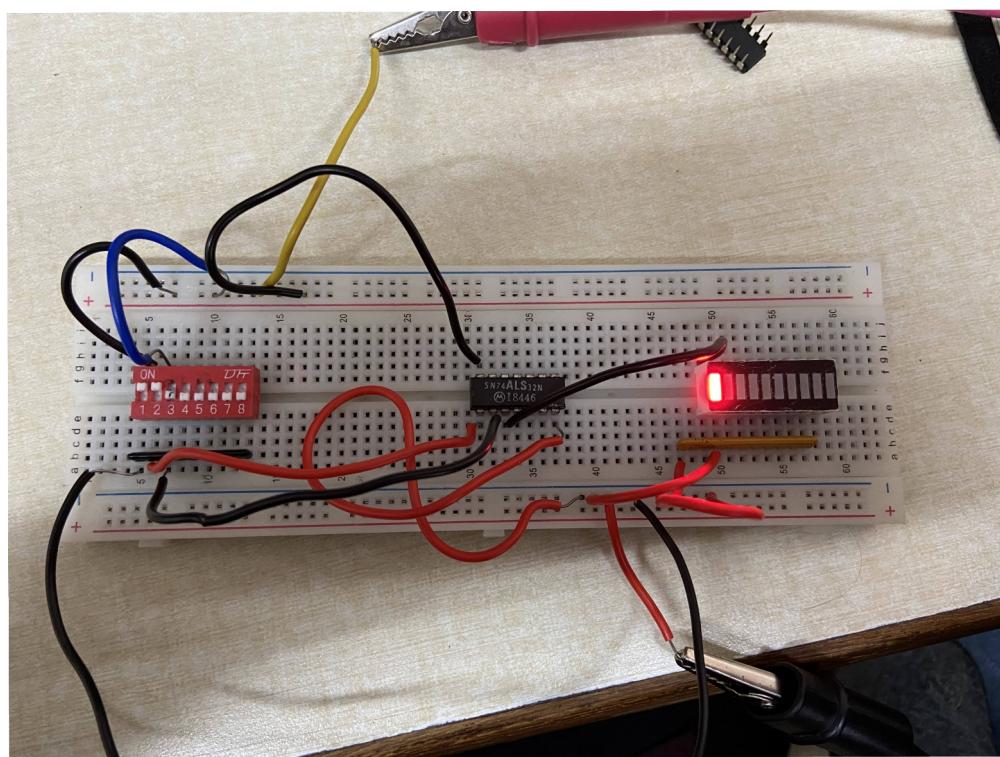


Nand, Nor, Xnor gates connections:-

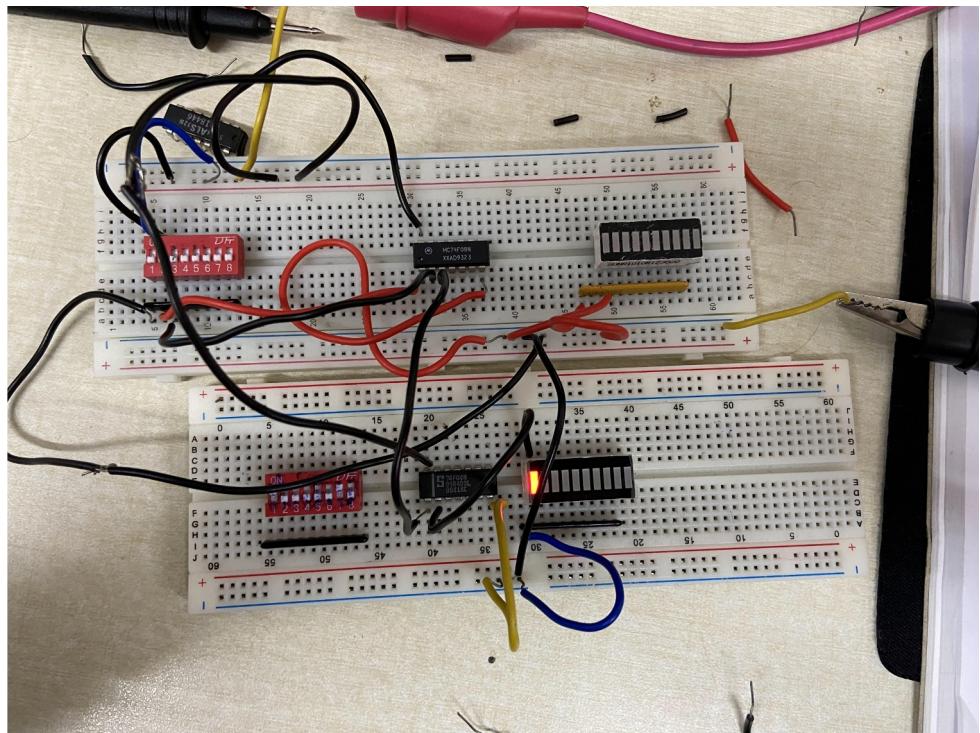


Circuit Snapshots:

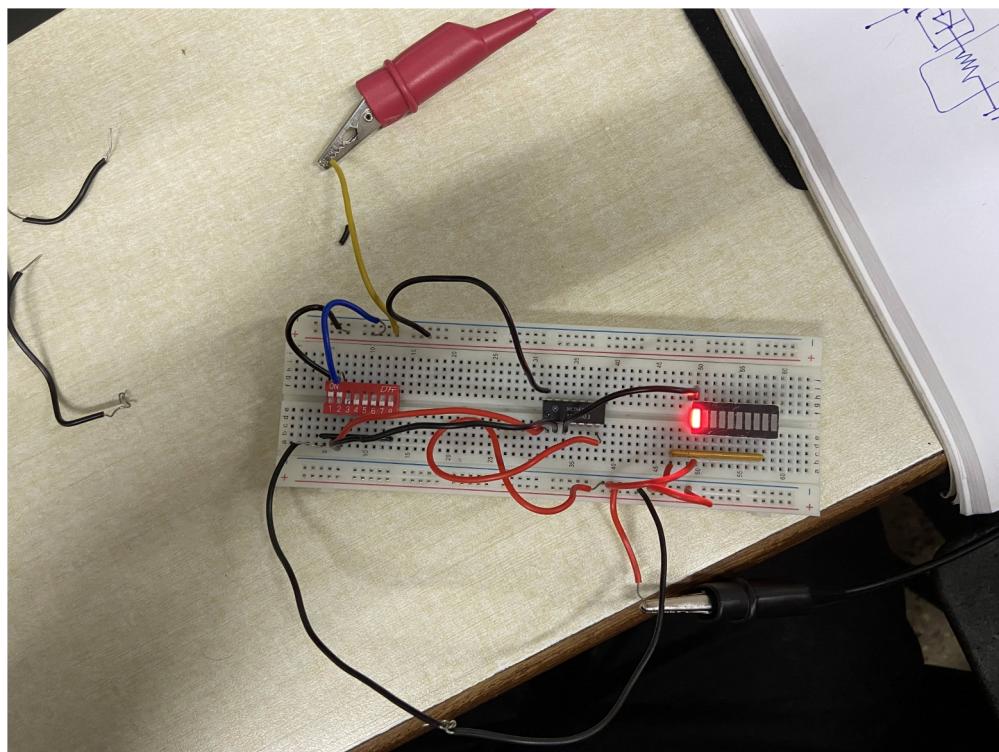
1. AND GATE:



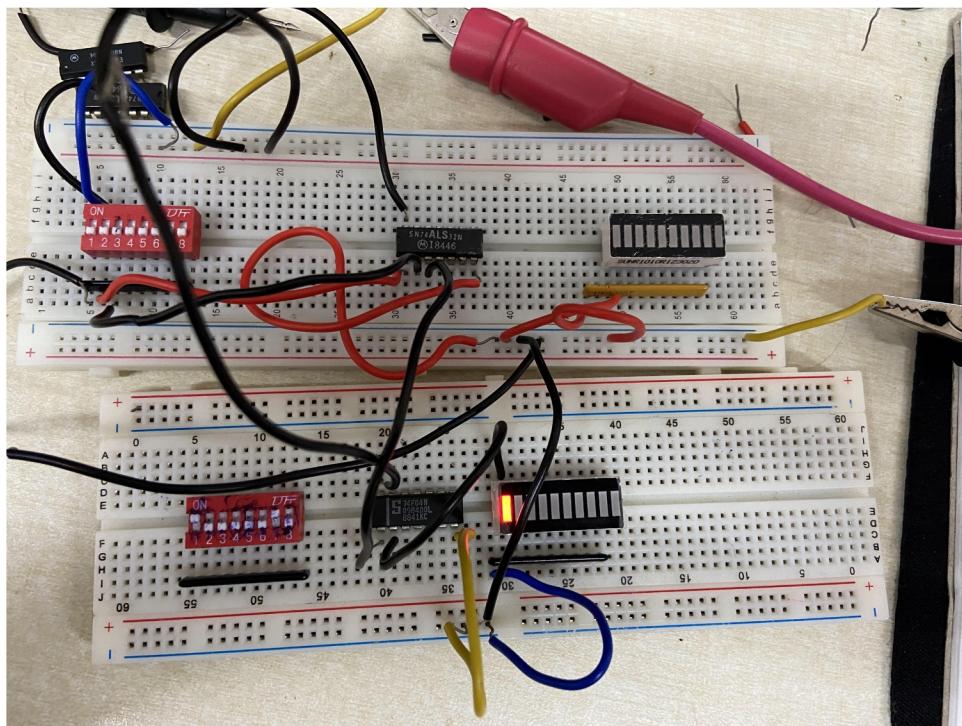
2. NAND GATE:



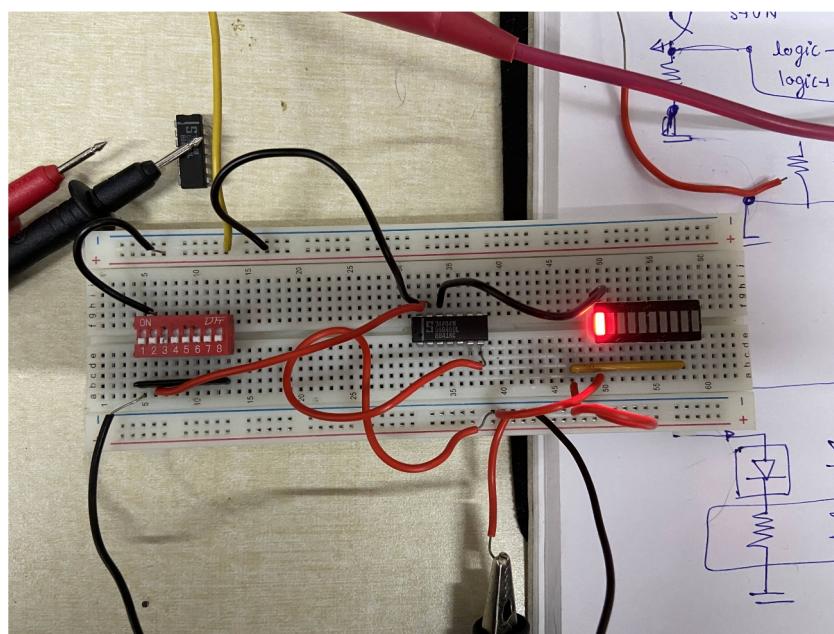
3. OR GATE:



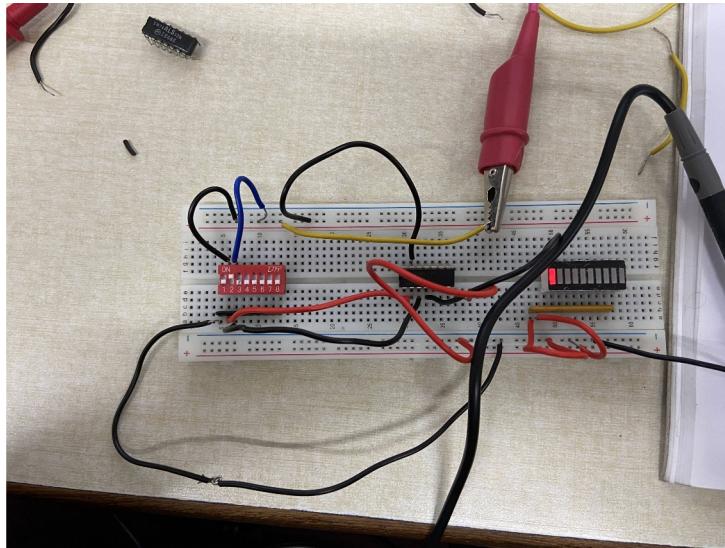
4. NOR GATE



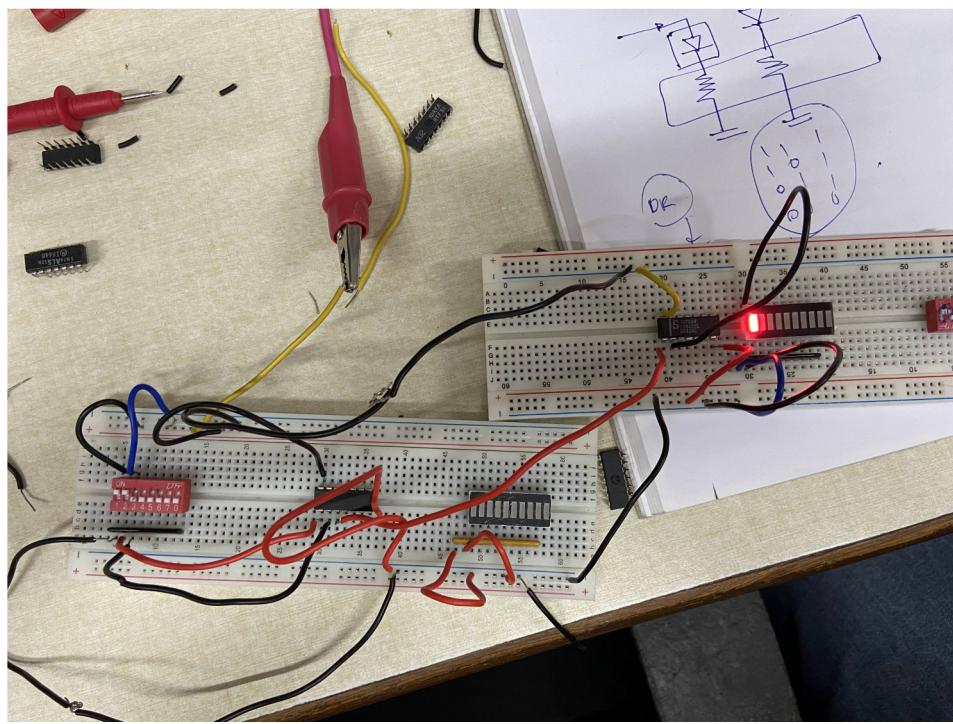
5. NOT GATE



6. XOR GATE



7. XNOR GATE



Conclusions: We have successfully explored the workings of the basic components like power supply and have implemented the 7 logic gates using different ICs on the breadboard.