# Lab 1 Report: Implementation of Logic circuits

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Course: DIGITAL ELECTRONICS AND VLSI DESIGN LAB (AV232)

**Aim:** Implementation of Logic circuits using Transistor Level Circuit and measuring the performance of the Logic gates

## Components Required:

- Digital Circuit board containing LEDs
- Integrated circuits (IC 7400, IC 7402, IC 7404, IC 7408, IC 7432, IC 7486)
- Connecting wires

## Circuits Truth Table:

IC 7408:

| A | B | Output |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

A, B: Input to two pins

0: Low voltage

1: High voltage

IC 7432:

| A | B | Output |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 1 |

IC 7404:

| A | Output |
|---|---|
| 0 | 1 |
| 1 | 0 |

IC 7400:

| A | B | Output |
|---|---|---|
| 0 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

IC 7402:

| A | B | Output |
|---|---|---|
| 0 | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 0 |

IC 7486:

| A | B | Output |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

**Observations and Conclusions:**

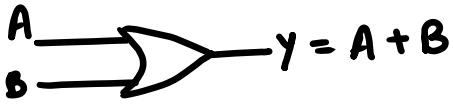
Truth table implies the following:

- IC 7408 contains AND Gate.
- IC 7432 contains OR Gate.
- IC 7404 contains NOT Gate.
- IC 7400 contains NAND Gate.
- IC 7402 contains NOR Gate.
- IC 7486 contains XOR Gate.

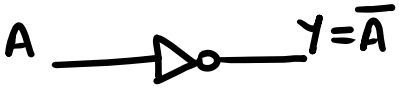
## Gate diagram:

### AND:

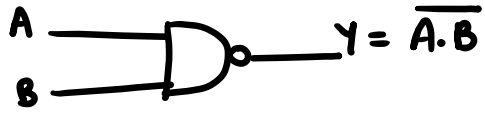

### OR:



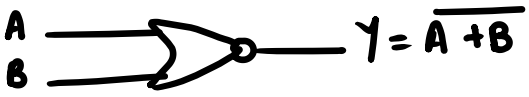

### NOT:




### NAND:




### NOR:




### XOR: