

Lab Report 1

Lab 1: Interface



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CEN 305

Microprocessors and Firmware Programming

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Abstract

In this experiment we verified the truth table for NOT, AND, and OR IC. And then used the digital circuits knowledge to implement XOR gate using these gates only. Then in the end verify the truth table for XOR also.

Introduction

We started off by testing the 3 IC chips which were provided to us by the lab instructor.

Logic Gate	IC Number
NOT	7414
AND	7408
OR	7432

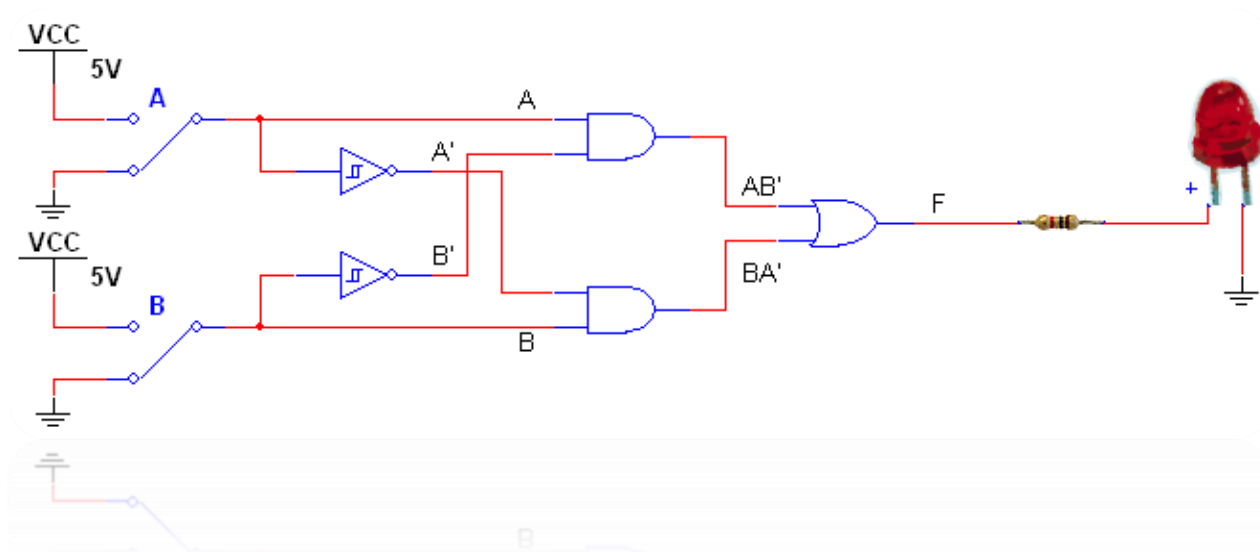
The testing for the ICs is done by verifying the truth table for each gate. Then the second step was to connect these ICs to make an XOR gate.

Experiment Setup

The ICs were placed on the breadboard and connected according to the diagram shown. The idea was to implement the following equation:-

$$\bar{A}B + A\bar{B} = A \oplus B$$

And using the following circuit diagram:-

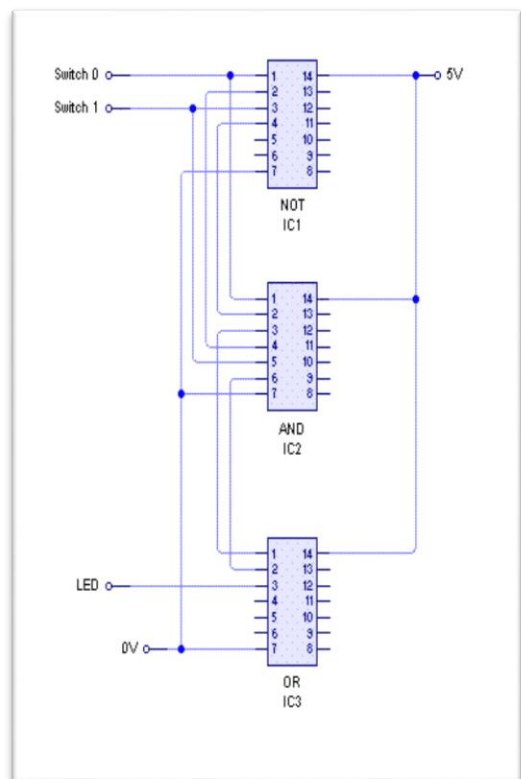


List of Equipment Used

- ✓ AND IC
- ✓ NOT IC
- ✓ OR IC
- ✓ Jumper Wires
- ✓ Breadboard

Procedure

1. The ICs were connected as shown in the figure
2. The switches were turned ON or OFF to represent 1 or 0, and the LED ON or OFF were noted.
3. This was then checked with the truth table if it matched or not.



Results and Discussions

The verified truth tables for the experiments are as follows:-

1. AND Gate

Switch A	Switch B	LED
0	0	0
0	1	0
1	0	0
1	1	1

2. OR Gate

Switch A	Switch B	LED
0	0	0
0	1	1
1	0	1
1	1	1

3. NOT Gate

Switch A	LED
0	1
1	0

4. XOR Gate

Switch A	Switch B	LED
0	0	0
0	1	1
1	0	1
1	1	0

Conclusion

I conclude from the experiment that one can implement infinite number of functions using simple basic gates, but it will get more and more complex according to the problem.

Home Work

Question)

Assume you have two **Unsigned Integer** (8-Bit each) A & B. Write the C code that will perform an Exclusive-OR operation on A & B?

Answer)

```
# include<iostream.h>
```

```
#include<stdio.h>
```

```
Void main()
```

```
{
```

```
    Int a, b, c;
```

```
    Cout<<"Enter the Integer A";
```

```
    Cin<<a;
```

```
    Cout<<"Enter the Integer B";
```

```
    Cin<<b;
```

```
    C=a^b;
```

```
    Cout<<c;
```

```
}
```