DLD PROJECT REPORT



**Group Members**

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# Abstract

The project is about making a 4-bit multiplier using adders and AND-gates.

# Introduction

The 4-bit multiplier is a device that take in two binary numbers comprising of four bits each and then give an answer by multiplying both the numbers in 8-Bit.

# Components Required

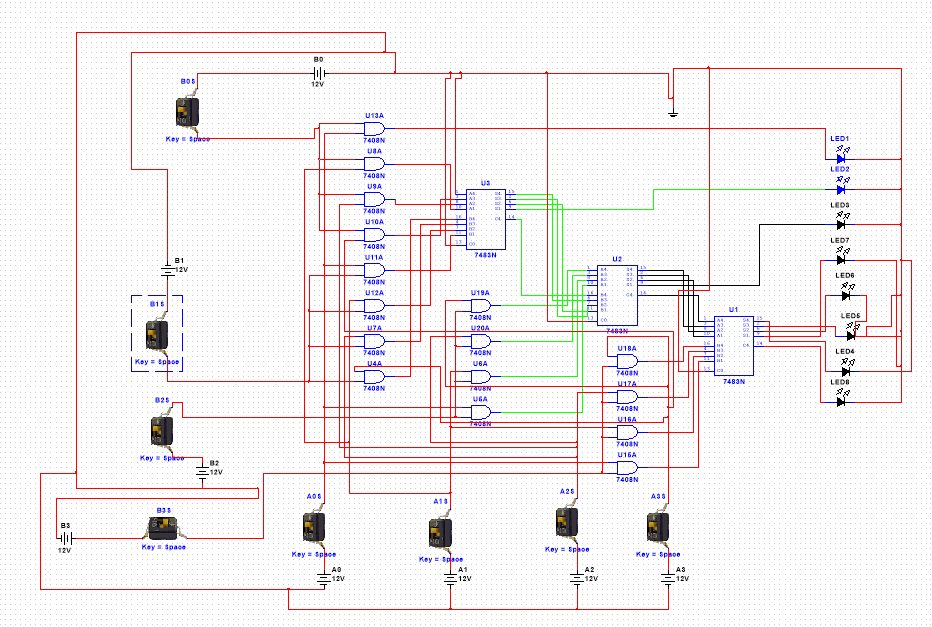
1. 4-bit adder IC (74LS83, it is a 16 pin IC).
2. AND-gate IC (DM7408n).
3. Vero board.
4. Two pin connectors.
5. LEDs.
6. Jumper wires.
7. Push buttons.

# Circuit Diagram

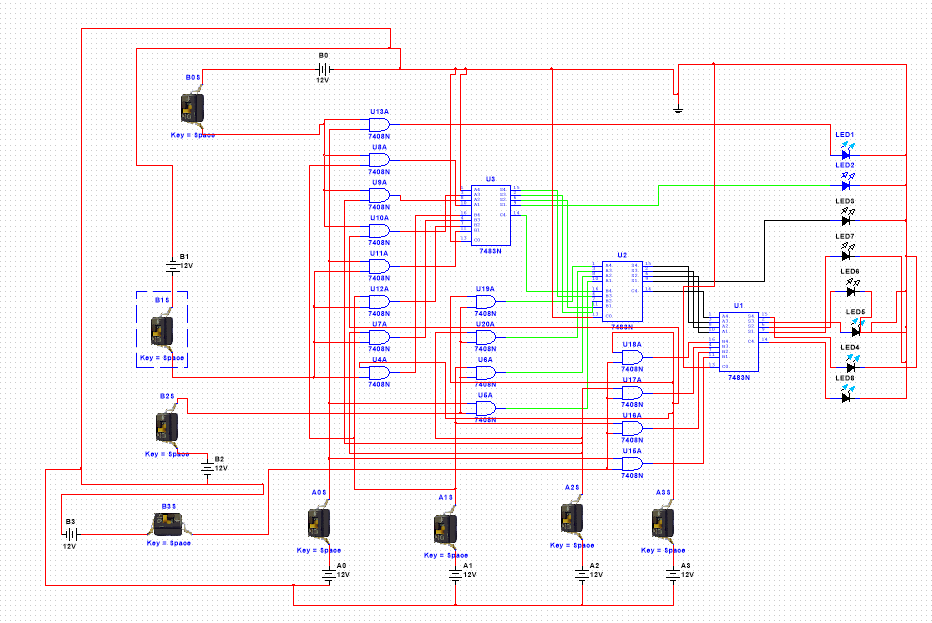
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# Simulated Diagram

When the circuit is such that all input bits are zero



When the circuit is such that all the inputs are ones



# Working

The circuit multiplies two four-bit binary numbers. For this we multiply the numbers using and gates and 4-bit adders. Each bit is multiplied with each other bit using the and gates and then the products are added as needed.

# Simulated Results

When all input bits are zero, that means we are multiplying two numbers that are 0000 \* 0000. This will give us an output 00000000. That is shown by our simulation result.

When all inputs are 1s. Then that means we are multiplying 1111 \* 1111. This makes 15 in decimal. 15 \* 15 makes 225. We get an out put 11100001.

# Conclusion

The multiplier works perfectly giving exact values.