

Minecraft ALU with 7-Segment Display

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Introduction:

An Arithmetic Logic Unit (ALU) is a crucial component of computer architecture responsible for performing basic arithmetic and logic operations. In this project, a functional ALU was built in Minecraft using redstone circuitry, featuring a 7-segment display to show the output.

I had a reference circuit that I made for a university project. And have used some of my Digital Logic Design slides to make the Full Adder and the 7-Segment Display.

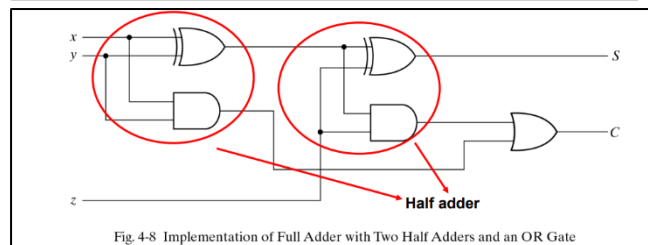
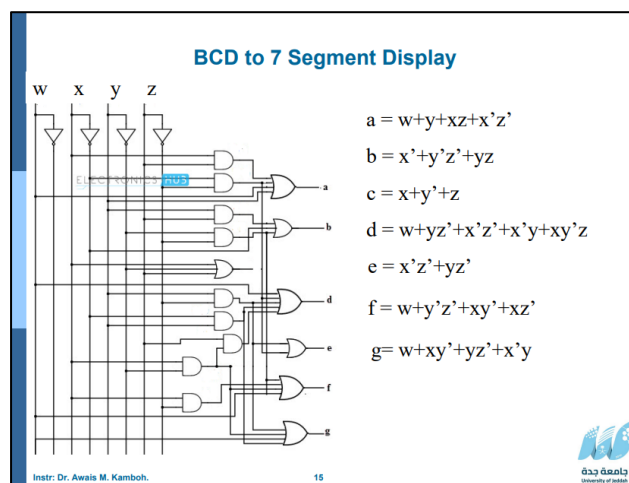
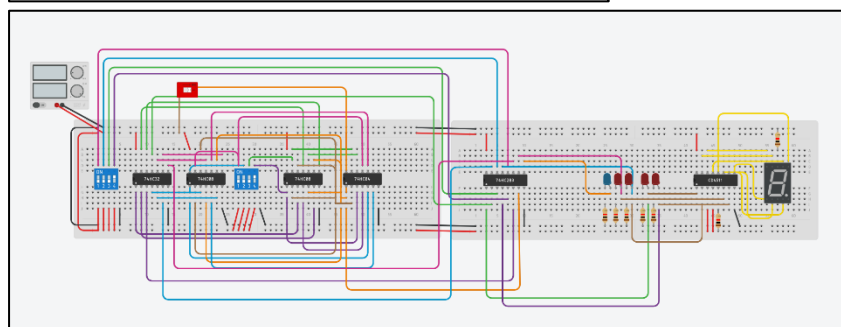
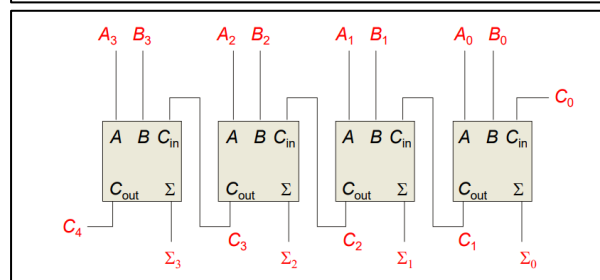


Fig. 4-8 Implementation of Full Adder with Two Half Adders and an OR Gate



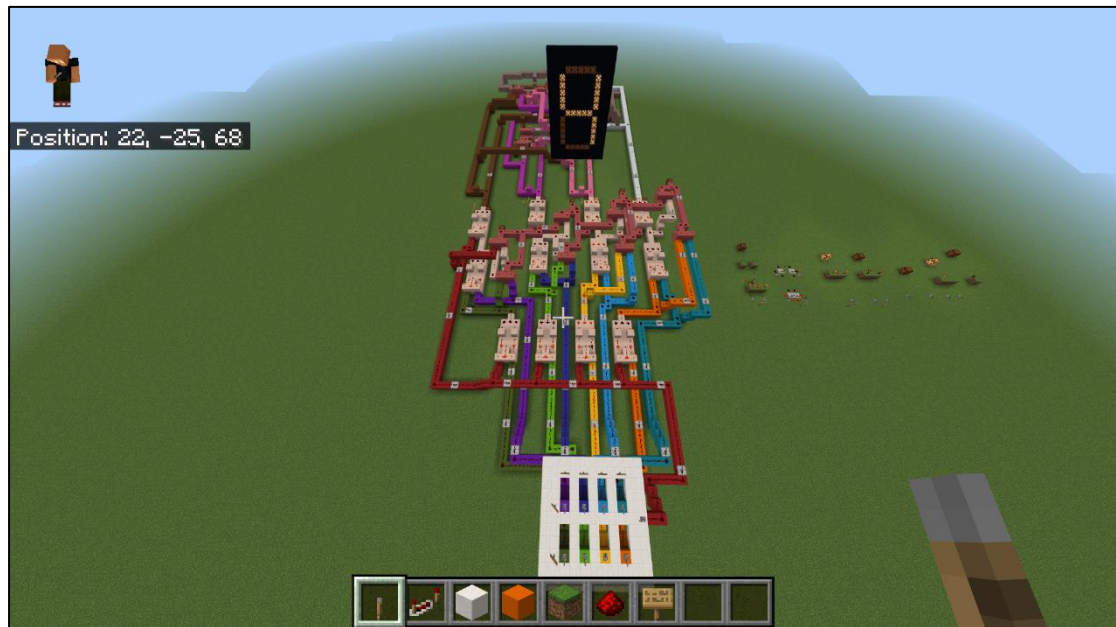
Reasons why I chose to build this project in Minecraft:

- 1- My passion for the game.
- 2- The practicality of Minecraft.

The building process took three major steps:

1. Figuring out how to create logic units in Minecraft
2. Trying to make a Full Adder
3. Building the 7-Segment Display





Future enhancement :

I could enhance the project by upgrading the ALU to convert from Binary to Decimal instead of Binary to Binary, using an encoder.

Encoders

An **encoder** accepts an active logic level on one of its inputs and converts it to a coded output, such as Octal to binary.

Input	Output		
Input=1	A_2	A_1	A_0
D0	0	0	0
D1	0	0	1
D2	0	1	0
D3	0	1	1
D4	1	0	0
D5	1	0	1
D6	1	1	0
D7	1	1	1

