

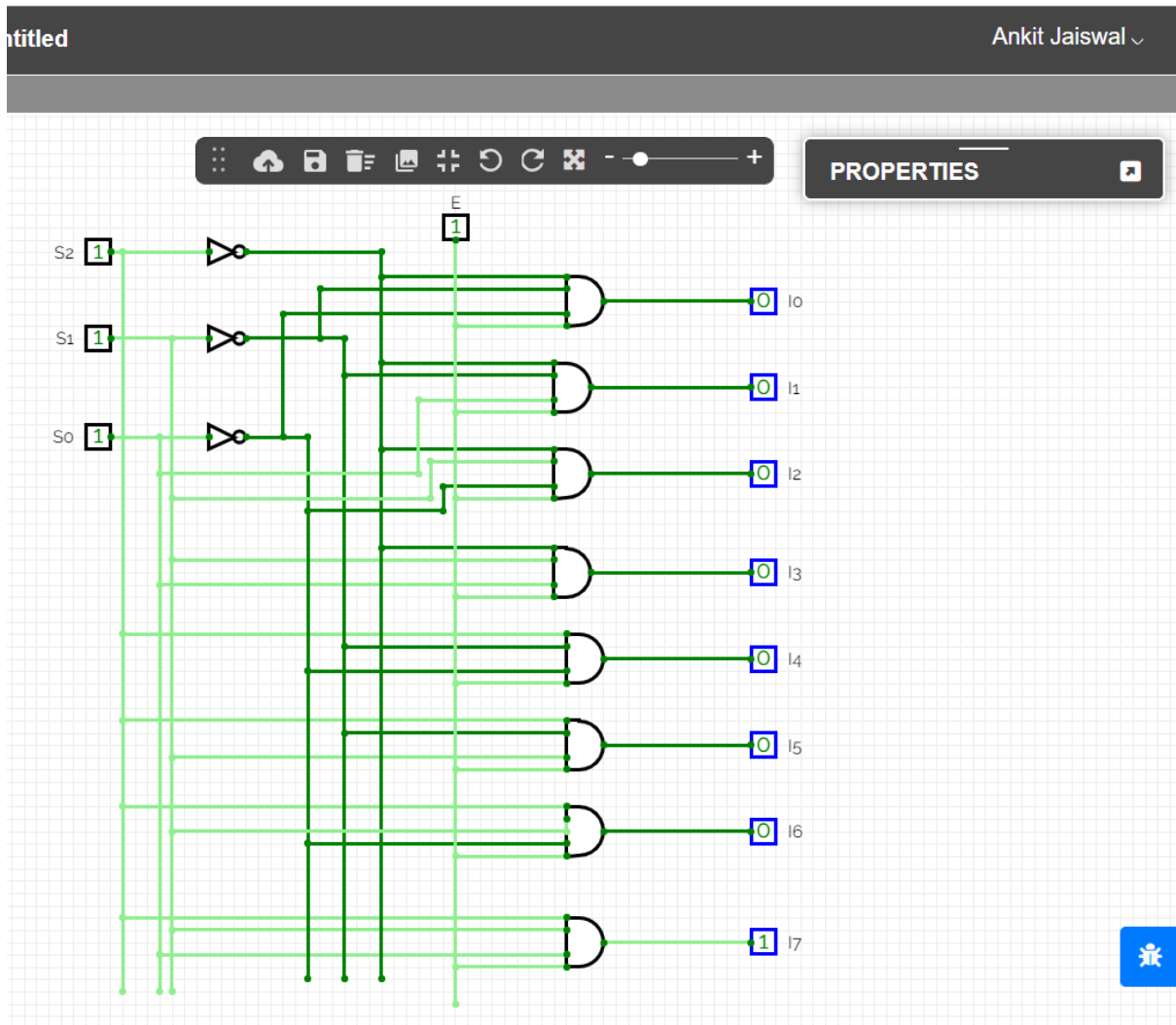
## EXPERIMENT

**OBJECTIVE:** Design & Implementation of 3\*8 decoder and also implement full subtractor.

### 3\*8 DECODER:

A 3-to-8 decoder, also known as a 3x8 decoder, is a combinational digital circuit that takes in 3 input lines and generates 8 output lines. Each output line corresponds to one of the possible combinations of input signals. Here's a truth table for a 3x8 decoder:

S2	S1	S0	I0	I1	I2	I3	I4	I5	I6	I7
0	0	0	1	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0
0	1	1	0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	1	0	0	0
1	0	1	0	0	0	0	0	1	0	0
1	1	0	0	0	0	0	0	0	1	0
1	1	1	0	0	0	0	0	0	0	1



## FULL SUBTRACTOR:

A full subtractor is a combinational logic circuit used in digital electronics to subtract three binary digits: the minuend (A), the subtrahend (B), and the borrow input (Bin) for the previous stage. It produces two outputs: the difference (Diff) and the borrow output (Bout). A full subtractor is more complex than a half subtractor as it takes into account the borrow input from the previous stage.

Here's the truth table for a full subtractor:

A	B	Bin	Diff	Bout
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	0	1
1	0	0	1	0
1	0	1	0	0
1	1	0	0	1
1	1	1	1	1

