

## TWO BIT HALF SUBTRACTOR

**EXP.NO: 22**

**AIM:** To design and implement the two bit half subtractor using Logisim simulator.

**PROCEDURE:**

- 1) Pick and place the necessary gates.
- 2) Insert 2 inputs into the canvas.
- 3) Connect the inputs to the OR gate, AND gate and NOT gate.
- 4) Insert 2 outputs into the canvas.
- 5) Make the connections using the connecting wires.
- 6) Verify the truth table.

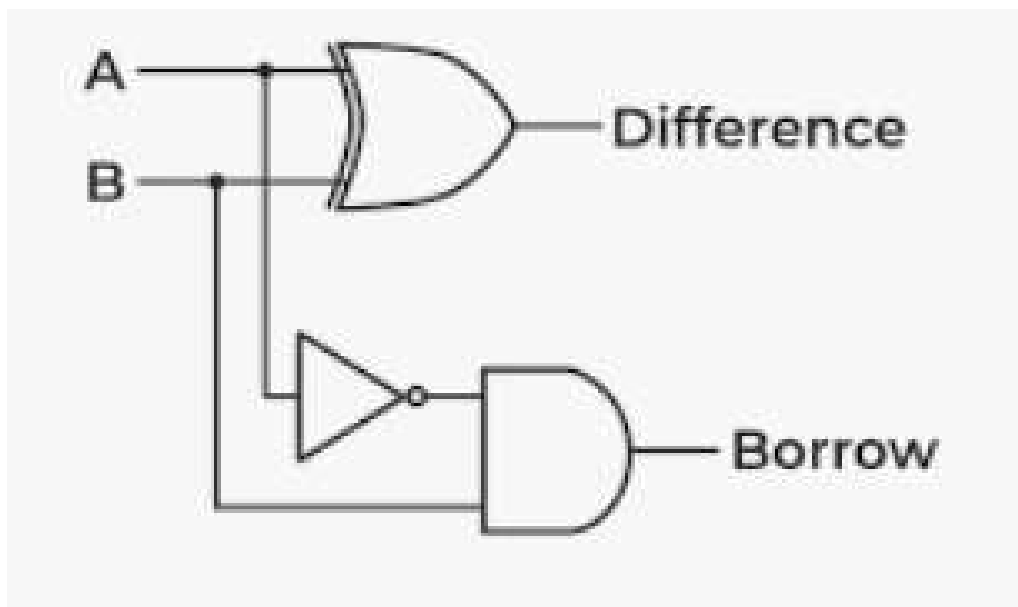
**TRUTH TABLE:**

A	B	Diff	Borrow
0	0	0	0
0	1	1	1
1	0	1	0
1	1	0	0

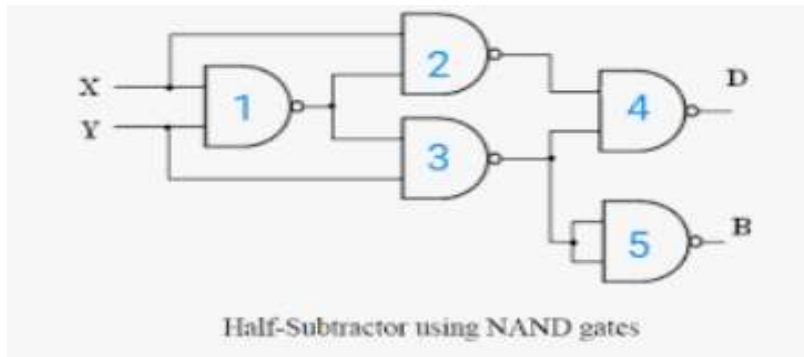
$$\text{Diff} = A'B + AB'$$

$$\text{Borrow} = A'B$$

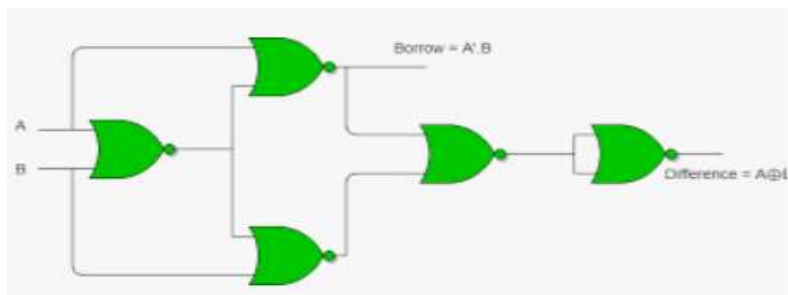
Logical Diagram:



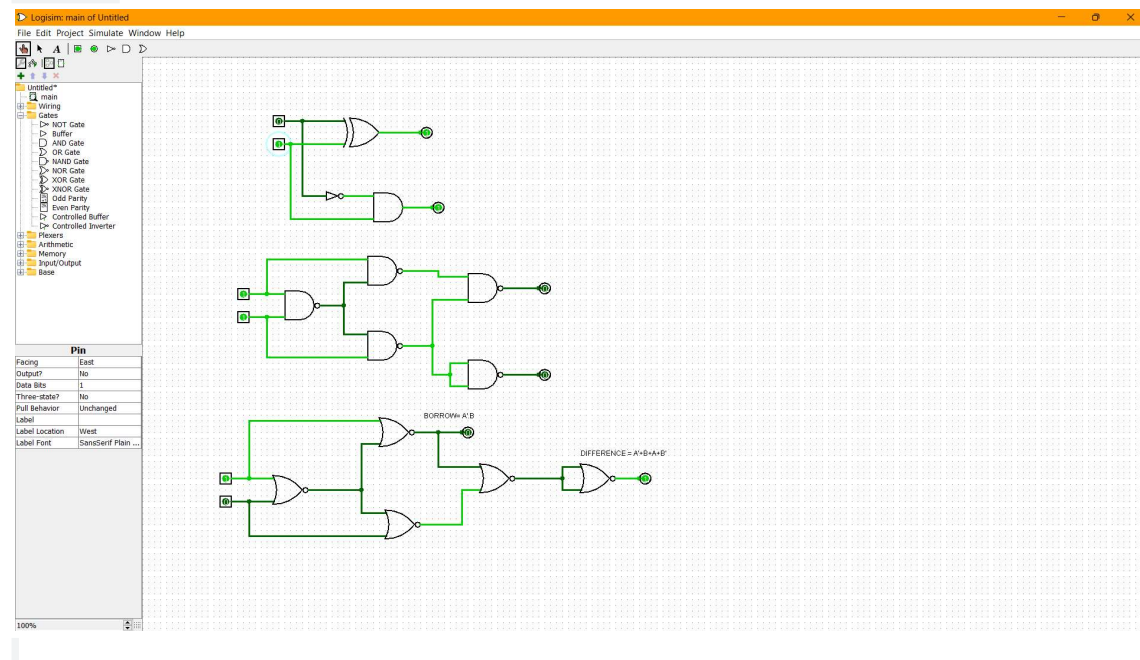
Half Subtractor using NAND Gates:



Half Subtractor using NOR Gates:



## OUTPUT



**RESULT:** Thus 2-bit half subtractor has been designed and implemented successfully using logisim simulator.