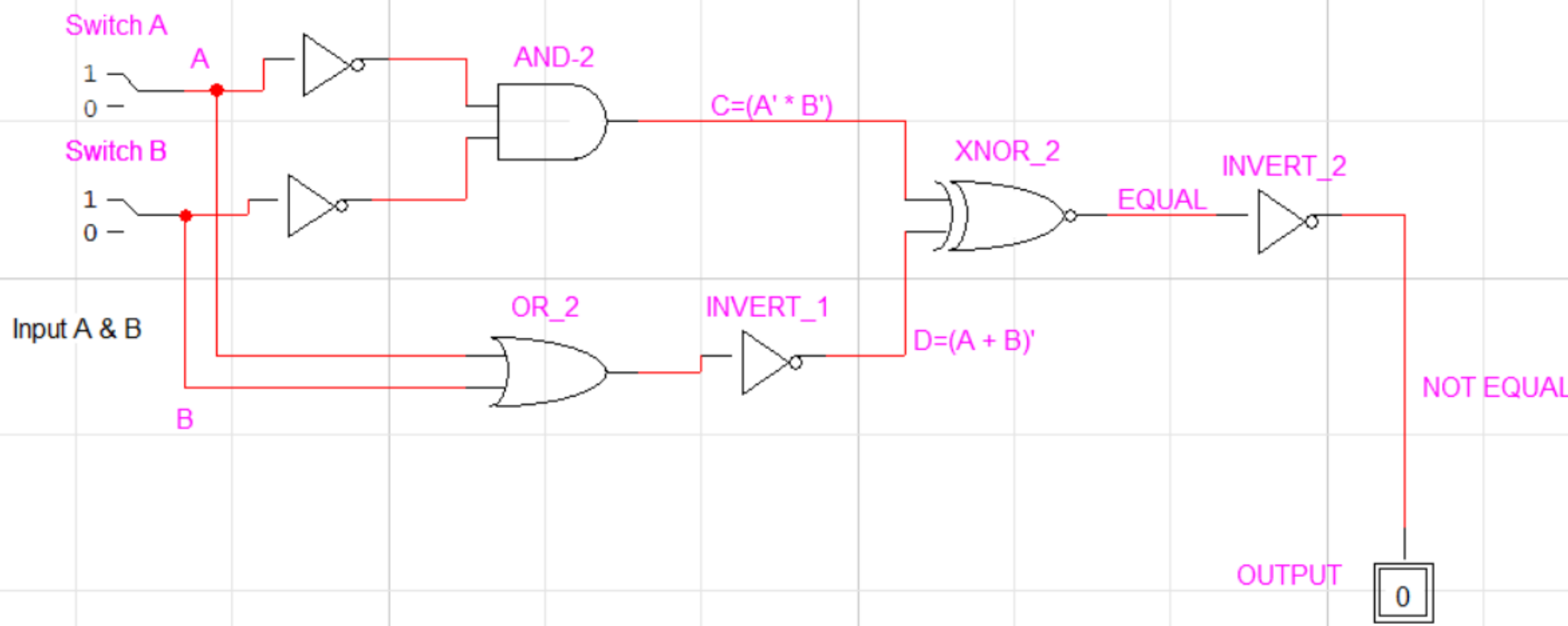
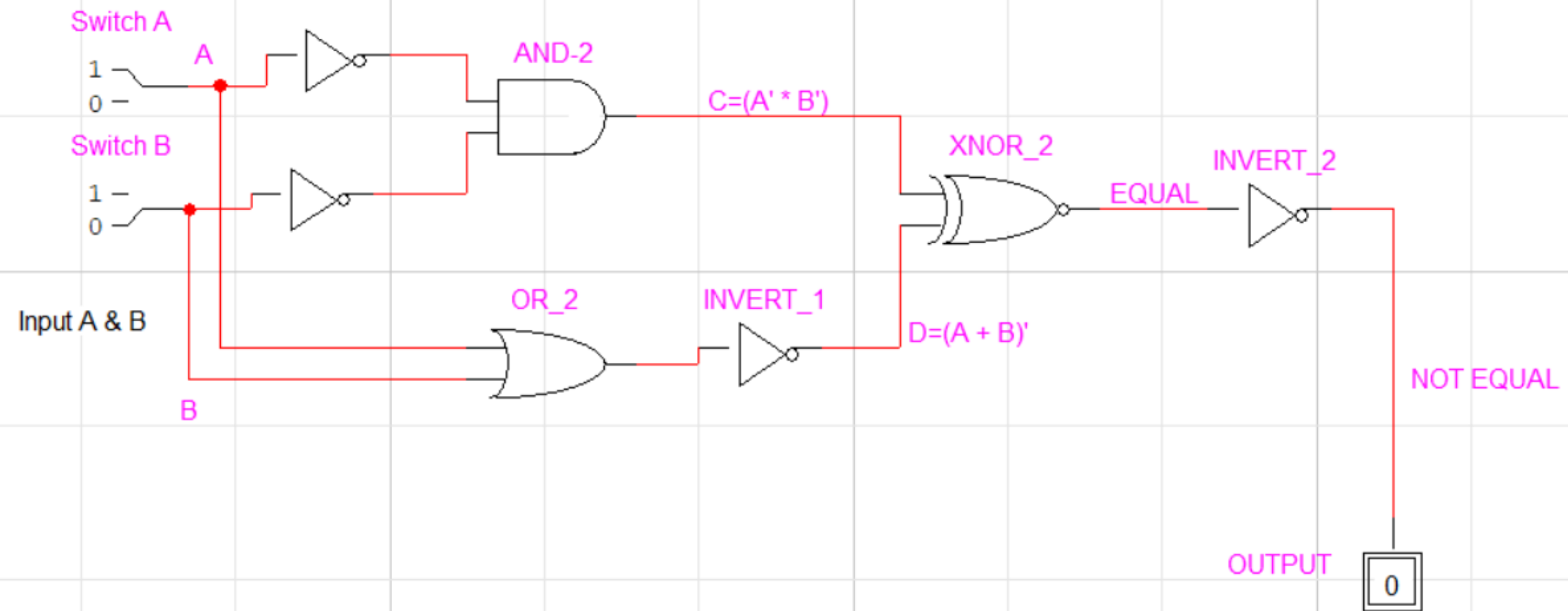


PROBLEM #1

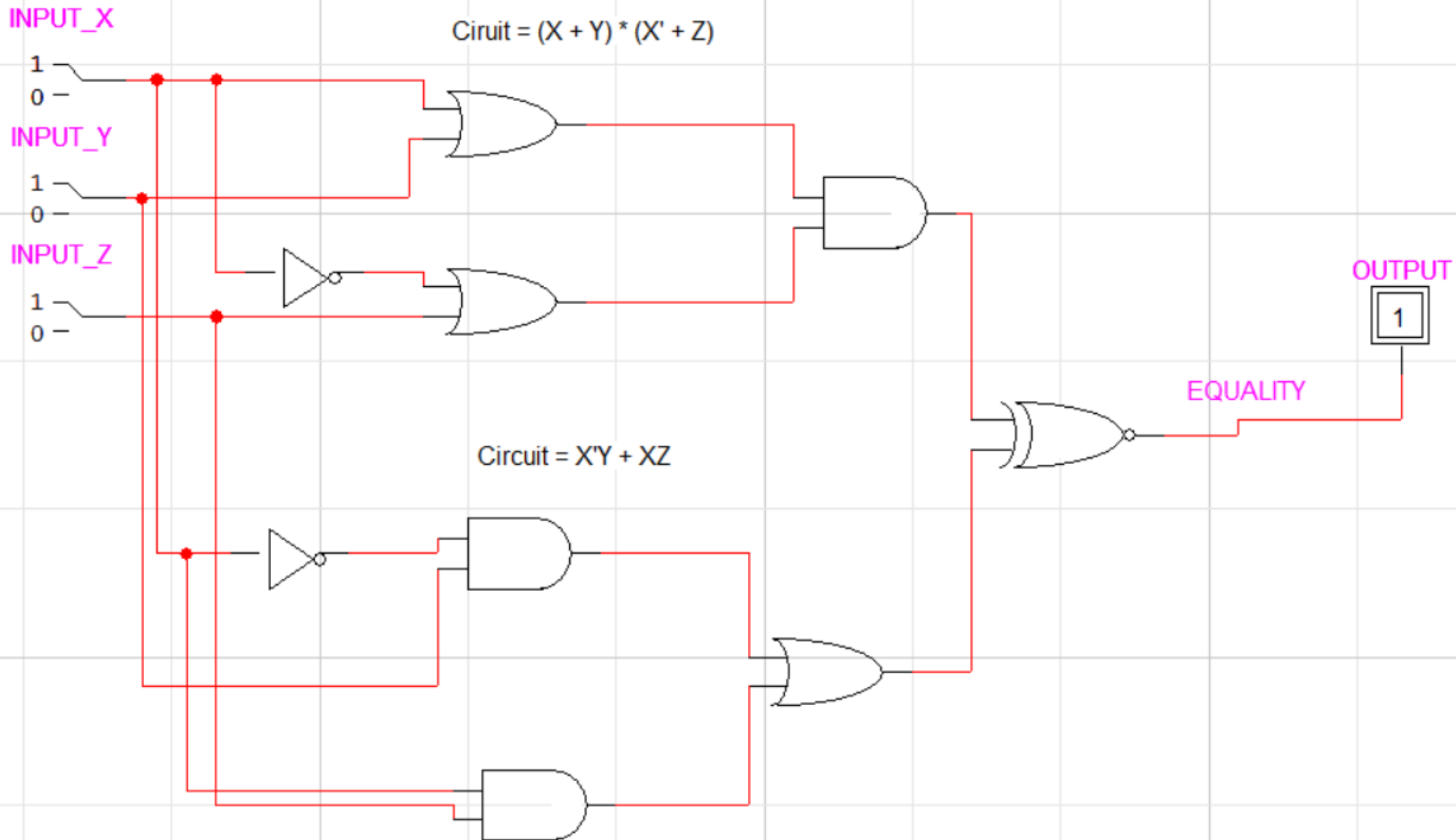


PROBLEM #1



PROBLEM #2

$$\text{Circuit} = (X + Y) * (X' + Z)$$



PROBLEM #2

$$\text{Circuit} = (X + Y) * (X' + Z)$$

INPUT_X

1
0

INPUT_Y

1
0

INPUT_Z

1
0

OUTPUT

1

EQUALITY

$$\text{Circuit} = X'Y + XZ$$

```
graph LR
    subgraph Top_Circuit [Circuit = (X + Y) * (X' + Z)]
        direction LR
        I1[INPUT_X] -- 1 --> J1(( ))
        I1 -- 0 --> J2(( ))
        I2[INPUT_Y] -- 1 --> J3(( ))
        I2 -- 0 --> J4(( ))
        J1 --> OR1[OR Gate]
        J3 --> OR1
        J2 --> NOT1[NOT Gate]
        J4 --> OR2[OR Gate]
        NOT1 --> OR2
        OR1 --> AND1[AND Gate]
        OR2 --> AND1
    end

    subgraph Bottom_Circuit [Circuit = X'Y + XZ]
        direction LR
        I1 -- 1 --> J5(( ))
        I1 -- 0 --> J6(( ))
        I2 -- 1 --> J7(( ))
        I2 -- 0 --> J8(( ))
        J5 --> NOT2[NOT Gate]
        NOT2 --> AND2[AND Gate]
        J7 --> AND2
        J6 --> AND3[AND Gate]
        J8 --> AND3
        AND2 --> OR3[OR Gate]
        AND3 --> OR3
    end

    AND1 --> OR4[OR Gate]
    OR3 --> OR4
    OR4 --> EQ[EQUALITY]
    EQ --> OUT[OUTPUT: 1]
```