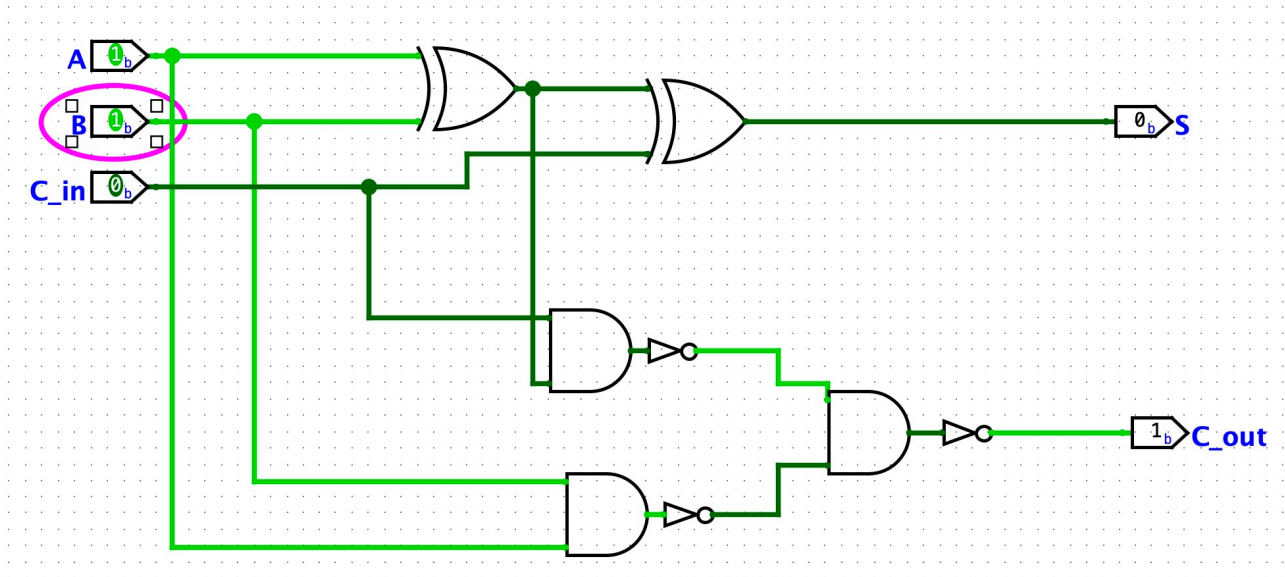


Lab 2

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- 17012296

Full Adder Circuit



Full Adder Code

```
def full_adder(a, b, c_in):
    out1, a_XOR_b = XOR(a, b)
    out2, S = XOR(c_in, a_XOR_b)

    out3, a_AND_b = AND(a, b)
    out4, a_NAND_b = NOT(a_AND_b)

    out5, ab_AND_c = AND(a_XOR_b, c_in)
    out6, ab_NAND_c = NOT(ab_AND_c)

    out7, cout_temp = AND(ab_NAND_c, a_NAND_b)
    out8, C_out = NOT(cout_temp)

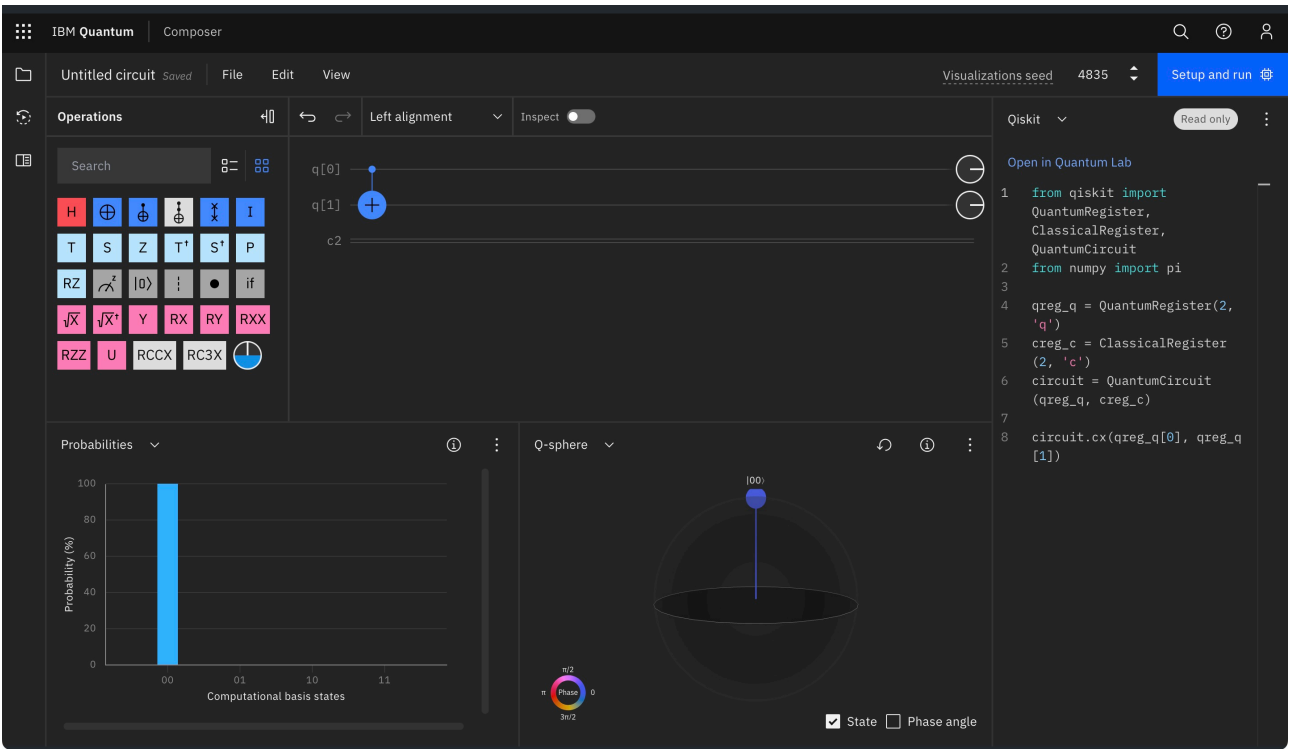
    return S, C_out

print("A\tB\tCin\t(Sum, Cout)")
for a in ['0', '1']:
    for b in ['0', '1']:
        for c_in in ['0', '1']:
            print(f"{a}\t{b}\t{c_in}", end="\t")
            print(full_adder(a, b, c_in))
```

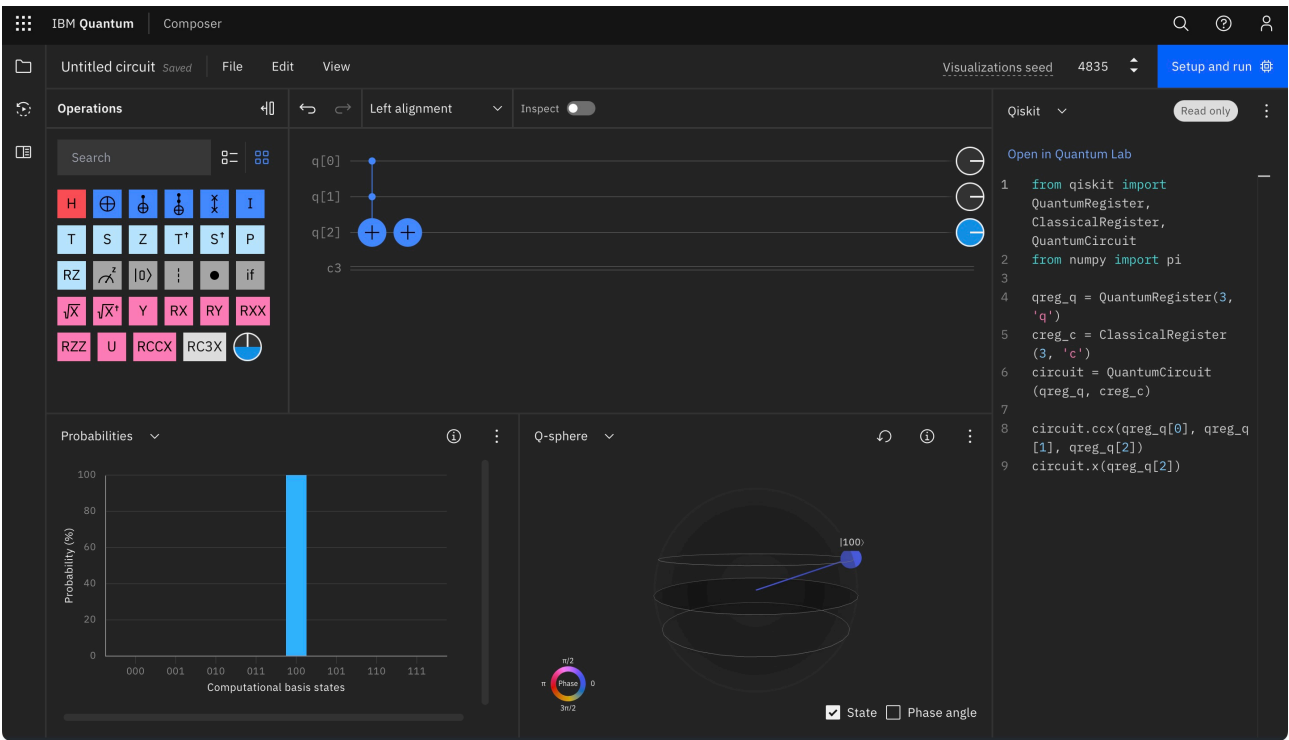
A	B	Cin	(Sum, Cout)
0	0	0	(0, 0)
0	0	1	(1, 0)
0	1	0	(1, 0)
0	1	1	(0, 1)
1	0	0	(1, 0)
1	0	1	(0, 1)
1	1	0	(0, 1)
1	1	1	(1, 1)

Quantum Connections

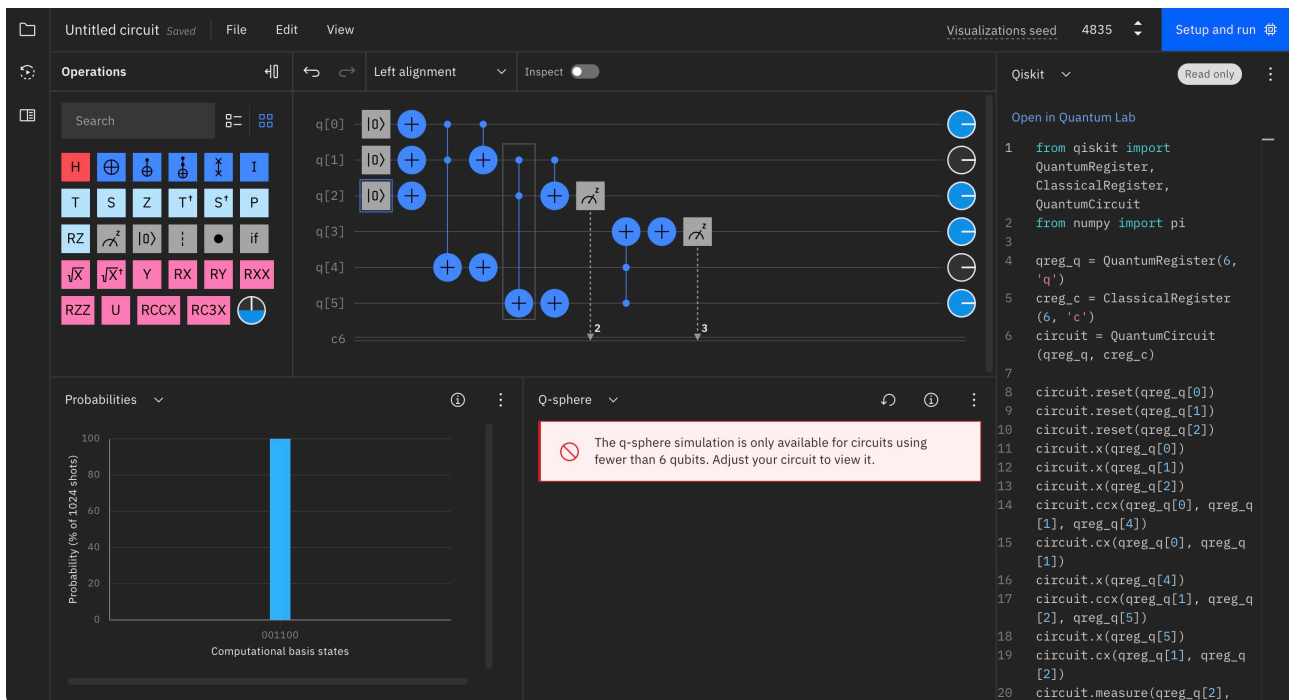
XOR GATE



NAND Gate



Full Adder



The result bits are the observed bits. Sum on top and Carry out on the bottom