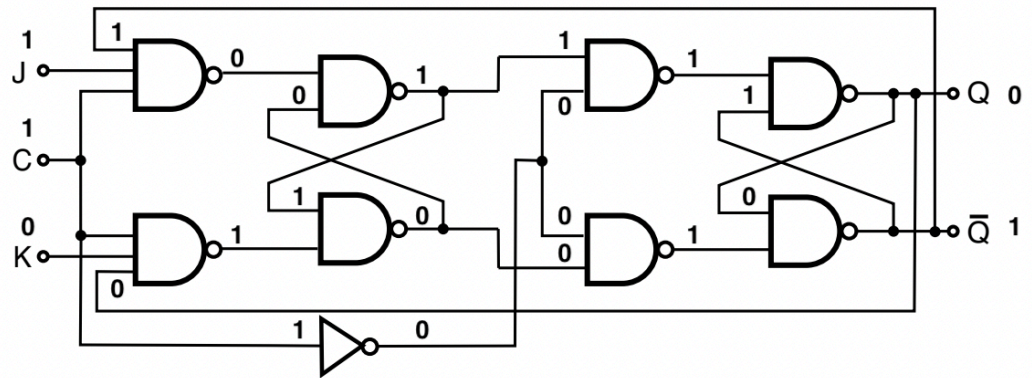


# Intro To Computer Science

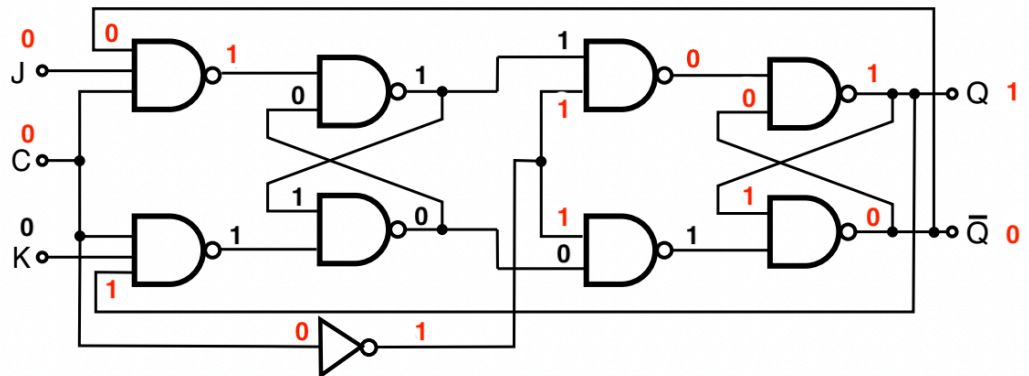
## Sheet 10

Problem 10.1:

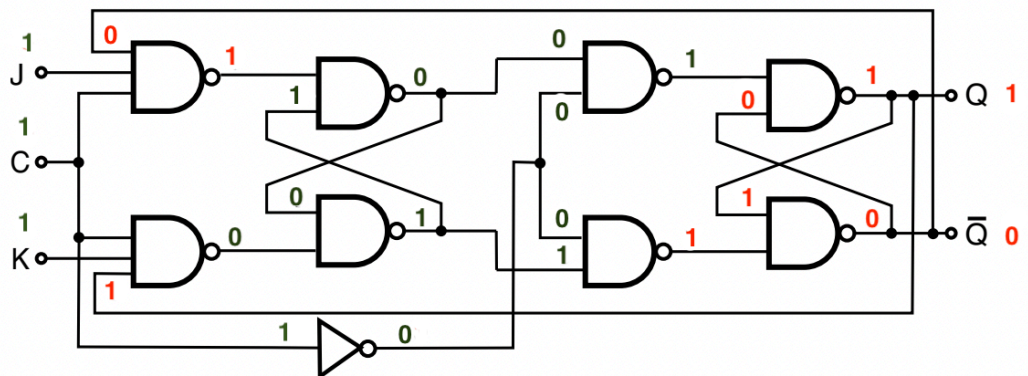
A)



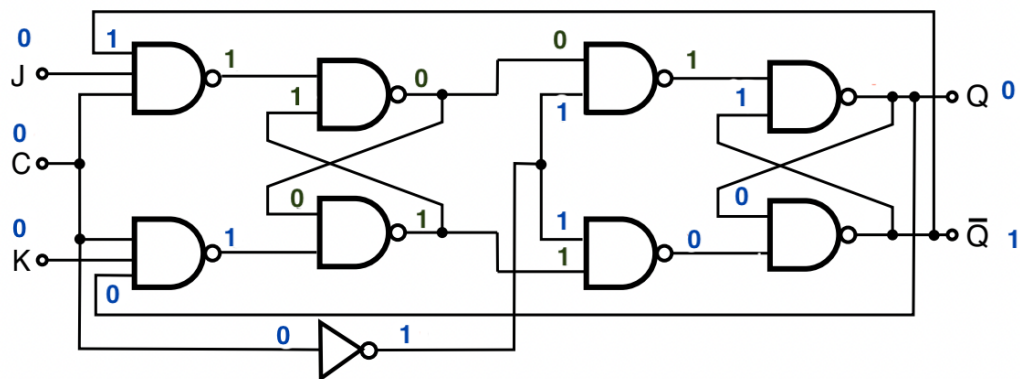
B)



C)



D)



Problem 10.2:

A+B)

Cell	Hex	Binary	Assembler	Description
0	2e	001 0 1110	LOAD 14	Load the value of memory location 14 into ACC
1	b0	101 1 0000	EQUAL #0	Skip instruction if ACC is equal to value 0
2	d4	110 1 0100	JUMP #4	Jump to instruction 4
3	e0	111 0 0000	HALT	Stop execution
4	2f	001 0 1111	LOAD 15	Load the value of memory location 15 in ACC
5	6f	011 0 1111	ADD 15	Add the value stored in memory location 15 to ACC
6	4f	010 0 1111	STORE 15	Store the value of ACC in memory location 15
7	2e	001 0 1110	LOAD 14	Load the value of memory location 14 into ACC
8	91	100 1 0001	SUB #1	Subtract the value 1 from value in ACC
9	4e	010 0 1110	STORE 14	Store value of ACC in memory location 14
10	cb	110 0 1011	JUMP 11	Jump to instruction stored in memory location 11
11	00	000 0 0000	DATA 0	0
12	00	000 0 0000	DATA 0	0
13	00	000 0 0000	DATA 0	0
14	06	000 0 0110	DATA 6	6
15	01	000 0 0001	DATA 1	1

C)

```
#include <iostream>

int main(){
    int memory15 = 1;
    int memory14 = 6;
    int ACC;

    while(memory14 != 0){
        ACC = memory15;
        ACC += memory15;
        memory15 = ACC;

        ACC = memory14;
        ACC -= 1;
        memory14 = ACC;
    }
    std :: cout<<memory15;
}
```

D) The value in memory 14 will change to 0 and then the value in memory location 15 will add to itself in each iteration while the iteration also decrements the value of memory location 14 to 0. Once the value in memory location is 0, the code will halt.

