Assignment 1

Alok Saroj - EE18BTECH11003

Download all latex-tikz and C codes from

https://github.com/Alokking/EE4013/tree/main/Assignment1/codes

https://github.com/Alokking/EE4013/blob/main/Assignment1/Assignment.tex

1 Problem

(Q 37) Consider the following C program.

```
#include <stdio.h>
int main()
{
    int i, j, count;
    count = 0;
    i = 0;
    for(j=-3; j<=3; j++)
    {
        if((j>=0) && (i++))
            count = count + j;
    }
    count = count + i;
    printf("%d", count);
    return 0;
}
```

Which one of the following options are correct ?

1) The program will not compile successfully.
2) The program will compile successfully and output 10 when executed.
3) The program will compile successfully and output 8 when executed.
4) The program will compile successfully and output 13 when executed.

2 Solution

Answer : Option 2

- Initially, i=0, count=0 and a for loop is running from j= -3 to j=3. If condition inside the for loop will execute when j>=0 and i is non zero. So for j=-3, -2, -1, it will not go inside the if condition, as j is less than 0.
- When j=0, initial value of i is also 0, so if condition will not satisfy, but i++ will increment the value of i after checking the if condition. so now i =1.
- When j=1, the value of i is 1, so it will enter the if condition and the value of count will be 0+1 = 1, and i++ will increment the value of i after checking the if condition. so now i =2.
- When j=2, the value of i is 2, so it will enter the if condition and the value of count will be 1+2 = 3, and i++ will increment the value of i after checking the if condition. so now i =3.
- When j=3, the value of i is 3, so it will enter the if condition and the value of count will be 3+3 =6 , and i++ will increment the value of i after checking the if condition. so now i =4.
- After running the for loop, the value of count variable is 6 and the value of i is 4.

Explanation
Initially i=0, j=-3, count=0
As j>=0 , i increases

int i	int j	count=count+j
0	-3	0
0	-2	0
0	-1	0
1	0	0
2	1	1
3	2	3
4	3	6

TABLE 4

After reaching j=3 the loop will break
We have count = 6 and i = 4
OR We can write expression as

$$count = (\sum_{j=0}^{n} j) + i \qquad (2.0.1)$$

Here, i = n+1
For the above given question n=3 so count = 10