Assignment #1 – SPRING 2023

Course Title:	Design and Analysis of Algorithms	Course Code:	CSC301	Credit Hours:	3
Course Instructor:	Dr. Hasan Jamal	Date:		06/03/2023	
Deadline:	11:59 PM, 08/03/2023	**Maximum Marks:**		**10**	

Important Instructions / Guidelines:
- Handwritten strictly.
- Maximum three persons per group are allowed for submission.
- No late submission allowed
- One of the group members shall upload the assignment on Google Classroom

Question: **[Marks: 10]**

CLO: < 4 >; Bloom Taxonomy Level: < Understanding >

For the following code snippet, provide a line-by-line analysis and construct function T(n) that give the runtime of this code snippet as a function of "n". Also determine the Big-Oh of this code snippet.

```
for (int i = 0; i < n; ++i) {
    if ( i%2 != 0)
        sum += foo( i ) + foo( i+1);
    else
        sum += foo( i ) + bar( i );
}


bar (a) {
    for (int i = 0; i < n; ++i)
        for (int j = 0; j < i; ++j)
            a = a*(i + j);
    return a;
}


foo (a) {
    for (int i = 1; i ≤ n*n; ++i)
        a =  a * i;
    return a;
}
```