**Exercise 3 Task A – Complexity and Big O notation**

**Segment 1:**

Console.WriteLine("please input n"); // This line runs once

int n = Convert.ToInt32(Console.ReadLine()); // This line runs once

int r = 20; // This line runs once

int dummy = 0; // This line runs once

Console.WriteLine("Creating a nested loop"); // This line runs once

for (int i = 0; i < n; i++) // This loop runs n times

{

Console.WriteLine("Inside the first loop"); // This line runs n times

dummy++; // This line runs n times

for (int j = 0; j < n; j++) // This nested loop runs n \* n times

{

r = r + dummy; // This line runs n \* n times

Console.WriteLine("Inside the second loop " + r); // This line runs n \* n times

}

}

Big O notation complexity for Segment 1: O(n^2)

**Segment 2:**

Console.WriteLine("please input m "); // This line runs once

int m = Convert.ToInt32(Console.ReadLine()); // This line runs once

for (int j = 1; j <= m; j++) // This for loop runs m times

{

Console.WriteLine("for loop"); // This line runs m times

}

while (m > 0) // This loop runs m times

{

m--; // This line runs m times

Console.WriteLine("while loop"); // This line runs m times

}

Big O notation complexity for Segment 2: O(m)