**DataStructure Introduction assignments**

**1. Refer the code below and estimate the time complexity.**

**a.**

**for(i= n ; i > 0; i++){**

**for(j = 0; j<n;j\*2){**

**cout<<i;**

**}**

**}**

Total Time Complexity:

· The outer loop runs n times.

· The inner loop runs approximately log₂(n) times for each iteration of the outer loop.

Thus, the total time complexity for this code is: O(n⋅logn)

**b.**

**for(i= n ; i > 0; i++){**

**//some operation here**

**}**

**//m > n**

**for(j = 0; j<m;j++){**

**//some operation here**

**}**

Total Time Complexity:

· The first loop runs n times, with constant time operations inside, so it contributes O(n).

· The second loop runs m times, with constant time operations inside, so it contributes O(m).

Since these two loops are independent, the total time complexity is: O(n+m)