**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;

}

}

Ans: **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

}

Ans: **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)