**Day 1 Assignment**

1. Find the time complexity for the following scenarios
2. for(i=1;i<=n;i++)

for(j=i;i<=n;j++)

printf("Hi");

Ans:-

for(i=1;i<=n;i++) ----------- n

for(j=i;i<=n;j++) -------- n-1\*n

printf("Hi");-----------n-1\*(n-1)

Time Complexity = n + n(n-1) + {(n-1)(n-1)}

= n + n2 - n + (n2- 2n + 1 )

= 2n2 + 2n -1

= O(n2)

Therefore, time complexity of the given problem is O(n2).

1. for(i=1;i<=n;i\*=3)

for(j=1;i<=n;j++)

printf("Hello");

Ans:-

for(i=1;i<=n;i\*=3) ---------------log n

for(j=1;i<=n;j++) -------------log n \* n

printf("Hello"); -----------log n \* (n-1)

Time Complexity = log n + (log n \* n) + {log n \* (n-1)}

= log n + n log n + (n - 1) log n

= log n + n log n + n log n - log n

= 2 n log n

= O (n log n)

Therefore, time complexity of the given problem is O(n log n).