

Day 1 assignment:

a) Find the time complexity for the following scenarios.

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

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

printf("Hi")

Solution:

$n + (n-1) + (n-2) + \dots + 2 + 1$ -> This number of times the loop will run

Summation of the above series will be

$$n(n-1)/2$$

$$= (n^2 - n)/2$$

= n^2 (getting only the highest order)

$O(n^2)$ -> Answer

ii) for(i=1; i<=n; i*=3)

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

printf("Hi")

Solution:

$(1 + 3 + 9 + 27 + \dots + 3^{(n-1)})n$ -> This number of times the loop will run

Summation of the above series

$$= n(n-1)\log 3$$

= n^2 (Getting only the highest order)

$O(n^2)$ -> Answer