Data Structures
And Algorithms

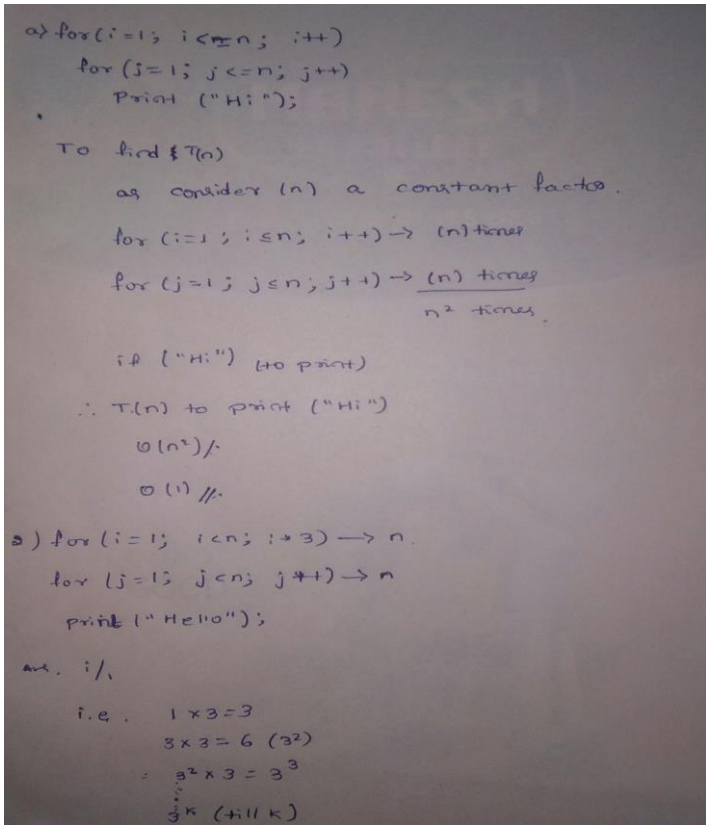
Assignment Day 1 | 24th December 2020

Question 1

1.Find the time complexity for the following scenarios

a.)
```
for(i=1;i<=n;i++)
    for(j=i;i<=n;j++)
        printf("Hi");
```

b.)
```
for(i=1;i<=n;i*=3)
    for(j=1;i<=n;j++)
        printf("Hello");
```



Assume $i > n$.

$\therefore i = 3^k$.

$= 2^k > n$

$2^k = n$

$k = \log_3 n$.

$\therefore O(\log_3 n)$

Assuming $n = 12$.

i/1

3 4 12

3

$\Rightarrow n = 3$

$\log 12 = 3$

$= \log_3 12^3$

$= 3 \log_3 12$

$= 2.2$ // $\Rightarrow$ The answer is said to be scaled value [$\log n$]

As it is near the number of loop that is $n = 3$

$\therefore T(n) = O(\log_3 n)$.

Ag $(j = 1;\ j \le n;\ j{+}{+})$

let

$1 + + + + 1 + - - - - + 1 n = n$

$\therefore O(n)$