Assignment 1 | 4th January 2021

For any doubts regarding the assignment, ask questions in the Data Structures and Algorithms Group in the Community.

Submit Assignments by 12th January 2021 11:59 PM

Assignment Submit Form: https://forms.gle/NNBMrBwhTFKhuP5h6

Submit assignments in Appropriate Dropdowns.

Questions here

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");
```

Answers

a. The time complexity for the code (a) is

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

Value of i	Value of j	
1	1, 2, 3,……., n	=> n
2	2, 3, 4,……., n	=> n-1
3	3, 4, 5,……., n	=> n-2
4	4, 5, 6,……., n	=> n-3
…….		
n-1	n-1, n	=> 2
n	n	=> 1

Total time complexity will be

n + n-1+ n-2 + …….. + 2 + 1 = n (n + 1)/2

We consider only the highest order that is "n^2"

Therefore, the time complexity of the above code will be "$O(n^2)$".

b. The time complexity for the code (b) is

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

Value of i	Value of j	
1	1, 2, 3, …., n	=> n
3	1, 2, 3, ….., n	=> n
…….		

Time complexity for 'i' is $O(\log_3 n)$

Time complexity for 'j' is O(n)

Total time complexity of the code will be "$O(n \log_3 n)$".

FAQs

Q. When do I submit the Assignments and how?

A. The assignments for the week should be submitted by 12th January 2021 i.e.Tuesday 11:59 PM IST.

B. You need to submit the answers in Document Format

Q. Where do I get class links for the next session?

A. All sessions will be Live on the Learning Management System. **Click here** for your classroom on Learning management system

B. It will be also updated in the Community Group in the pinned post.

Q. I have some doubt, who do I ask?

A. Post your Queries on the community, someone will help you out.

Q. How can we know if my assignment is verified or not? And is it successfully submitted or not?

A. You will receive a mail for your successful submission.