9/4/15

(Lec 3.4) 1) Data Structure & Algorithms

1) Data Structure:-

It used to manage, organize or create mechanism to store data.

→ Data Structure is a general term. It has following terms:-

- Arrays
- Stacks (First in, Last out)
- Queues (First in, First out)

What are Algorithms?

Algorithm is a step by step way (shows processing) in general way. It can be in any general language

What is Program?

Implementable part of algorithm while using some particular Language.

What are main advantages of OOP?

i) Re-usability
ii) Modularity

In classes (general Type)

- Attributes are of static type
- Functions are of Dynamic Type.

Major differences b/w ADT & Data Structure

Abstract data Type	Data Structure
• It only tells what to do? • It is only Logical representation • It only gives properties & functions.	It also tells which to do? Physical implementation It gives data properties & methods. It implements the properties & functions.
Examples: Stacks (Logically)	Examples: Stacks (Using Arrays) (Implementing)

Arrays

Arrays are Configcous Memory Locations.

Why we use Array?

i) For storage of elements

ii) Direct Access:-
Arrays enables us to have direct access to any particular value in Array.

To print particular value, we will search by index

```
cout << str [2];
```

gf will print value stored at index no. 2

Syntax:-

i.e.

```
int str [5];
{
for(int i=0; i<=4; i++)
{
cin >> str [i];
cout << str [i];
}
return 0;
}
```


What are 2-D Arrays?
Arrays having two inputs (rows & columns)
i.e int arr [5][4];

i) First Loop for rows.
ii) Second Loop for columns.

Problem Solving Techniques

There are Two problem solving Techniques under discussion here:-

1) Hit & Trial Method:-

Their is no such mechanism in this method. (Heuristic)

2) Divide & Conquer:-

Divide big problem into small ones and then implement it.