

Data Structures and Algorithms I

Arrays in Data Structures Tutorial 01

One Dimensional Array

- 1). Write a C program to take inputs from user and print the array values using for loops. (For one-D Array)

Hint: use array name as **Test** and actual size of array is 5 and array maximum size is 50.

Use the array values as 5, 6,3,7,9

Write a required code snippet for asking user what is the actual size of array.

Hint: use new variable **size**

- 2). Update the above program to insert an element to third position of the above array. (Use swapping method; start to swap from last index).

Hint: use two new variables as **num** and **pos**. Write the code segment to read the values for these two variables from the user.

- 3). Modify the above program to check the upper bound limits of the array using if else statement.

- 4) Update the program to insert an element at the beginning.

- 5) Write a program to delete the second element of array.

- 6) Write the code segment to check the position validity

- 7). Modify the above program to delete the element from 0th index.

One D Arrays and Pointers

- 1). Write a program to access the base address of the below array using pointers.

int a[]={6,2,1,5,3}, **Hint:** Declare the two pointers as **p** and **q** and variable **b** in **int** type with value is 10.

- 2) Evaluate the following statements are correct or not and give the reason.

p=&b;

q=a;

q=a[2];

a=&a;

q=&q;

- 3) Write the printf() to print the value of pointer p.

- 4) Write a printf() to print the address of b in hexadecimal form.

- 5) Write the printf() to print the value of array a of 2 that is a[2].

- 6) What is the value of *(a+1) and *(q+1).

- 7) Find the values of the following statements.

printf("\n%d",*a);

```
printf("\n%X",a+1);
printf("\n%X",&a+1);
printf("\n%X",&a[0]+1);
printf("\n%X",a+1);
printf("\n%d",*a+1);
printf("\n%d",*(a+1));
```

Two Dimensional Arrays

- 1). Write a program to take inputs from user and print the array values using for loop. (For two-D array)

Hint: use array name as **arr** and use the array values as following table.

| | | |
|---|---|---|
| 1 | 2 | 3 |
| 4 | 5 | 6 |

- 2) Write a program to enter array values from the user and print the values using pointers.

Two D Arrays and Pointers

- 1). Write a program to access the base address of the below array using pointers.

| | | |
|---|---|---|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |

Declare the pointer variable as p.

- 2) Evaluate the following statements are correct or not.

```
P=&a[0][0]; or p=a[0];
print p/a/&a[0][0]/&a/*a/a[0]
a+1/&a[1]
*(a+1)/a[1]/&a[1][0]
*(a+1)+2
*(*(a+1)+2) / a[1][2]
```