WELCOME 2 U

About :- array

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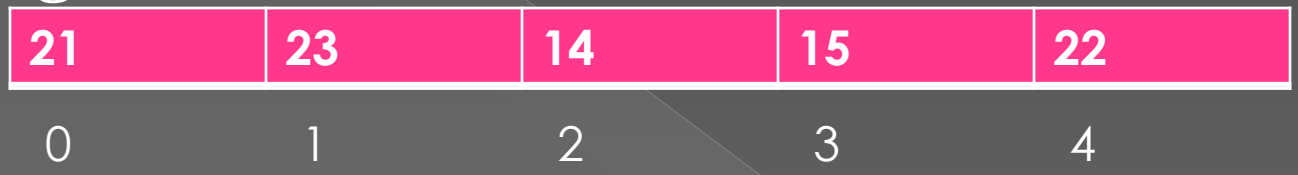
INTRODUCTION OF ARRAY

- Array is a collection of same type elements under the same variable identifier referenced by index number.
- It supports the homogeneous data type not heterogeneous.
- Arrays are widely used within programming for different purposes such as sorting, searching and etc.
- Arrays are efficient and useful for performing operations .

INTRODUCTION TO ARRAY

- It always start from 0 (zero) position and end with size -1.
- eg. int a[5]={21,23,14,15,22}



- Therefore in an array with “n” elements first index is “0” and the last index is “n-1”.
- The value of each element of the array is listed within two curly brackets ({ }) and a comma (,) is used to separate one value from another.

Sample Program 1

```
/* example of an array */
#include<stdio.h>
#include<conio.h>
void main()
{
int i;
int n[5]= {2, 4, 6, 3, 0};
for (i=0; i<=4; i++)
{
printf("%d\n", n[i]);
}
getch();
}
```

Output:

3. Write a flowchart and a program to read 5 persons age maximum, minimum

```
#include <stdio.h>
#include <conio.h>
void main()
{
int age[5],max=0,min=100,i;
clrscr();
for (i=1;i<=5;i++)
     {
printf("enter the age: ");
scanf("%d",&age[i]);
if (age[i]>max)
   max=age[i];
 if(age[i]<min)
 min=age[i];
 }
 printf("\nmax=%d", max);
 printf("\nmin=%d",min);
 getch();
 }
```

WAP to interchange given numbers {3,61,80,9,70,51,2,1}

```
#include <stdio.h>
#include <conio.h> //interchange the number
  void main()
  {
  int num[8]={3,61,80,9,70,51,2,1};
  int i,temp;
  clrscr();

  for(i=0;i<=7;i+=2)
  {
  temp=num[i];
  num[i]=num[i+1];
  num[i+1]=temp;

   }
   for(i=0;i<=7;i++)
    printf("\n marks=%d",num[i]);
      getch();
      }
```

```
#include <stdio.h>
#include <conio.h>
 void main()
 {
 clrscr();
 int arr[5]={25,17,31,13,2},i,j,temp;
 for(i=0;i<5;i++)
  {
  for(j=0; j<5-i; j++)
      {
   if (arr[j]> arr[j+1])
       {
       temp=arr[j+1];
       arr[j+1]= arr[j];
       arr[j]=temp;       }
        }
      }
    printf("\n\narray after sorting \n");
    for(j=0;j<5;j++)
    printf("%d\t",arr[j]);
    getch();
    }
```

//Program to sort following numbere in Ascending order= 25,17,31,13,2

```
#include <stdio.h>
#include <conio.h>
 void main()
 {
 clrscr();
 int arr[5]={25,17,31,13,12},i,j,temp;
 for(i=0;i<5;i++)
  {
  for(j=0; j<5-i; j++)
     {
   if (arr[j]> arr[j+1])
      {
      temp=arr[j];
      arr[j]= arr[j+1];
      arr[j+1]=temp;
      }
       }
     }
    printf("\n\narray after sorting \n");
    for(j=0;j<5;j++)
    printf("%d\t",arr[j]);
    getch();
    }
```

//Program to sort following numbere in decending order= 25,17,31,13,2

7. WAP to print the odd and even numbers from 1 to 10 and sum them separately.

```
#include <stdio.h>
#include <conio.h>
 void main()
 {
 int a[10]={1,2,3,4,5},sum=0,even=0,odd=0,i;
 for(i=0;i<=4;i++)
 {
 //printf("enter the number=");
 //scanf("%d",&a[i]);
 sum=sum+a[i];
 if (a[i]%2==0)
 {
    even=even+a[i];
     }
     else

   odd=odd+a[i];
    }
 printf("\ntotal sum=%d",sum);
  printf("\ntotal even=%d",even);
  printf("\ntotal odd=%d",odd);

  getch();
  }
```

/* Write a program to read five persons age using array and find out average age. (preeboard exam 2070*/

```
#include <stdio.h>
#include <conio.h>
 void main()
   {
  int age[5],sum=0,avg,i;
  clrscr();
  for(i=0;i<5;i++)
  {
  printf("Enter five persons age:");
  scanf("%d",&age[i]);
  sum= sum+age[i];
   }
  avg=sum/5;
  //printf("\nsum=%d",sum);
  printf("\navg=%d",avg);
 getch();
   }
```

Print “NEPAL”

```
#include <stdio.h >
#include <conio.h>
 void main()
 {
 char n[5]= "NEPAL",i;
  for(i=0;i<5;i++)
   {
    printf("%c",n[i]);
     }
   getch();
     }
```

Show this (2072-3-18)

N

N E

N E P

N E P A

N E P A L

```
#include <stdio.h >
#include <conio.h>
 void main()
 {
 char n[6]= "NEPAL",i,j;
  for(i=0;i<=5;i++)
   {
      for(j=0;j<i;j++)
      {
       printf("\t%c",n[j]);
              }
      printf("\n");
             }
       getch();
```

Two/Multi- dimensional array

Multi- dimensional arrays are those which have more then one dimensions. Multi- dimensional arrays are defined in much the same manner as one dimensional array, except that a separate pair of square brackets is required for each subscript .thus ,two dimensional arrays will require two pairs of square brackets.

In 2-D array, the first dimensional specifies number of rows and second specifies columns. Each row contains elements of many columns. Thus ,a row is 1-D array .2-D array contains multiple rows .Thus, 2-D array is an *array of 1-D* arrays. As each row will contain elements of many columns, *2*-D array is an array with a variable with two subscripts e.g

Int a[2] [2]

We can represent matrix in double dimensional array

2 3

1 4

This matrix can be represented by double dimensional array

Int a [2] [2] where

A [0] [0]=2

A [0] [1]=3

A [1] [0]=1

A [1] [1]=4

/*WAP to read matrix of size 2*2 from user display and it to screen*/

```
#include <stdio.h>
#include <conio.h>
 void main()       // print the 2/2 matrix
 {
 int A[2][2],i,j;
 for (i=0;i<2;i++)
   for(j=0;j<2;j++)
   //this is a main matrix entry
      {
       printf("enter the   element %d %d:", i, j);
       scanf("%d",&A[i][j]);
       }
       //print matrix
printf("this is my uptharo matrix: ");
for (i=0;i<2;i++)
   {
    printf("\n");
    for(j=0;j<2;j++)
     {
printf("%d\t",A[i][j]);
      }
     printf("\n");
    }
   getch();
    }
```

/*WAP to read matrix of size 2*2 from user display it to screen and transpose of the matrix*/

```
#include <stdio.h>
#include <conio.h>
 void main()
 {
  clrscr();
  int a[2][2],i,j;
   printf("enter the matrix:\n");
   for(i=1;i<=2;i++)
    {
    for(j=1;j<=2;j++)
    scanf("%d",&a[i][j]);
    }
    printf("the matrix you supplied");
    for(i=1;i<=2;i++)
    {
    printf("\n");
      for(j=1;j<=2;j++)
      printf("\t%d",a[i][j]);
      }
      printf("\n");
      printf("transpose of the matrix\n");
      for(i=1;i<=2;i++)
      {
      for(j=1;j<=2;j++)
      {
      printf("%d\t",a[j][i]);
      }
      printf("\n");
      }
  getch();
   }
```

Program that accept values in 2-Dimensional 3 by 3 array and displays the sum of all the elements.

```
#include<stdio.h>
  #include<conio.h>
  void main()
{
  int arr[3][3], i, j, sum=0;

   for(i=0;i<3;i++)
  {
     for(j=0;j<3;j++)
     {
        printf("\nEnter the value for
A[%d][%d]:",i,j);
        scanf("%d",&arr[i][j]);
           }
  }

for(i=0;i<3;i++)
  {
     for(j=0;j<3;j++)
     {
sum=sum+arr[i][j];
      }
  }

  /*Display the value of sum*/
  printf("\nThe sum of the elements of 2-D
array is %d", sum);
  getch();
  }
```