ARRAYS

Array is a derived datatype which is used to store the more than one values in single

Variable but same type.

Means we can say array is a collection of values of similar datatype.

Types of arrays

I]one dimension array

Ii]Multi dimensional array.

The identification of array is :[] {subscripting or dimension}

If we place the subscript with any type variable it is become array

How to declare the single dimension array

Syntax:- datatype variablename[size];

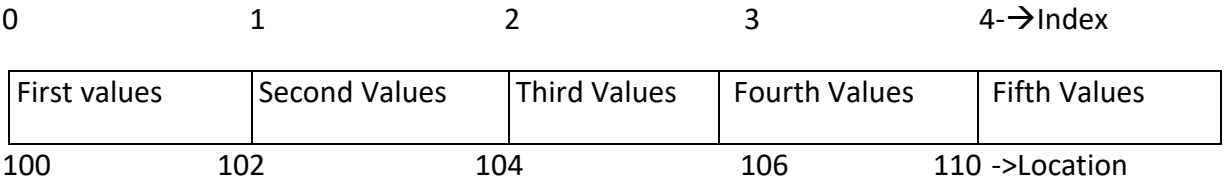
e.g. int a[5];

above statement shows variable a is a integer type array and can store and can store the five values in it because mention in array declaration.

After the array declaration how array stored in memory

Array stored in memory sequentially means one by one.the first element of array stored at location zero index.the second element at one index and so on n-1.

The following diagram shows how array stored in memory as per above example.



Indexes:- insexes are used to insert the element in array delete the specified element

From array search element of array is operation perform on array.

Location:-Location indicate As per datatype size.

How to store the values in single dimension array.

```
For(variable=0;variable<sizeof array;variable++)
{
Scanf("%d",&arrayvariable(variable));
}
e.g.
for(i=0;i<5;i++)
{
Scanf("%d",&a[i]);
}
```

How to shows the values of array retrieve the values of array.

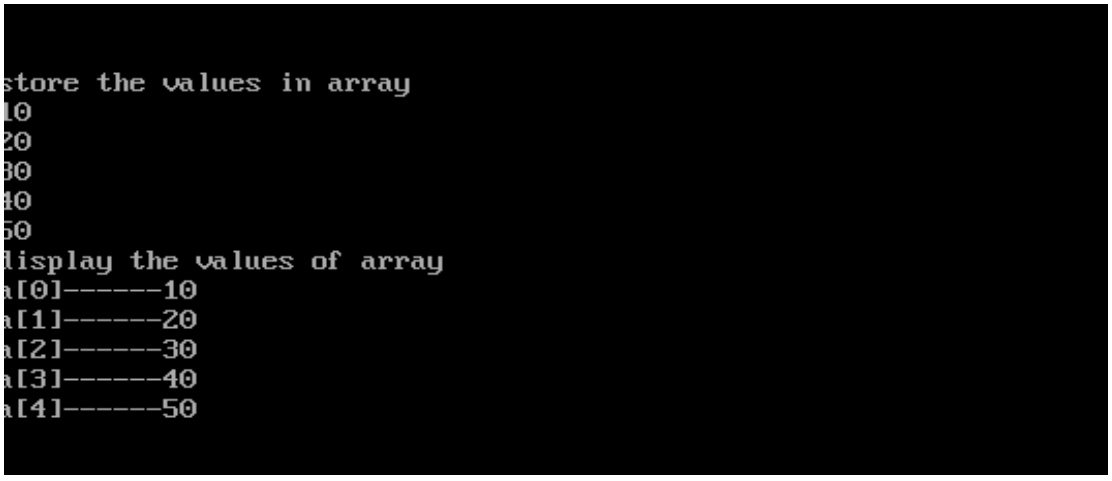
```
For(variable=0;variable<size of array;variable++)
{
Printf("%d",arrayvariable(variable));
}

e.g. for(i=0;i<5;i++)
{
Printf("%d",a[i]);
```

```
}
```

//Programme using the single dimension array store the five values in array and display it

```
#include<stdio.h>
#include<conio.h>
void main(){
int a[5],i;
clrscr();
printf("store the values in array");
for(i=0;i<5;i++)
{
scanf("%d",&a[i]);
}
printf("display the values of array");
for(i=0;i<5;i++)
{
printf("a[%d]------%d\n",I,a[i]);
}
getch();
}
```

Output:-



How to use the two dimensional arrays

Syntax:- datatype variablename[size][size];

e.g.int a[3][4];

genrally two dimensional array is used to create the matrix then first bracket refer to the row and second bracket refer to the colomn.if we want to store the values in two dimensional array then we need to nested two loop.

How to store the values in two dimensional array

```
For(i=0;i<first bracket size;i++)
{
For(j=0;j<second bracketsize;j++)
{
Scanf("%d",&array variable[i][j]);
}
e.g. for(i=0;i<3;i++)
for(j=0;j<4;j++)
{
Scanf("%d",&a[i][j]);
}
}
```

//How to shows or retrieve the two dimensional array

```
for(i=0;i<first bracket size;i++)
{
for(j=0;j<3;j++){
scanf("%d",&a[i][j]);
}
}
printf("\n Display the matrix");
for(i=0;i<3;i++)
{
for(j=0;j<3;j++)
```

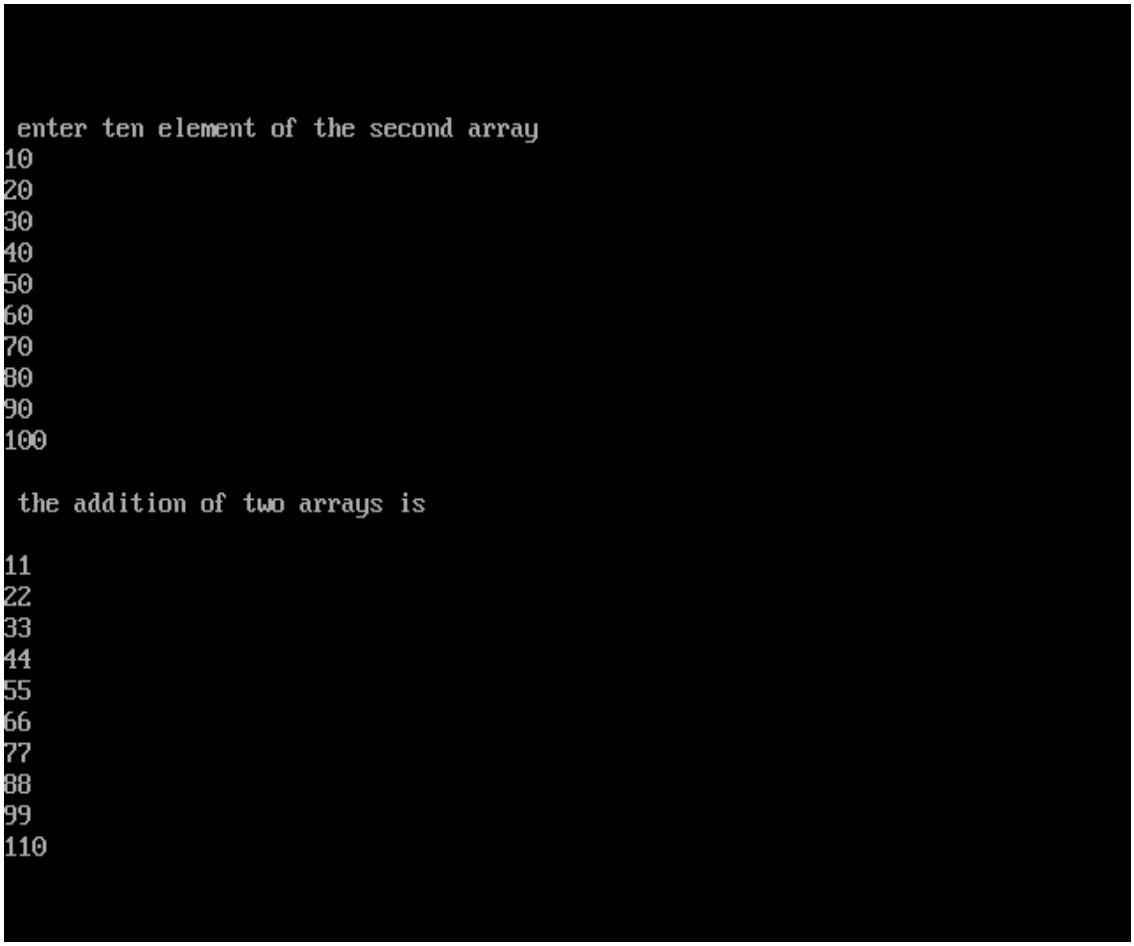
```
{
scanf("%d\t",&a[i][j]);
}
printf("\n");
}
getch();
}
```

//Solved programme on single and two dimensional arrays

//1] programme shows adding two array and storing in third array

```
#include<stdio.h>
#include<conio.h>
void main(){
int num1[10],num2[10],sum[10],i,j,k;
clrscr((();
printf("\n enter ten element of the first array:\n");
for(i=0;i<10;i++)
scanf("%d",&num1[i]);
printf("\n enter ten element of the second array");
for(i=0;i<10;i++)
scanf("%d",&num2[i]);
printf("\n the addition of two arrays is \n");
for(i=0;i<10;i++)
{
sum[i]=num1[i]+num2[i];
printf("\n%d",sum[i]);
}
getch();
}
```

Output:-

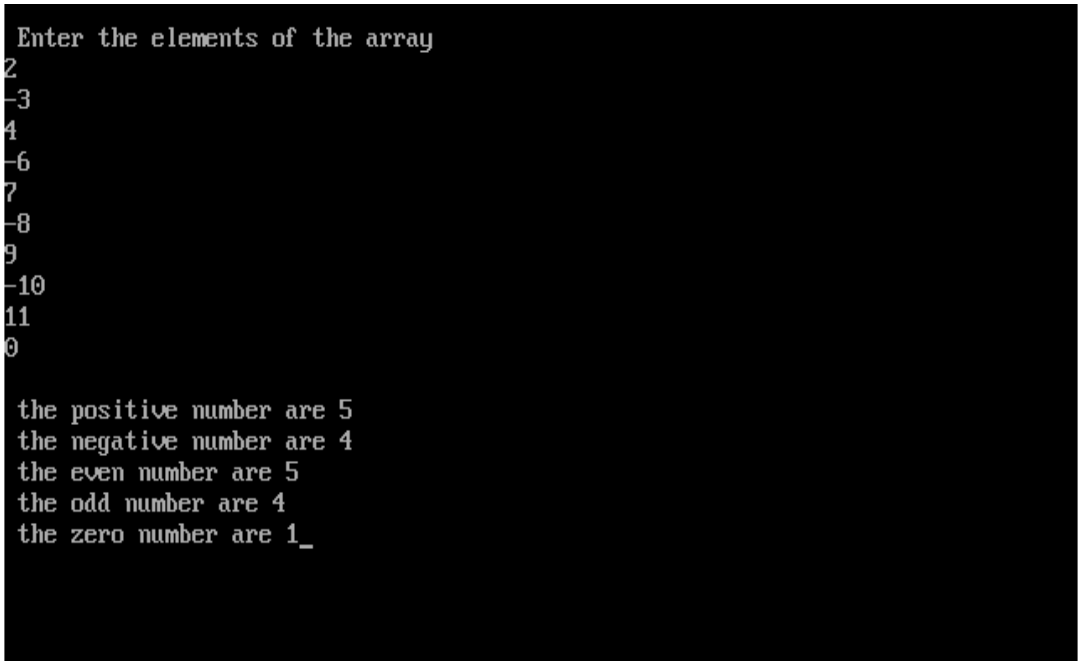


//2]Programme demonstrate the counting ,positive,negative,even,odd,values in arrays

```
#include<stdio.h>
#inlclude<conio.h>
void main(){
int num[10],i,pos=0,neg=0,even=0,odd=0,zero=0;
clrscr();
printf("\n Enter the elements of the array");
for(i=0;i<10;i++)
scanf("%d",&num[i]);
for(i=0;i<10;i++)
```

```
{
if(num[i]>0)
pos++;
else
if(num[i]>0)
pos++;
else
if(num[i]<0)
neg++;
if(num[i]==0)
zero++;
else
if(num[i]%2==0)
even++;
else
odd++;}
printf("\n the positive number are %d",pos);
printf("\n the negative number are %d",neg);
printf("\n the even number are %d",even);
printf("\n the odd number are %d",odd);
printf("\n the zero number are %d",zero);
getch();
}
```

Output:-



//3] programme for calculate the square of even position and cube of odd position

```
#include<stdio.h>
#include<conio.h>
void main(){
int num[10],i;
clrscr();
printf("\n enter the ten element of the array\n");
for(i=0;i<10;i++)
scanf("%d",&num[i]);
printf(\n the elements of the array after squre and cube are\n");
for(i=0;i<10;i++)
{
if(i%2==0)
{
num[i]=num[i]*num[i];
```

```
printf("%d",num[i]);
}
else{
num[i]=num[i]*num[i]*num[i];
printf("%d",num[i]);
}
getch();
}
```

Output:

```
enter the five element of the array

10
23
12
14
15

the elements of the array after squre and cube are
100_
```

//4]programme for converting decimal to binary

```
#include<conio.h>
#include<stdio.h>
void main(){
int num,i=0,j;
int binary[20];
clrscr();
printf("\n enter the number");
scanf("%d",&num);
while(num>0)
{
binary[i]=num%2;
num=num/2;
i++;
}
```

```
printf("\n the binary equivalent is");
while(i>0){
i--;
printf("%d",binary[i]);
}
getch();
}
```

Output:-

```
enter the number01234

the binary equivalent is10011010010
```

//5]Programme find greatest and smallest element in arrays.

```
#include<stdio.h>
#include<conio.h>
void main(){
int num[10],i,great,small,gpos,spos;
clrscr();
printf("enter the elements of the array");
for(i=0;i<10;i++)
scanf("%d",&num[i]);
great=small=num[0];
gpos=spos=0;
for(i=1;i<10;i++)
{
if(num[i]>great)
{
great=num[i];
```

```
gpos=i;
}
if(num[i]<small)
{
small=num[i];
spos=i;
}
}
printf("\n the greatest number %d",great);
printf("\n the greatest number is %d",gpos);
printf("\n the smallest number is %d",small);
printf("\n at position %d",spos);
getch();
}
```

Output:-

```
enter the elements of the array
3
24
56
78
90
56
34
12
35
67

 the greatest number 90
 the greatest number is 4
 the smallest number is 3
 at position 0_
```

//Programme for generating transpose matrix

```
#include<stdio.h>
#include<conio.h>
void main(){
int num[5][3],tran[3][5],i,j;
```

```
clrscr();
for(i=0;i<5;i++)
{
for(j=0;j<3;j++)
{
scanf("%d",&num[i][j]);
}
}
printf("\n the original matrix is \n");
for(i=0;i<5;i++)
{
for(j=0;j<3;j++)
{
printf("%d",num[i][j]);
}getch();}
```