ARRAYS

ARRAY: Array is defined as collection of similar type of data items stored at contigeous memory locations is called as “Array”. The array is the simplest data structure where each data element can be randomly acessed by it’s index number.

ARRAY PROPERTIES:

1.Each element of the array is of same data type and carries same size . i.e int=4 bytes

2.Element of the array are stored at contigeous memory locations where the first element address of memory location stores array.

3.Elements of array can be randomly accessed.

DECLARATION OF ARRAY:

SYNTAX:

Data type array_name[size];

Ex: int array[15];

Float a[10];

Char c[15];

Double d[20];

INTIALIZATION OF ARRAY :

SYNTAX:

Datatype array_name[size]={};

Ex: int d[5]={2,3,4};

2nd way:

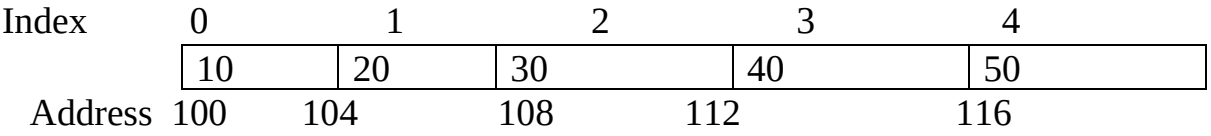
```
int d[5];
d[0] = 2;
d[1] = 3;
d[2] = 4;
```

3rd way:

int d[]={2,3,4};

MEMORY REPRESENTATION OF ARRAY:

[How elements are stored in array]
int d[5];



d[0] = 10;
d[1] = 20;
d[2] = 30;
d[3] = 40;
d[4] = 50;

write a program to print elements of the array

```
#include<stdio.h>
int main()
{
        int arr[5]={1,2,3,4,5};
        int i;
        printf("array elements are:");
        for(i=0;i<5;i++)
        {
        printf("%d",arr[i]);
        }
        return 0;
}
```

Output:
array elements are:12345

wap to print element of the array

```
#include<stdio.h>
int main()
{
   int a[5],i;
   a[0]=10;
   a[1]=20;
   a[2]=30;
   a[3]=40;
   a[4]=50;
   printf("array elements are:");
   for(i=0;i<5;i++)
   {
     printf("%d\t",a[i]);
   }
   return 0;
}
```

OUTPUT:
array elements are:10 20 30 40 50

wap to take n elements at run time in array

```
include<stdio.h>
int main()
{
  int a[100],i,n;
  printf("enter the size of array:");
  scanf("%d",&n);
  printf("enter  array elements");
  for(i=0;i<n;i++)
  {
    scanf("%d",&a[i]);
  }
  printf("array elements are:");
  for(i=0;i<n;i++)
  {
    printf("%d",a[i]);
  }
```

```
   return 0;
}
```
Output:

```
enter the size of array:5
enter  array elements2 3 4 5 6
array elements are:23456
```

wap to find the sum of elements in array

```
#include<stdio.h>
int main()
{
        int a[10]={1,2,3,4,5};
        int i,sum=0;
        printf("array elements are");
        for(i=0;i<5;i++)
        {
                printf("%d",a[i]);
                sum=sum+a[i];
        }
        printf("\nthe sum of array elements are:%d",sum);
        return 0;
}
```
Output:

```
array elements are12345
the sum of array elements are:15
```

wap to reverse array in c

```
#include<stdio.h>
int main()
{
        int a[5]={1,2,3,4,5};
        int i;
        printf("array elements are");
        for(i=0;i<5;i++)
        {
                printf("%d",a[i]);
```

```
        }
        printf("\n reversed array elements are");
        for(i=5;i>=0;i--)
        {
        printf("%d",a[i]);
    }
        return 0;
}
```

Output:

array elements are12345
reversed array elements are054321

wap to find average of elements in array

```
#include<stdio.h>
int main()
{
        int arr[10];
        int i,n,sum=0;
        float avg;
        printf("enter no.of elements");
        scanf("%d",&n);
printf("entered array elements");
for(i=0;i<5;i++)
{
        scanf("%d",&arr[i]);
}
printf("array elements ");
for(i=0;i<5;i++)
{
        printf("%d \n",arr[i]);
        sum=sum+arr[i];
}
avg=sum/i;

printf("the average is :%f",avg);
return 0;
}
```

Output:

enter no.of elements5

entered array elements1 2 3 4 5
array elements 1
2
3
4
5
the average is :3.000000

wap to check largest element in the array

```
#include<stdio.h>
int main()
{
	int a[10],largest,i,n;
	printf("enter no.of elements");
	scanf("%d",&n);
	printf("entered array elements");
	for(i=0;i<n;i++)
	{
		scanf("%d",&a[i]);
	}
	largest=a[0];

	for(i=0;i<n;i++)
	{
		scanf("%d",&a[i]);
	}

	for(i=0;i<n;i++)
	{
		if(largest>a[i])
		{
			largest=a[i];
		}
	}
	printf("the  largest element is:%d",largest);
	return 0;
}
```

Output:

enter no.of elements5

entered array elements1

2

3

4

5

the largest element is:5

wap to check smallest element in the array

```
#include<stdio.h>
int main()
{
        int a[10]={1,5,6,9,8,2,3};
      int smallest,i;
        printf(" array elements");
        for(i=0;i<6;i++)
        {
                printf("%d\t",a[i]);
        }
        smallest=a[0];
        for(i=0;i<6;i++)
        {
                printf("%d",a[i]);
        }
        printf("\n");
        smallest=a[0];
        for(i=0;i<6;i++)
        {
                if(smallest>a[i])
                {
                        smallest=a[i];
                }
        }
        printf("the smallest element is:%d",smallest);
        return 0;
}
```

Output:

array elements1 5 6 9 8 2

the smallest element is:1