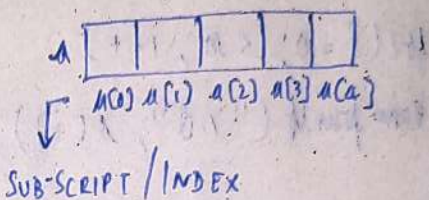
ARRAYS:- An array is a collection of similar data types.
Array elements are always stored in continuous memory location.
If n is size of an array its subscript starts from 0 & ends with (n-1).
It is a simplest linear data structure.

Declaration of an Array :-

SYNTAX:- int name [size]

Ex:- int a[5]



Ex:-

```
→ main ()
  { int a[3] = [1, 2, 3]
    printf ("%d %d %d", a[0], a[1], a[2]);
  }

→ main()
  { int a[3];
    a[0] = 4;
    a[1] = 5;
    a[2] = 6;
    printf ("%d %d %d", a[0], a[1], a[2]);
  }

→ main ()
  { int a[3];
    printf ("enter 3 elements");
    Scanf ("%d %d %d", &a[0], &a[1], &a[2]);
    printf ("%d %d %d", a[0], a[1], a[2]);
  }
```

Q:- Program to print 'n' numbers :-

```
-> main()
{
    int a[20], i, n;
    printf ("enter n");
    scanf ("%d", &n);
    printf ("enter elements: ");
    for (i=0; i<n; i++)
    scanf ("%d", &a[i]);
    for (i=0; i<n; i++)
    printf ("%d", a[i]);
}
```

0 1 2 3 4 5 6
1, 1, 1, 2, 1, 1, 1

---

1. Program to find maximum element in an array

```
-> int main()
{
    int n, i, max;
    printf ("Enter number of elements: ");
    scanf ("%d", &n);
    int arr[n];
    printf ("Enter %d elements: ", n);
    for (i=0; i<n; i++)
    {
        scanf ("%d", &arr[i]);
    }
    max = arr[0];
    for (i=1; i<n; i++)
    {
        if (arr[i] > max)
        {
            max = arr[i];
        }
    }
    printf ("Maximum element is: %d \n", max);
}
```

2. Program to find sum & average of an array

```
-> int main()
{ int n, i;
  float sum = 0.0, avg;
  printf("Enter number of elements: ");
  scanf("%d", &n);
  int arr[n];
  printf("Enter %d elements: ", n);
  for(i=0; i<n; i++)
  {
    scanf("%d", &arr[i]);
    sum += arr[i];
  }
  avg = sum/n;
  printf("Sum = %f \n", sum);
  printf("Average = %f \n", avg);
}
```

3.

```
-> int main()
{ int num[5] = {10, 20, 30, 40, 50};
  printf("The 1st element of an array is: %d \n", num[0]);
  printf("The 3rd element of an array is: %d \n", num[2]);
}
```

4.

```
int main()
{
  int num[5] = {30, 40, 50, 60, 70}
  printf("3rd element of an array is: %d \n", num[2]);
  num[2] = 55;
  printf("3rd element of an array is: %d \n", num[2]);
}
```

5.
```
int main()
{
int num[5]={50,60,70,80,90};
for(int i=0;i<5;i++)
{ printf("numbers[%d]=%d\n",i,num[i]);
}
}
```

o/p:-

number[0]=50

number[1]=60

number[4]=90

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Q:- Program to check even/odd for n-numbers:-

even → +1

odd → -1

```
→ main()
{ int a[20],i,n;
printf("enter n");
scanf("%d",&n);
printf("enter elements");
for(i=0;i<n;i++)
scanf("%d",&a[i]);
for(i=0;i<n;i++)
{ if(a[i]%2==0)
printf("%d is even\n",a[i]);
else
printf("%d is odd\n",a[i]);
}
}
```

→ main ()

{

int a[20], i, n;

printf ("enter n ");

scanf ("%d", &n);

printf ("enter elem number");

for (i = 0; i < n; i++)

scanf ("%d", &a[i]);

for (i = 0; i < n; i++)

{ if (a[i] > 50)

a[i] = a[i] - 10;

else if (a[i] < 50) ~~&& (a[i])~~

a[i] = a[i] + 5;

else

a[i] = a[i] + 2;

}

for (i = 0; i < n; i++)

printf ("%d \n", a[i]);

}

50 if
≥ -10
< +5 else if
= +2 else

Q:- Find avergge of n subject marks :-

```
-> main()
{ int a[20], i, n, sum=0;
  float avg;
  printf("enter n");
  scanf("%d", &n);
  printf("enter subject marks: ");
  for(i=0; i<n; i++)
  scanf("%d", &a[i]);
  for(i=0; i<n; i++)
    sum = sum + a[i];
    avg = (float) sum / n;
  printf("%f", avg);
}
```

array biggest/smallest

Element find/ not found

1. Print smallest or biggest number in an array :-

```
-> main()
{ int a[20], i, n, min, max;
  printf("enter n: ");
  scanf("%d", &n);
  printf("enter numbers: ");
  for(i=0; i<n; ++i)
  scanf("%d", &a[i]);
  min = a[0];
  max = a[0];
```

```
for(i=1;i<n;++i)
{
  if(a[i]>max)
   max=a[i];
   if(a[i]<min)
    min=a[i];
}
printf("Smallest number is: %d\n", min);
printf("Biggest number is: %d\n", max);
}
```

2. To search an element in an array :-

→
```
int main()
{
  int a[100], size, i, find, found;
  printf("Enter size of an array: ");
  scanf("%d", &size);
  printf("Enter elements: ");
  for(i=0; i<size; i++)
  {
    scanf("%d", &a[i]);
  }
  printf("Enter the elements to be searched: ");
  scanf("%d", &find);
  found=0;
  for(i=0; i<size; i++)
  {
    if(a[i]==find)
    {
      found=1;
      break;
    }
  }
```

```
if (found == 1)
{
    printf ("%d is found at position %d \n", find, i+1);
    printf ("%d is found at index position %d \n", find, i);
}
else
{
    printf ("%d is not present ", find);
}
}
```