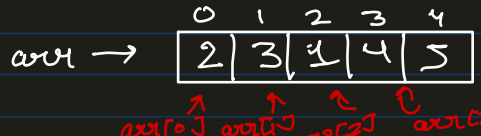
define Array

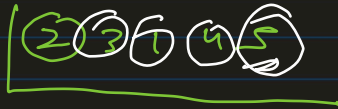
<data_type> <var_name> [<size>];

- int arr[20]
- string arr[5]
- float arr[5]

Searching in an array

```
int N = 5
int arr[N];
```

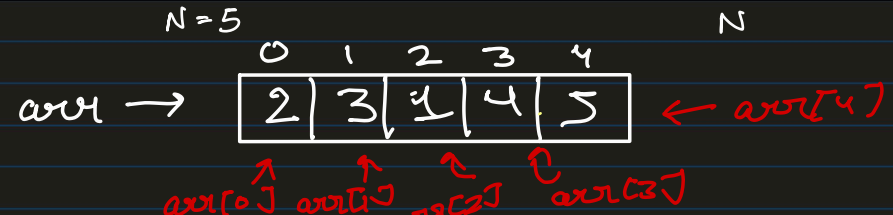




Data Insert :-

```
for(int i=0; i<N; i++) {
        cin >> arr[i];
}
```

i	arr[i]
0	arr[0]
1	arr[1]
2	arr[2]
3	arr[3]
4	arr[4]



searching

```
int x = 4;
```

```
int key = -1;
for(int i=0; i<N; i++){
    if(arr[i] == x){
        cout<<"Present at "<<i<<
        x<<endl;
        break;
    }
}
```

X = 4

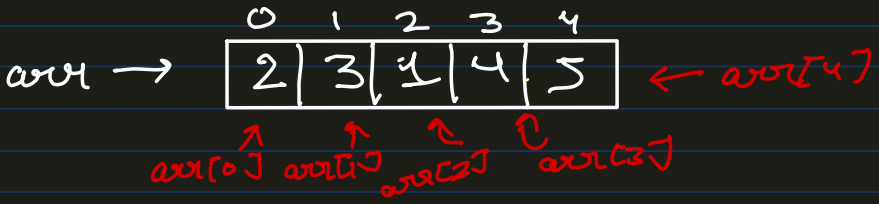
```
for (int i = 0; i < N; i++) {
    if (arr[i] == X) {
        cout << X << " is Present at " << i << endl;
        break;
    }
    else {
        cout << X << "is not present" << endl;
    }
}
```

i

X << "is not present" << endl;

N = 5

N



```
// X: element to be searched for
int search(int arr[], int N, int X)
{

    for(int i = 0; i < N; i++) {
        if(arr[i] == X) {
            return i;
        }
    }

    return -1;

}
```

X = 3 N = 4

0 1 2 3

1	2	3	4

i == -1

i = 0 1 2

To Implement Program from scratch

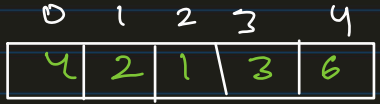
Input

Process

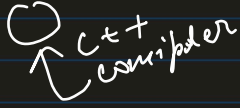
output

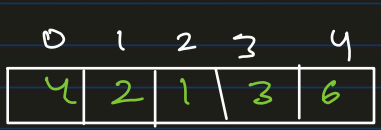
Sum of Array

Hint



$$sum = arr[0] + arr[1] + \cdots arr[4]$$

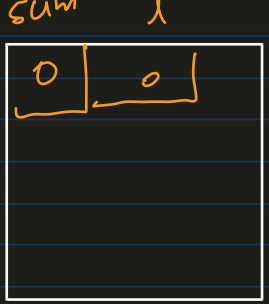




N = 5

coding Env. (usually)

left → right




```
int sum = 0;
for( i = 0; i < n; i++){
    sum = sum + arr[i]
}
```

Parhna kya ha → Memory Allocation in C++

```
{
    //block of Memory.
}
```

eg:-

```
for(int i=0; i<n; i++){
    //Block
}
if (condition) {
    //Block
}
while(cndn){
    //block
}
```

Variables defined inside a block will be destroyed from the memory when the block ends.

Maximum element in array

Or

```
int largest(vector<int> &arr, int n)
{
    int max =arr[0];
    for(int i=0;i<n;i++){
        if(max<arr[i]){
        max=arr[i];
        }

    }
    return max;
}
```

Logical operator

0 / 1

update

	0	1	2	3
arr	3	2	7	5

Dry Run

Memory

max 7

i 3

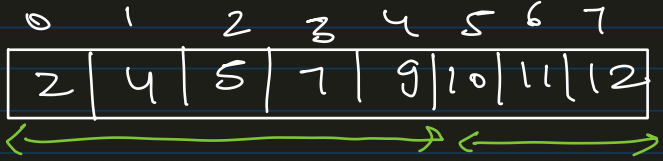
Input
* n ← size of array
* Int arr[n]

Process
* max ← arr[0]
* Find maximum

Output
* maximum element print karo

Count of smaller elements → gfg.

$x = 9$



count
0
1
2
3
4
5

```
if(x>=arr[i]){
        countt++;
}
else{
        break;
}
```

This can be used because of sorted property of array