



Agenda

- ① why arrays?
- ② Array Basics
- ③ Array Syntax
- ④ Indices in array
- ⑤ Questions

Take 5 integers as input, print sum of all integers and store their respective value

```
int a1, a2, a3, a4, a5;
```

// take input from user

// add them and give result.

As input size increases it is infeasible to manage those many variables

What are Arrays?

→ "Sequential" collection of "similar" data

Real life examples

↳ Train boggies

↳ YT playlist

Syntax of Arrays

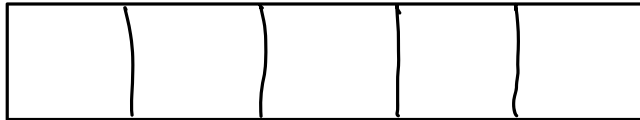
```
int [] marks = new int [5];
```

```
int marks [] = new int [5];
```

`int [] marks = new int [5];`

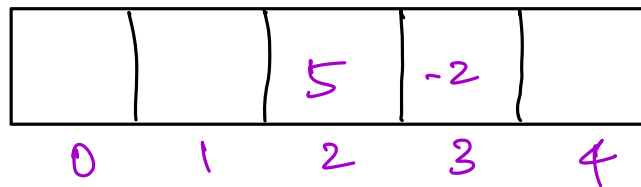
↑ data type ↑ variable name ↑ size

marks =



Indexing in Array

marks =



S.O.P (marks [3]) → -2

marks [2] = 5

if we have n elements in array
the maximum index $[n-1]$

Q4) Given an integer array as input, check if k is present in the array.

arr = [3, 8, 1, -10, 0]

$k = 8$ ✓ (true)

$k = 3$ ✓ (true)

$k = -1$ ✗ (false)

boolean findK (int arr[], int k) {

int n = arr.length;

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

if (arr[i] == k) {

return true;

}

else {

return false;

}

}

case 1 \rightarrow Input = -1 ✓

Case 2 \rightarrow Input = 3 ✓

case 3 \rightarrow Input = 8 ✗

We can only say an element is not present
if it is not there in entire array

boolean AndK (int arr[], int k) {

int n = arr.length;

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

if (arr[i] == k) {

return true;

}

return false;

}

//

AndK (arr, k)

\rightarrow call AndK
function

Q) Given an Integer array, and Integer k Find the frequency of k

arr = [1, 2, 1, 1, 3, 0, 2, 1, 2]

k = 1 → 4

k = 2 → 3

```
int freqK ( int arr [], int k ) {
```

```
    int n = arr.length;
```

```
    int freq = 0;
```

```
    for (int i = 0; i < n; i++) {
```

```
        if (arr[i] == k) {
```

```
            freq ++;
```

```
        }
```

```
    }  
    return freq;
```

```
}
```

arr = [1, 2, 1, 1, 3, 0, 2, 1, 2]

k = 1

i	i < n	arr[i] == k	freq
0	0 < 9	1 == 1	1
1	1 < 9	2 == 1	1
2	2 < 9	1 == 1	2
3	3 < 9	1 == 1	3
4	4 < 9	3 == 1	3
5	5 < 9	0 == 1	3
6	6 < 9	2 == 1	3
7	7 < 9	1 == 1	4
8	8 < 9	2 == 1	4
9	9 < 9	exit	

Q) Given an Integer array, return its respective frequency array

arr = [1, 2, 1, 1, 3, 0, 2, 1, 2]

ans = [4, 3, 4, 4, 1, 1, 3, 4, 3]

```
int [] freqCount (int arr []) {
```

```
    int n = arr.length;
```

```
    int [] ans = new int [n];
```

```
    for (int i = 0; i < n; i++) {
```

```
        ans[i] = freq (arr, arr[i]);
```

```
    }
```

```
    return ans;
```

```
}
```


Q6) Given an Integer array as Input,
check if it is strictly increasing.

arr = [0, 2, 6, 9, 11]

arr = [0, 2, 2, 4, 5, 11, 13]

arr = [0, -5, 7, 6, 11]

```
for ( i = 0; i < n; i++) {  
    if ( arr[i] >= arr[i+1]) {  
        return false;  
    }  
}  
  
return true;
```

arr = [0, 2, 6, 7]

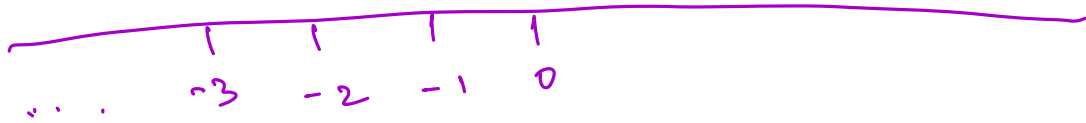
i	i < n	arr[i] >= arr[i+1]
0	0 < 4	0 >= 2 proceed
1	1 < 4	2 >= 6 proceed
2	2 < 4	6 >= 7 proceed
3	3 < 4	7 >= ? 0

// this code will not work

```
for ( i = 0 ; i < n-1 ; i++ ) {  
    if ( arr[i] >= arr[i+1] ) {  
        return false;  
    }  
}  
  
return true;
```

arr = [-3, -10, -1, -2, 0]

max = -3



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