Basic Array Operations

Name	Description	Example

arrName.length
Note: length is without parenthesis ()
	Returns the length of the array i.e. count of elements in array	`int[] arr1 = {3, 1, 2, 4};`
		`int[] arr2 = {};`
		`int len1 = arr1.length;`
		`int len2 = arr2.length;`
		`System.out.println(len1);`
		`System.out.println(len2);`
		
		Output:
		4
		0

arrName[index]	Returns the element at the index. Indexes range from 0 to arrayName.length - 1	`int[] arr = {3, 5, 2, 4};`
		`int len = arr.length;`
		`int n = arr[0];`
		`System.out.println(n);`
		`n = arr[1];`
		`System.out.println(n);`
		`n = arr[len-1];`
		`System.out.println(n);`
		
		Output:
		3
		5
		4

Traversing an Array

For traversing we use a for loop from index **0 to last index (i.e. length - 1)** of array and extracting element at each position using **arr_name[index]**

Example 1: Array traversal

```
1   int[] arr = {3, 1, 5, 2, 6};
2   int len = arr.length;
3   int n = 0;
4   String printStr = "";
5
6   for(int i = 0; i < len; i++)
7   {
8       n = arr[i];                          //getting element at a particular index
9       printStr = "index" + i + ":" + n;
10      System.out.println(printStr);
11  }
```

Output:

```
index0:3
index1:1
index2:5
index3:2
index4:6
```

Dry Run:

Before loop	len = 5 n = 0		
loop variable	**n**	**printStr**	**Print**
i = 0	⇨ n = arr[i] ⇨ n = arr[0] ⇨ n = 3	⇨ printStr = "index" + 0 + ":" + 3 ⇨ printStr = "index0:3"	index0:3
i = 1	⇨ n = arr[i] ⇨ n = arr[1] ⇨ n = 1	⇨ printStr = "index" + 1 + ":" + 1 ⇨ printStr = "index1:1"	index1:1
i = 2	⇨ n = arr[i] ⇨ n = arr[2] ⇨ n = 5	⇨ printStr = "index" + 2 + ":" + 5 ⇨ printStr = "index2:5"	index2:5
i = 3	⇨ n = arr[i] ⇨ n = arr[3] ⇨ n = 2	⇨ printStr = "index" + 3 + ":" + 2 ⇨ printStr = "index3:2"	index3:2
i = 4	⇨ n = arr[i] ⇨ n = arr[4] ⇨ n = 6	⇨ printStr = "index" + 4 + ":" + 6 ⇨ printStr = "index4:6"	index4:6
i = 5	-	-	-

Problem 1	**Give output of following code.**

```
1  int[] zarr = {6, 10, 23, 9};
2  String xstr = "";
3  int len = zarr.length;
4
5  for(int i = 0; i < len; i++)
6  {
7      int m = zarr[i];
8      xstr = xstr + "#" + i + "#" + m;
9  }
10 System.out.println(xstr);
```

Quick Sheet: Working with array indexes

```
1  int[] arr = {3, 4, 1, 7, 9};
2  int len = arr.length;
```

Example	Value
First Element: arr[0]	3
Last Element: arr[len-1]	9

Example 2: Counting the number of 0s in given array

```
1  int[] arr = {0, 5, 0, 4, 9, 0};
2  int len = arr.length;
3  int count = 0;
4  for(int i = 0; i < len; i++)
5  {
6      int element = arr[i];            //getting element at a particular index
7      if(element == 0)
8      {
9             count = count + 1;
10     }
11 }
12 System.out.println(count);
```

Output:

```
3
```

Dry Run:

Before loop	len = 6 count = 0			
loop variable	**element**	**if**	**count**	**Print**
i = 0	⇨ element = arr[i] ⇨ element = arr[0] ⇨ element = 0	⇨ 0 == 0 ⇨ true	1	-
i = 1	⇨ element = arr[1] ⇨ element = 5	⇨ 5 == 0 ⇨ false	1	-
i = 2	⇨ element = arr[2] ⇨ element = 0	⇨ 0 == 0 ⇨ true	2	-
i = 3	⇨ element = arr[3] ⇨ element = 4	⇨ 4 == 0 ⇨ false	2	-
i = 4	⇨ element = arr[4] ⇨ element = 9	⇨ 9 == 0 ⇨ false	2	-
i = 5	⇨ element = arr[5] ⇨ element = 0	⇨ 0 == 0 ⇨ true	3	-
i = 6	-	-	-	-
Outside Loop	-	-	-	3

Problem 2	Give output of following code.

```
1  int[] ar = {2, 9, 12, 100, 97, 13, 14};
2  int x = ar.length;
3  int z = 0;
4  for(int i = 0; i < x; i++)
5  {
6     int e = ar[i];
7     if(e % 2 == 0)
8     {
9           z = z + i;
10    }
11 }
12 System.out.println(z);
```