

### QUES 1.What Do You Mean by an Array?

An array in Java is a data structure that allows you to store multiple elements of the same type in a contiguous block of memory. Each element in an array is accessed by its index, with the first element at index 0.

### QUES2.How to Create an Array

You can create an array in Java in the following ways:

#### 1. Declaration and Initialization:

```
int[] numbers = new int[5]; // Creates an array of integers with 5 elements.
```

#### 2. Declaration and Initialization with Values:

```
int[] numbers = {1, 2, 3, 4, 5}; // Creates an array of integers with these specific values.
```

#### 3. Declaration Only:

```
int[] numbers; // Declaration of an array  
numbers = new int[5]; // Initialization
```

### QUES3.Can We Change the Size of an Array at Runtime?

No, you cannot change the size of an array once it has been created. The size of an array in Java is fixed and determined when the array is initialized. If you need a resizable array, you can use other data structures like ArrayList.

### QUES4.Can You Declare an Array Without Assigning the Size?

You can declare an array without assigning the size, but you must initialize it before using it:

```
int[] numbers; // Declaration without size  
numbers = new int[10]; // Initialization with size
```

However, if you provide values at the time of initialization, the size is inferred from the number of values:

```
int[] numbers = {1, 2, 3, 4}; // Array of size 4
```

#### QUES 5 What Is the Default Value of an Array?

When an array is created, its elements are automatically initialized to default values:

- int, short, byte, long: 0
- float, double: 0.0
- char: \u0000 (null character)
- boolean: false
- Reference types (e.g., String, Object): null

#### QUES 6. What Is a 1D Array? (With an Example)

A 1D array (one-dimensional array) is a linear array that stores elements in a single row or a single sequence.

Example:

```
public class OneDArrayExample {  
    public static void main(String[] args) {  
        int[] numbers = {10, 20, 30, 40, 50};  
  
        for (int i = 0; i < numbers.length; i++) {  
            System.out.println("Element at index " + i + ": " + numbers[i]);  
        }  
    }  
}
```

Output:

Element at index 0: 10

Element at index 1: 20

Element at index 2: 30

Element at index 3: 40

Element at index 4: 50

QUES7. Write a Program on a 2D Array

A 2D array (two-dimensional array) is an array of arrays. It can be visualized as a table or a matrix.

Example:

```
public class TwoDArrayExample {  
    public static void main(String[] args) {  
        int[][] matrix = {  
            {1, 2, 3},  
            {4, 5, 6},  
            {7, 8, 9}  
        };  
  
        // Printing the 2D array  
        for (int i = 0; i < matrix.length; i++) {  
            for (int j = 0; j < matrix[i].length; j++) {  
                System.out.print(matrix[i][j] + " ");  
            }  
            System.out.println();  
        }  
    }  
}
```

```
}  
}
```

Output:

```
1 2 3  
4 5 6  
7 8 9
```