Assignment

1] What do you mean by array?

Ans→An array is a collection of items of same data type stored at contiguous memory location

The array is a data structure where values or items are placed in a linear order, which means the memory assigned to each item is contiguous. The data type of an array is the same for all the elements present in it.

With the contiguous memory allocation, it becomes easier to find out the memory location of any element in the array by just knowing the first memory location and adding the offset.

Indexing in the array

We can identify and access each value with the help of an index number in an array.

For example, arr[1] will be used to access the second element of the array in zero-based indexing

2] How to Create Array ?

Ans→ create an array in Java, you need to declare a variable of the desired array type and allocate memory for it. Here is a basic example:

```
// Declare an array of integers

Int [] numbers;

// Allocate memory for 5 integers

numbers = new int[5];

// Initialize the array elements

numbers [0] = 10;

numbers [1] = 20;

numbers [2] = 30;

numbers [3] = 40;

numbers [4] = 50;

// Alternatively, you can declare, allocate, and initialize in a single
```

.

3]Can we change the size of array at runtime ?

Ans->In Java, once an array is created, its size is fixed and cannot be changed. If you need to dynamically resize a collection of elements at runtime, you can use other data structures provided by the Java Collections Framework, such as ArrayList or LinkedList, which can grow or shrink dynamically as needed.

3] Can you Declare an array without assigning the size of array ?

Ans→In Java, you can declare an array without assigning its size, but you need to specify the type of elements it will contain. Here's how you can do it:

```
// Declare an array without specifying its size
int[] numbers;
// You can also specify the size later, like this:
// numbers = new int[5];
// Now you can assign an array with a specific size
numbers = new int[]{10, 20, 30, 40, 50};
// Or you can assign it with a different size
numbers = new int[]{100, 200, 300};
```

// Declare an array without specifying its size
int[] numbers;
// You can also specify the size later, like this:
// numbers = new int[5];
// Now you can assign an array with a specific size
numbers = new int[]{10, 20, 30, 40, 50};
// Or you can assign it with a different size
numbers = new int[]{100, 200, 300};

4]What is the Default value of an Array ?

Ans→ In Java, when you declare an array, the elements of the array are initialized with default values according to their data type. Here are the default values for different types of arrays:

For numeric primitive types (byte, short, int, long, float, double), the default value is 0.

For the Boolean type, the default value is false.

For object reference types (arrays, classes, interfaces), the default value is null.

For char type, the default value is '\u0000', which represents the null character.

int[] numbers = new int[5];

Boolean[] flags = new Boolean[3];

String[] names = new String[2];

char[] characters = new char[4];

After these declarations, the default values for the elements of each array will be:

numbers: [0, 0, 0, 0, 0]

flags: [false, false, false]

names: [null, null]

characters: ['\u0000', '\u0000', '\u0000', '\u0000']

These default values are automatically assigned by Java when you create an array but haven't explicitly initialized its elements.

5] What is 1-D Array with Example?

Ans→ A 1-D array, also known as a one-dimensional array, is a linear collection of elements of the same type that are stored sequentially in memory. Each element in a 1-D array is accessed by its index.

Here is an example of a 1-D array in Java:

```
public class Main {
 public static void main (String [] args) {
  // Declare and initialize a 1-D array of integers
    int[] numbers = {10, 20, 30, 40, 50};

    // Accessing elements of the array using index
    System.out.println("Element at index 0: " + numbers [0]); // Output: 10
    System.out.println("Element at index 2: " + numbers [2]); // Output: 30

    // Modifying elements of the array
    Numbers [1] = 25;
```

```
        System.out.println("Updated element at index 1: " + numbers[1]); // Output: 25


        // Iterating through the array
         System.out.println("Array elements:");
        for (int i = 0; i < numbers. Length; i++) {
           System.out.println(numbers[i]);
        }
    }
}
```

6] Write a program of a 2D array?

Ans→

```
public class Demo3{
	public static void main(String[] args){
		int nums [][]= new int[3][2];
		nums[0][0]=3;
		nums[0][1]=9;
		nums[1][0]=1;
		nums[1][1]=5;
		nums[2][0]=8;
		nums[2][1]=4;
		for(int i=0;i<=2;i++)
		{
			for(int j=0;j<=1;j++)
			{
				System.out.println(nums[i][j]+ " ");
			}
			System.out.println();
		}
	}
}
```