Arrays in Java

Assignment Questions

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1. **What do you mean by an Array ?**

   Ans :

- **An array is a fundamental data structure in computer programming used to store a collection of elements, such as numbers, characters, or other data types, in a contiguous block of memory.**
- **It allows to group multiple elements of the same type under a single name and access them using an index or position within the array.**
- **The elements in an array are stored in consecutive memory locations, and each element is identified by its index or position, starting from 0.**
- **Arrays are widely used because they provide efficient access to elements and are suitable for various tasks, including storing lists, matrices, and other structured data.**

2. **How to create an Array ?**

   Ans :

- **We have to determine first the data type which the array will store it can be any primitive data type like int, float, char, etc.**
- **Declare the array variable: Use the array syntax to declare a variable that will hold the array.**

  dataType[ ] arrayName;

  dataType[ ] arrayName = new dataType[arraySize];

  dataType[ ] arrayName = {value1, value2, value3, ...};

- **Creating the integer type of the array**

Int a[ ] = new int[5];

- **Creating the string type of the array**

  String a[ ] = { “ram”, “ganesha”, “krishna”};

3. Can we change the size of an array at run time ?

Ans :

- **No, you cannot change the size of an array at runtime in Java. The size of an array is fixed at the time of creation, and it cannot be changed afterwards.**
- **If you need to change the size of an array, you will need to create a new array with the new size and copy the contents of the old array to the new array.**

4. Can you declare an array without assigning the size of an array ?

Ans :

- **Yes, in Java, we can declare an array without assigning its size, but you will need to allocate memory to the array before you can use it.**
- **Declaring an array without specifying its size is useful when you don't know the exact size of the array at compile time and want to determine it at runtime.**
- **Syntax of the array without specifying the size**

  dataType[] arrayName;

- **After declaring the array, we will need to allocate memory to it using the new keyword with the appropriate size before you can use it. This is typically done using the new operator.**

5. What is the default value of Array ?

Ans :

- **In java the array is stored in the heap memory so the default values of the array in java is zero.**
- **For the int data type there is the default 0 value.**
- **For String type of data there is the default null.**
- **For the float type of the data there will be the 0.0 default value.**

6. What is a 1D array with an example ?

Ans :

- **A one-dimensional array, often simply referred to as a 1D array, is a linear data structure that stores a fixed-size collection of elements of the same data type. Each element in the array is accessed using its index, which starts from 0 and goes up to (array length - 1).**
- **The syntax of the 1D array**

  dataType arrayName[ ] = new dataType[arrayLength];
- **Example of the 1D array :**

```
public class Array {
    public static void main (String[] args){
        int a[] = {2,6,3,4};
        for (int i=0;i<4;i++){
            System.out.println(a[i]);
        }
    }
}
```

Output :

```
2
6
3
4
```

7. Write a program on a 2D array ?

Ans :

```
public class Array {
    public static void main (String[]args){
        int a[][] = {{2,4,3}, {3,1,7}, {1,5,3}};
        for (int i=0;i<3;i++){
            for (int j=0;j<3;j++){
                System.out.print(a[i][j] + " ");
            }
            System.out.println();
```

```
            }
        }
    }
```

Output :

```
2 4 3
3 1 7
1 5 3
```