

Title: Implementing Java Program to Display Content of Array

Aim: To study the use of arrays in Java programming.

Objective: To demonstrate the concept of arrays in Java and how to display their content.

Introduction: An array is a data structure that stores a fixed-size sequential collection of elements of the same type. It is used to store multiple values of the same type under a single variable name. Each item in an array is called an element, and each element is accessed by its numerical index.

In this lab, we will implement a Java program to create an array, initialize it with some values, and then display the content of the array.

Java Program:

```
java
// Importing required packages
import java.util.Arrays;

// Main class
public class DisplayArrayContent {
    // Main method
    public static void main(String[] args) {
        // Define and initialize an array
        int[] numbers = {10, 20, 30, 40, 50};

        // Displaying content of the array
        System.out.println("Content of the array:");
        for (int i = 0; i < numbers.length; i++) {
            System.out.println("Element at index " + i + ": " +
numbers[i]);
        }
    }
}
```

Explanation:

1. We import the `java.util.Arrays` package to use utility methods related to arrays.
2. We define a class named `DisplayArrayContent`.
3. Inside the class, we define the `main` method, which is the entry point of our program.
4. We declare and initialize an array named `numbers` of type `int`. The array is initialized with some values `{10, 20, 30, 40, 50}`.
5. We then display the content of the array using a `for` loop. The loop iterates through each element of the array using the index `i` from `0` to `numbers.length - 1`. Inside the loop, we print the index and the value of each element.

Certainly! Below are two alternative ways to implement a Java program to display the content of an array:

Alternative 1: Using Enhanced for Loop

java

```
public class DisplayArrayContent {
    public static void main(String[] args) {
        // Define and initialize an array
        int[] numbers = {10, 20, 30, 40, 50};

        // Displaying content of the array using enhanced for loop
        System.out.println("Content of the array:");
        for (int number : numbers) {
            System.out.println("Element: " + number);
        }
    }
}
```

Explanation:

- In this alternative, we use an enhanced for loop (also known as a for-each loop) to iterate through the elements of the array.
- The loop automatically iterates over each element of the array `numbers`, assigning the value of each element to the variable `number`.
- Inside the loop, we print each element.

Alternative 2: Using `Arrays.toString()` Method

```

java
import java.util.Arrays;

public class DisplayArrayContent {
    public static void main(String[] args) {
        // Define and initialize an array
        int[] numbers = {10, 20, 30, 40, 50};

        // Displaying content of the array using Arrays.toString()
method
        System.out.println("Content of the array:");
        System.out.println(Arrays.toString(numbers));
    }
}

```

Explanation:

- In this alternative, we use the `Arrays.toString()` method from the `java.util.Arrays` package to directly print the content of the array.
- The `Arrays.toString()` method converts the array `numbers` into a string representation, where each element of the array is separated by commas and enclosed within square brackets.
- We simply print the result returned by the `Arrays.toString()` method.

Both alternatives achieve the same objective of displaying the content of the array, but they use different approaches to iterate through and print the elements of the array.