Day 16 – Arrays in Java (Introduction)

From today, we are starting Arrays in Java. Arrays are used to store multiple values of the same data type in a single variable. This PDF explains arrays from the very basics with simple examples.

1. What is an Array?

An array is a collection of similar type elements stored at contiguous memory locations. Instead of creating multiple variables, we can store many values using a single array.

2. Why do we need Arrays?

Arrays are needed to manage large amounts of data easily. They make programs shorter, cleaner, and easier to manage.

3. Declaring an Array

```
dataType[] arrayName;
OR
dataType arrayName[];
```

Example:

```
int[] marks;
String[] names;
```

4. Creating an Array

```
arrayName = new dataType[size];
```

Example:

```
marks = new int[5];
```

5. Initializing an Array

We can assign values to array elements using index numbers. Array index always starts from 0.

```
marks[0] = 50;
marks[1] = 60;
marks[2] = 70;
marks[3] = 80;
marks[4] = 90;
```

6. Array Initialization at Declaration

```
int[] numbers = {10, 20, 30, 40, 50};
```

7. Accessing Array Elements

We can access array elements using their index values.

```
System.out.println(numbers[0]);
System.out.println(numbers[3]);
```

8. Array Length

Java provides a length property to find the size of an array.

```
System.out.println(numbers.length);
```

9. Simple Array Program

```
class ArrayExample {
    public static void main(String[] args) {
        int[] arr = {10, 20, 30, 40, 50};

        for(int i = 0; i < arr.length; i++) {
            System.out.println(arr[i]);
        }
    }
}
```

Next, we will study array operations, user input in arrays, and then revisit the for-each loop in detail.