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## **Lecture: (1)** **one-dimensional array**

**Subject: Computer Programming**

**Class: One**

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## one-dimensional array

```
package computerprogramming;
import java.util.Scanner;
public class lec1java {
    public static void main(String[] args) {

        // 1. Create a Scanner object to read input from the keyboard
        Scanner input = new Scanner(System.in);

        // 2. Ask the user to define the size of the array
        System.out.print("Enter the number of elements: ");
        int n = input.nextInt();

        // 3. Declare and initialize the array with size 'n'
        int[] arr = new int[n];

        // 4. Use a 'for' loop to read elements from the user
        System.out.println("Enter " + n + " elements:");
        for (int i = 0; i < n; i++) {
            System.out.print("Element " + (i + 1) + ": ");
            arr[i] = input.nextInt(); // Storing input in the array at
index'i'
        }

        // 5. Print the stored elements using another 'for' loop
        System.out.println("\n--- Array Elements ---");
        for (int i = 0; i < n; i++) {
            System.out.print(arr[i] + " ");
        }

        // Close the scanner to free resources
        input.close();
    }
}
```

### Output:

```
Enter the number of elements: 4
Enter 4 elements:
Element 1: 1
Element 2: 2
Element 3: 3
Element 4: 4

--- Array Elements ---
1 2 3 4
```



## one-dimensional array

A one-dimensional array in Java is a data structure that allows a group of elements of the same type to be stored in contiguous locations in memory. Each element is accessed through a cabinet number called the "index."

Think of an array as a row of numbered boxes, where the numbering always starts from 0

### 1. Declaring and Defining an Array

To create an array in Java, we need to specify the data type, the array name, and its size.

General syntax:

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

Practical example:

To define an array that stores 5 integers:

```
java  
int[] numbers = new int[5];
```

### 2. Essential Properties

1. Single Type: Text and numbers cannot be stored in the same array; all elements must be of the same type (e.g., all ints or all strings).

2. Fixed Size: Once the array size is specified (e.g., 5 elements), it cannot be changed during program execution.

3. Indexing: The first element starts at index 0 and ends at length -1.

### 3. Methods of Assigning Values

You can assign values to an array in two ways:

A. Directly upon definition:

```
int[] grades = {90, 85, 77, 95};
```

B. Accessing a specific item using the index:

```
numbers[0] = 10; // Place the value 10 in the first place
```

```
numbers[1] = 20; // Place the value 20 in the first place
```



#### 4. Accessing Elements (Looping)

```
for (int i = 0; i < numbers.length; i++) {  
    System.out.println("Element at index " + i + ": " + numbers[i]);  
}
```

### One-Dimensional Array in Java

