

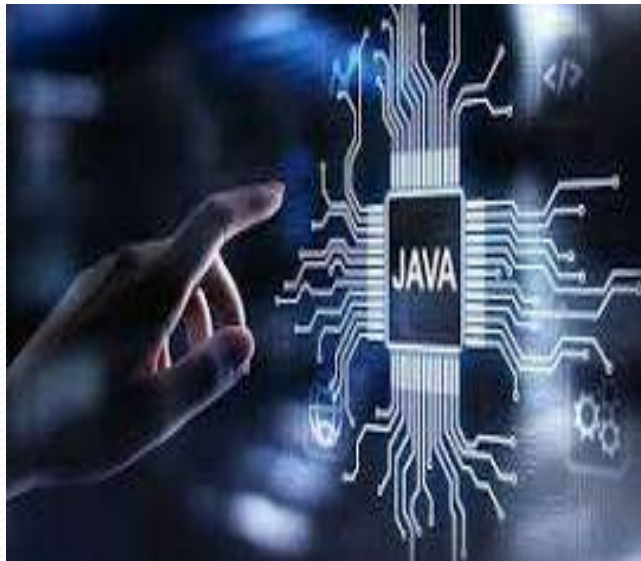
SNS COLLEGE OF TECHNOLOGY



An Autonomous Institution
Coimbatore-35

Department of Computer Science & Design

23CSB201 – Object Oriented Programming
I B.E CSD/ II SEMESTER



UNIT II :Control Statements and Constructors

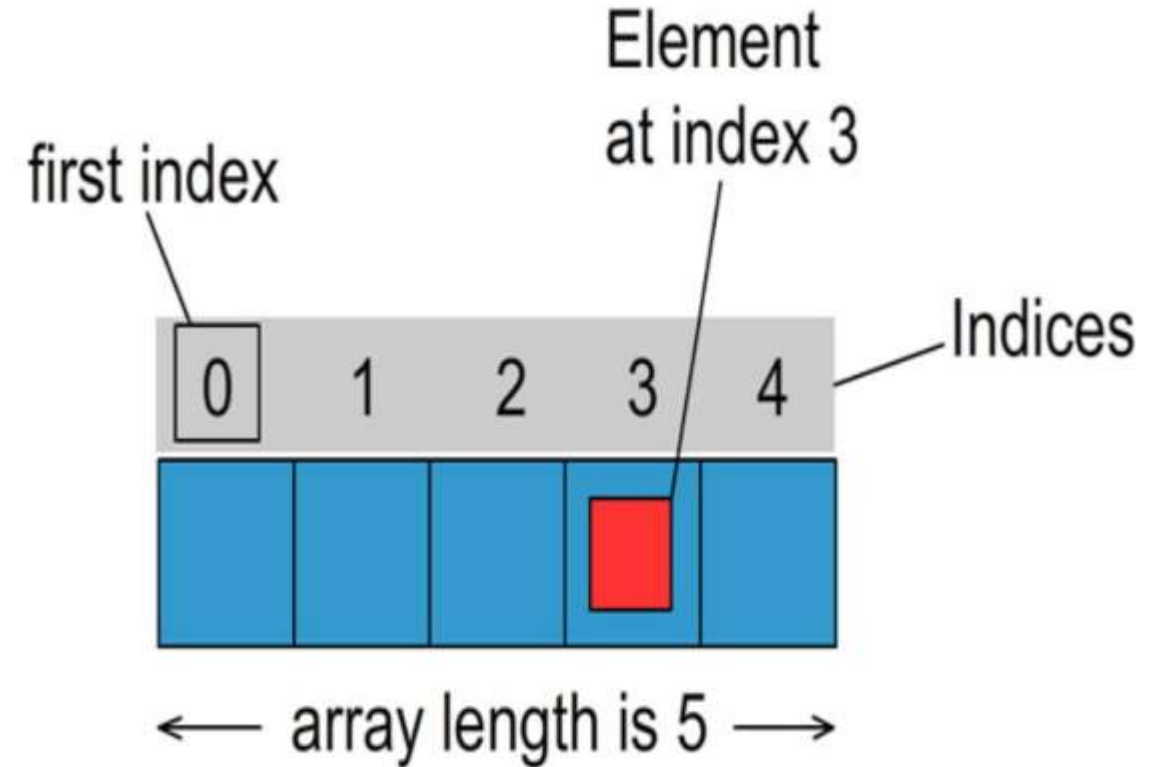
Topic 2 : Arrays in Java

Topics for Discussion

- ✓ Introduction to Arrays.
- ✓ What is an Array?
- ✓ Why Arrays are Used.
- ✓ Types of Arrays
- ✓ Declaration & Initialization
- ✓ Examples
- ✓ Assignment

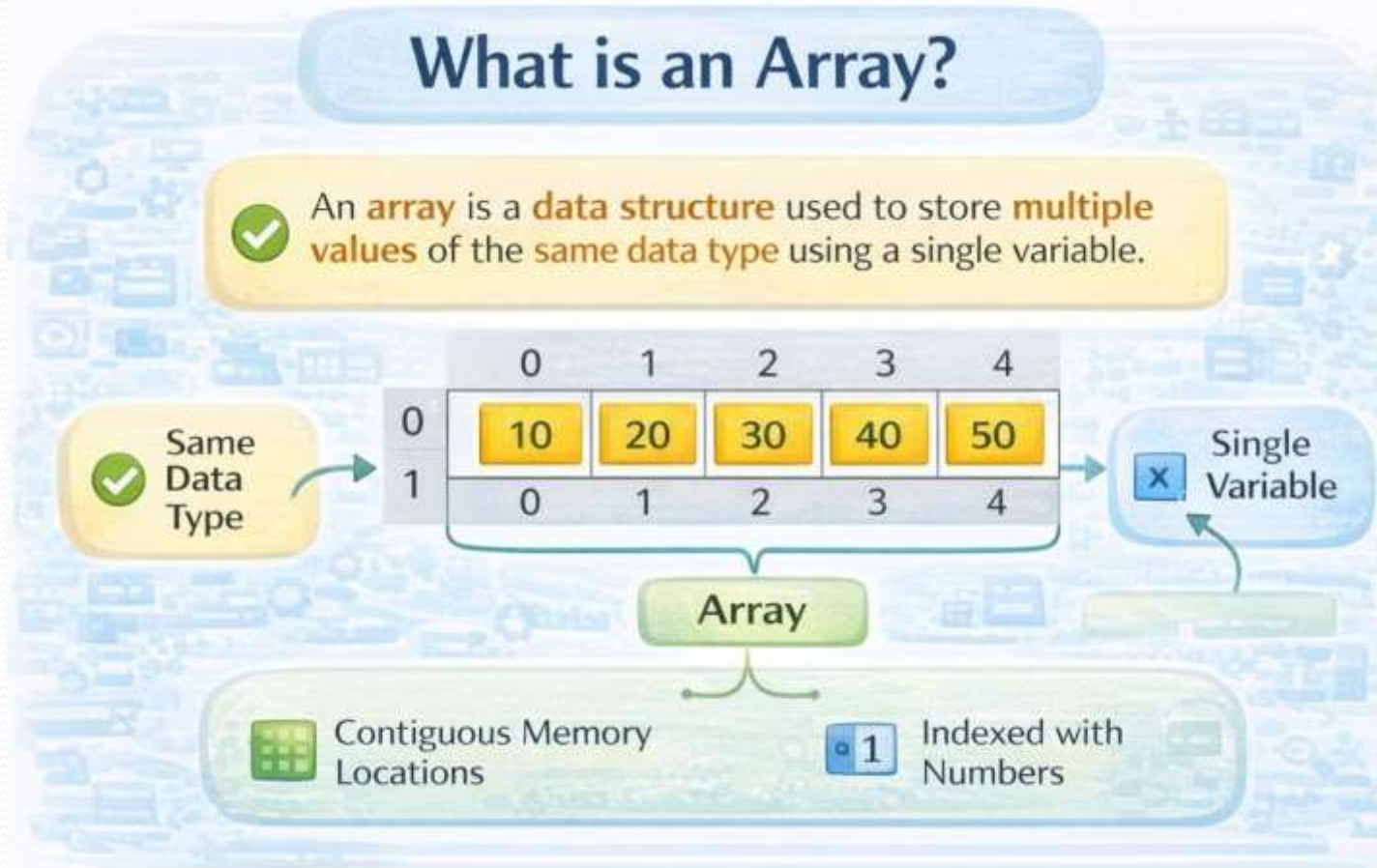
INTRODUCTION TO ARRAYS

- Array is a collection of similar data types.
- Stores multiple values using a single variable name.
- Each value is stored at a specific index.
- Index starts from 0 in Java



What Is An Array?

- An array is a data structure used to store multiple values of the same data type.
- Values are stored in contiguous memory locations.
- Each element is accessed using an index number

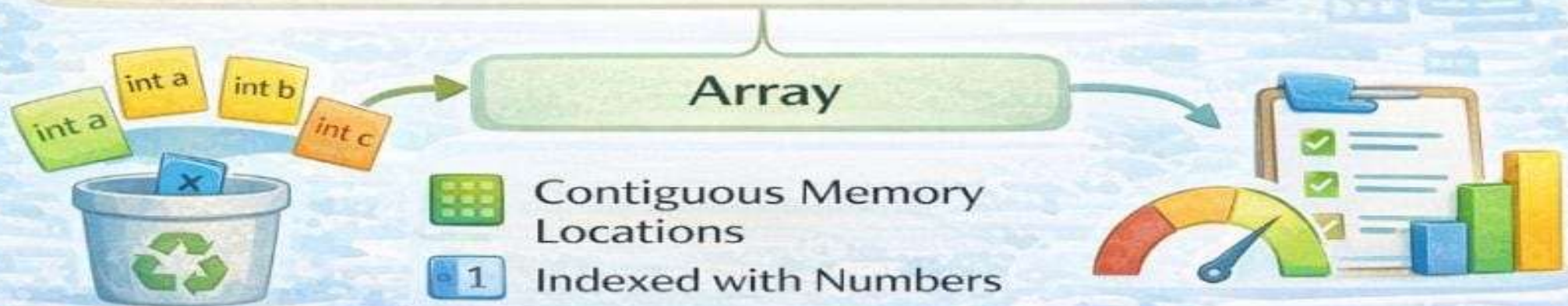




Why Array is Important?

Arrays are **important** because they:

- ✓ Store **multiple values** using a **single variable**.
- ✓ Reduce the need for many separate variables.
- ✓ Make data handling easy and organized.
- ✓ Improve program efficiency and readability.



Types Of Arrays In Java

1. One-Dimensional Array

- Stores data in a single line
- Uses one index

Example: `int[] a = {1, 2, 3};`

2. Two-Dimensional Array

- Stores data in rows and columns
- Uses two indices

Example: `int[][] a = {{1,2},{3,4}};`

✓ **1D** → simple list

✓ **2D** → table / matrix

Types of Arrays in Java

Java supports mainly two types of arrays:



One-Dimensional Array



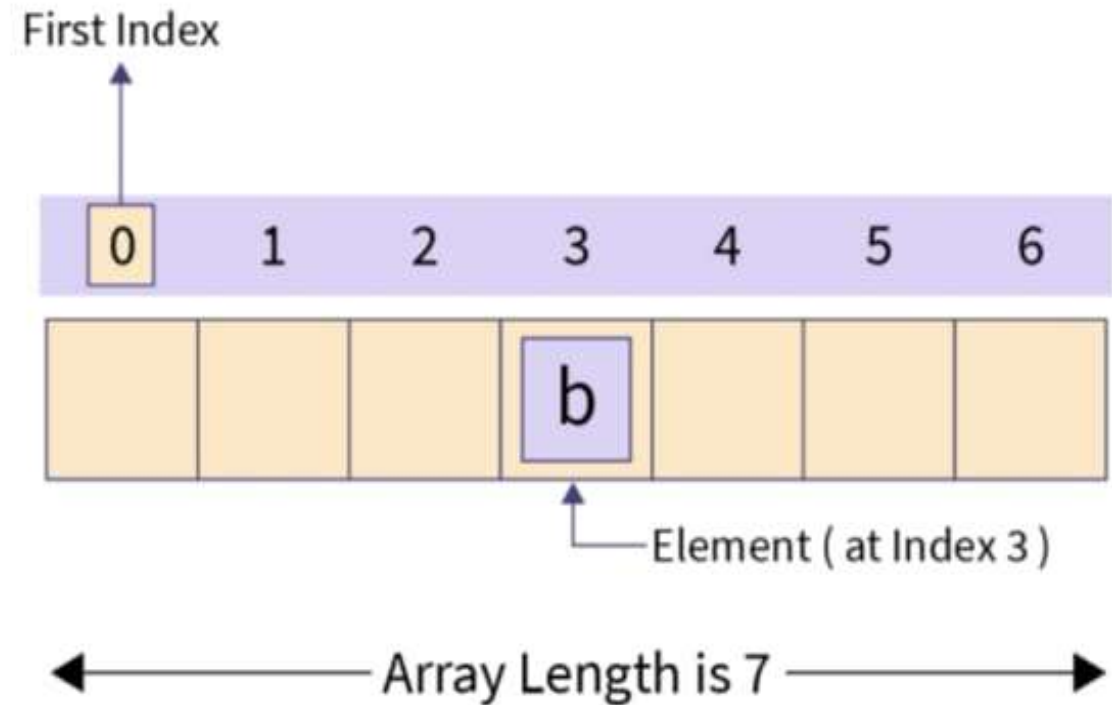
Two-Dimensional Array

One-dimensional Array

- Stores elements in a single row.
- Accessed using one index.
- Simple and commonly used

Syntax:

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

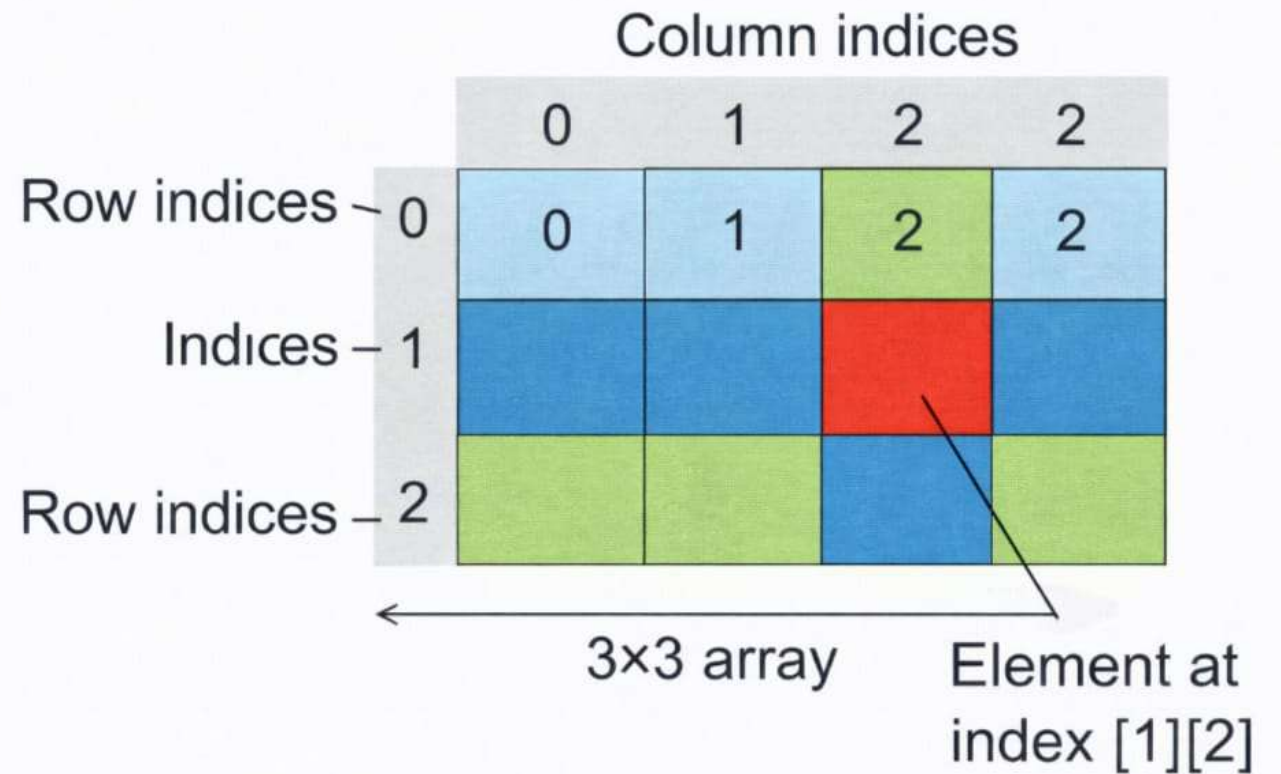


Two-dimensional Array

- Stores data in rows and columns.
- Accessed using two indexes.
- Used to represent tables or matrices.

Syntax:

```
int a[][] = new int[3][3];
```



Declaration & Initialization

- Declaration: Defines array type.
- Initialization: Assigns values.

Syntax:

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

long form

```
double[] a;
a = new double[N];
for (int i = 0; i < N; i++)
    a[i] = 0.0;
```

declaration (points to `double[] a;`)

creation (points to `a = new double[N];`)

initialization (points to `a[i] = 0.0;`)

short form

```
double[] a = new double[N];
```

initializing declaration

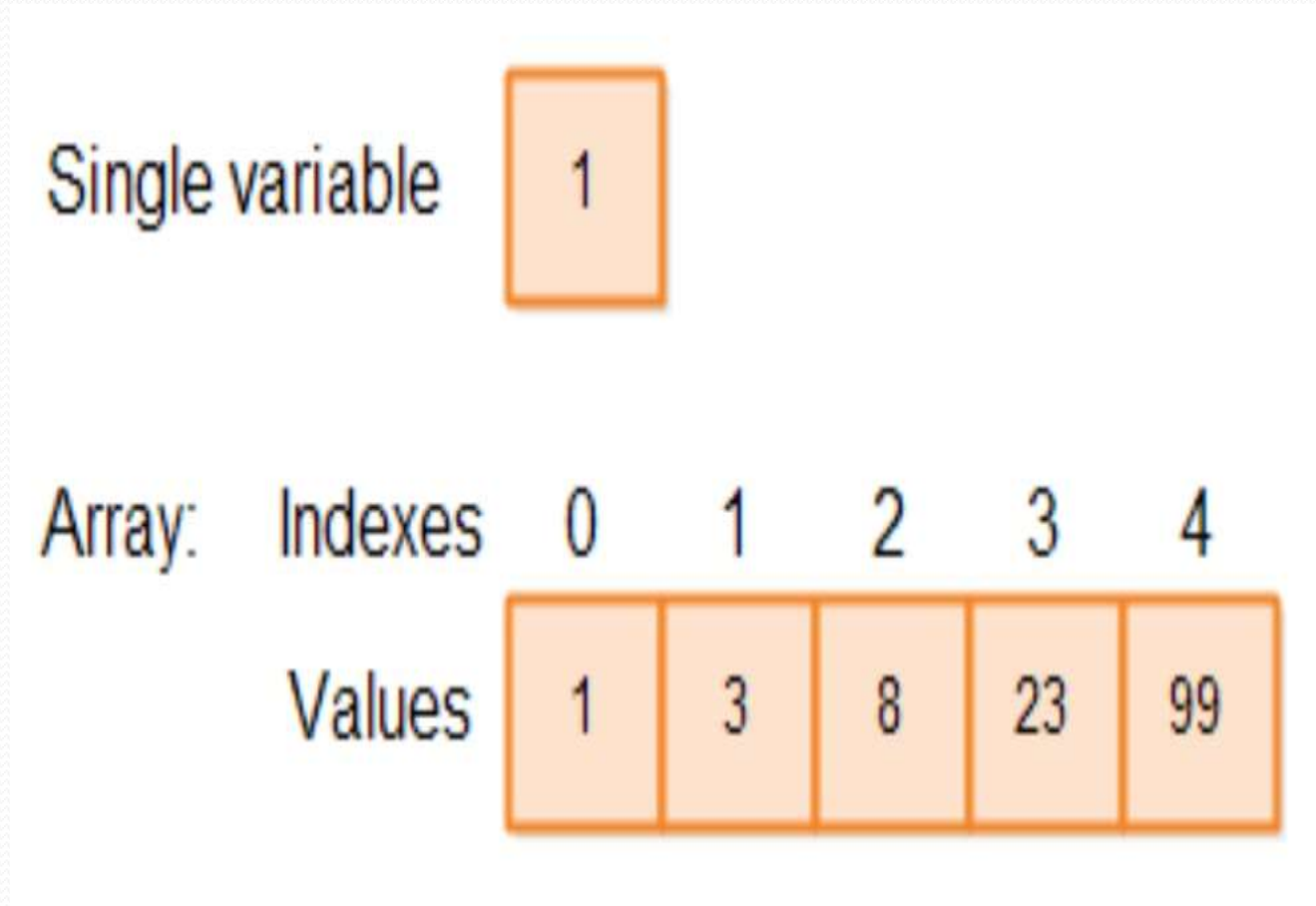
```
int[] a = { 1, 1, 2, 3, 5, 8 };
```

Accessing Array Elements

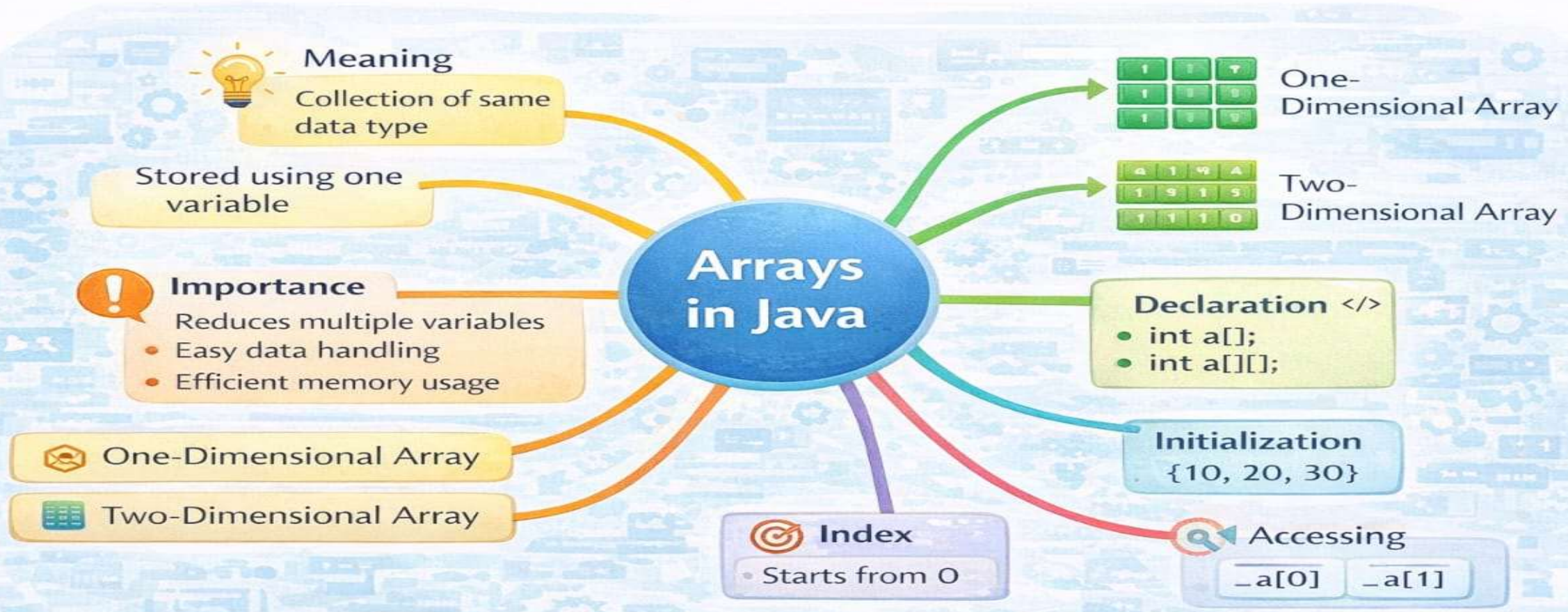
- Array elements accessed using index.
- Index starts from 0

Example:

```
System.out.println(a[0]);
```



Mind Map



Assessment

1. The index of an array in Java starts from __.

Answer: 0

1. Choose the correct answer.

2. Which of the following is the correct way to declare an array?

- a) int a;
- b) int a[];**
- c) array int a;
- d) int = a[];

3. Write the syntax to declare and initialize an array.

Answer : `int a[] = {10, 20, 30};`

References

- <https://docs.oracle.com/javase/tutorial/java/nutsandbolts/arrays.html>
- <https://www.javatpoint.com/java-array>
- <https://www.geeksforgeeks.org/arrays-in-java/>

