# Arrays & Strings

## One-Dimensional Arrays:

Arrays are used to store multiple values in a single variable instead of declaring separate variables for each value.

Syntax:

datatype[] arrayName = new datatype[size];

Example:

int[] marks = new int[5];

Create an array with 5 elements.

int[] marks = {85, 90, 75, 88, 95};

int firstMark = marks[0];

marks[2] = 80;

changes the third element to 80.

```
package Practice;

public class ArrayExample {
    public static void main(String[] args) {
        int[] numbers = new int[5];

        numbers[0]=10;
        numbers[1]=20;
        numbers[2]=30;
        numbers[3]=40;
        numbers[4]=50;
```

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


    }
}
```

- Multi-Dimensional Arrays

Multi-dimensional arrays are arrays within arrays. For example, a 2D array is often used to represent a marix.

SYNTAX:

Datatype[][] arrayName = new datatype[rows][columns];

Example:

A 3x3 matrix can be created like

```
int[][] matrix = {
                    {1,2,3},
                    {4,5,6},
                    {7,8,9}
};
```

To access the element:

int value=matrix[1][2];

```
package Practice;

public class MultiArrayExample {
    public static void main(String[] args) {
        int[][] matrix = new int[3][3];

        //Initialize the matrix
        matrix[0][0]=1;
        matrix[0][1]=2;
        matrix[0][2]=3;
        matrix[1][0]=4;
        matrix[1][1]=5;
        matrix[1][2]=6;
        matrix[2][0]=7;
        matrix[2][1]=8;
        matrix[2][2]=9;

        //Print the matrix
        for(int i=0; i<3 ;i++){
            for(int j=0; j<3; j++){
                System.out.println(matrix[i][j] + " " );
            }
            System.out.println();
        }

    }
}
```

## Strings in Java:

Strings in java are sequences of characters and are immutable, meaning their value cannot be changed once it is created.

String str1 = “example”;

Methods in string class:

1.length() - “Returns the length of the string”

int length=str1.length();

2.charAt(int index) -

3. substring(int beginIndex, int endIndex) -

4. equals(String anotherString)

5. toLowerCase() and toUpperCase()

```
package Practice;

public class StringExample {
    public static void main(String[] args) {
        String example ="Hello, World";
        System.out.println("Length: "+ example.length());
        System.out.println("Character at index 0: "+
example.charAt(0));
        System.out.println("Substring: "+
example.substring(0,5));
        System.out.println("Equals to Hello, World :
"+example.equals("Hello"));
        System.out.println("LowerCase: "+
example.toLowerCase());
        System.out.println("UpperCase: "+
example.toUpperCase());

    }
}
```