

**SWT 12031: Practical for Object-oriented Program**  
**Lab Sheet No: 03**  
**Java Basic**

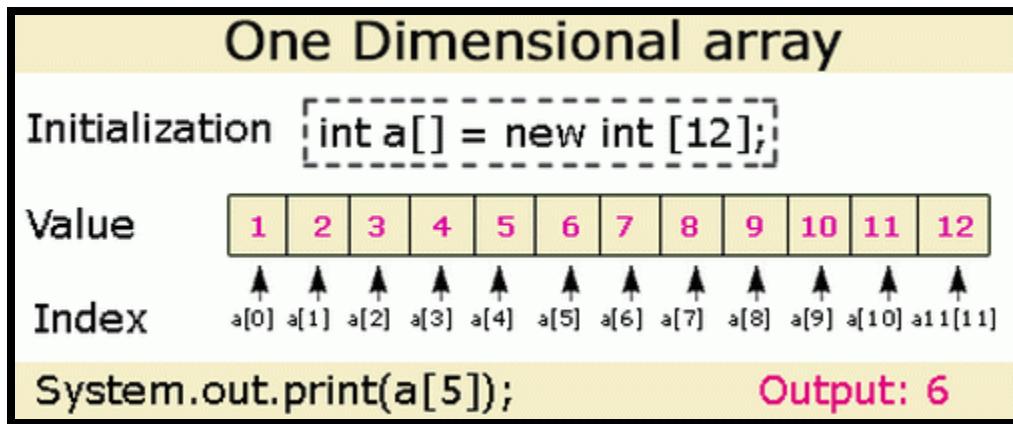
**Time:- 09.30 – 12.30 pm**

**Submission Due: 2023-02-03**

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## Java Arrays

### Single Array / One-Dimensional Array



```
public class Main {
    public static void main(String[] args) {
        String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
        System.out.println(cars[0]);
    }
}
```

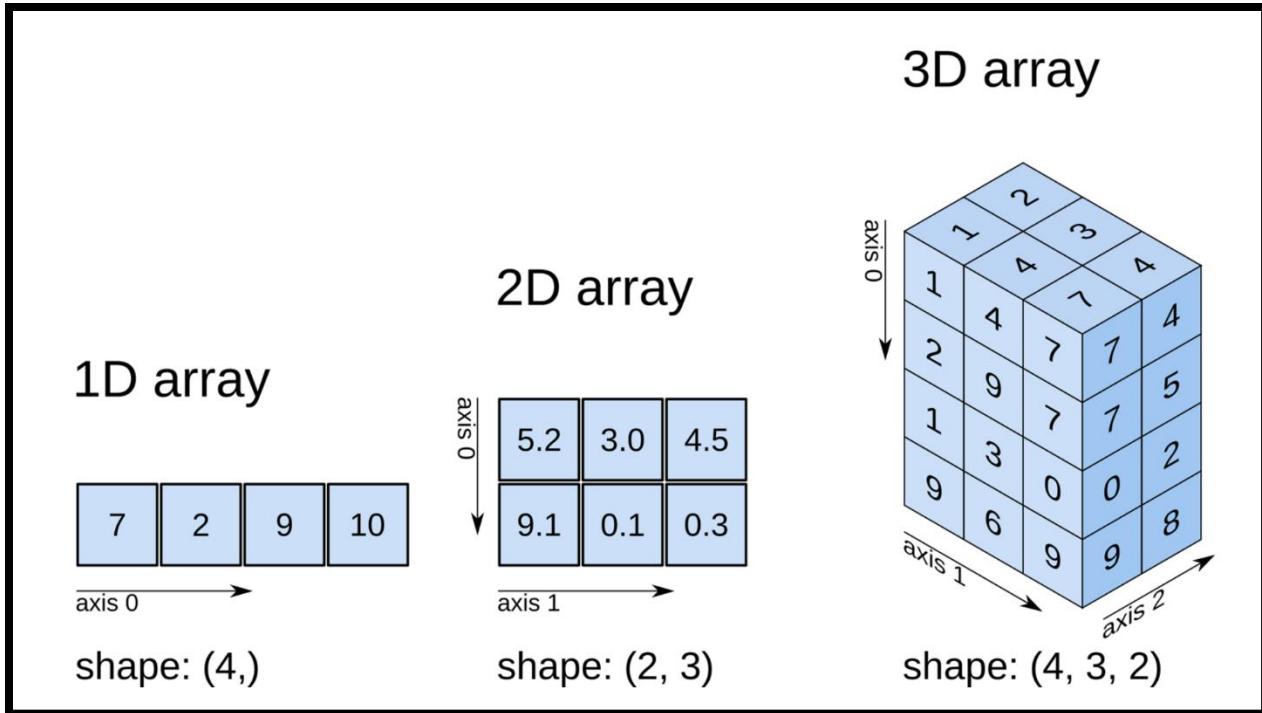
```
public class Main {  
  
    public static void main(String[] args) {  
  
        String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};  
  
        for (int i = 0; i < cars.length; i++) {  
  
            System.out.println(cars[i]);  
  
        }  
  
    }  
}
```

## 2D Array

	Column 1	Column 2	Column 3	Column 4
Row 1	a[0][0]	a[0][1]	a[0][2]	a[0][3]
Row 2	a[1][0]	a[1][1]	a[1][2]	a[1][3]
Row 3	a[2][0]	a[2][1]	a[2][2]	a[2][3]

```
public class Main {  
  
    public static void main(String[] args) {  
  
        int[][] myNumbers = { {1, 2, 3, 4}, {5, 6, 7} };  
  
        for (int i = 0; i < myNumbers.length; ++i) {  
  
            for(int j = 0; j < myNumbers[i].length; ++j) {  
  
                System.out.println(myNumbers[i][j]);  
  
            }  
  
        }  
  
    }  
}
```

### 3D Array



```
class ThreeArray {  
  
    public static void main(String[] args) {  
  
        // create a 3d array  
  
        int[][][] test = {  
  
            {  
                {1, -2, 3},  
  
                {2, 3, 4}  
  
            },  
  
            {  
                {-4, -5, 6, 9},  
  
                {1},  
  
                {2, 3}  
  
            }  
  
        };  
  
        // for..each loop to iterate through elements of 3d array  
  
        for (int[][] array2D: test) {  
  
            for (int[] array1D: array2D) {  
  
                for(int item: array1D) {  
  
                    System.out.println(item);  
  
                }  
  
            }  
  
        }  
  
    }  

```

# Print Pattern in Java

## 1. Star Pattern



```
public class RightTrianglePattern
{
    public static void main(String args[])
    {
        //i for rows and j for columns
        //row denotes the number of rows you want to print
        int i, j, row=6;
        //outer loop for rows
        for(i=0; i<row; i++)
        {
            //inner loop for columns
            for(j=0; j<=i; j++)
            {
                //prints stars
                System.out.print("* ");
            }
            //throws the cursor in a new line after printing each line
            System.out.println();
        }
    }
}
```

## 2. Number Pattern

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4 5 6
1 2 3 4 5 6 7
```

```
public class Pattern1
{
    public static void main(String args[])
    {
        int i, j, number, n=7;
        //loop for rows
        for(i=0; i<n; i++)
        {
            number=1;
            //loop for columns
            for(j=0; j<=i; j++)
            {
                //prints num
                System.out.print(number+ " ");
                //incrementing the value of number
                number++;
            }
            //throws the cursor at the next line after printing each row
            System.out.println();
        }
    }
}
```

### 3. Character Pattern

```
A  
A B  
A B C  
A B C D  
A B C D E  
A B C D E F  
A B C D E F G  
A B C D E F G H  
A B C D E F G H I
```

```
public class RightAlphabeticPattern  
{  
    public static void main(String[] args)  
    {  
        int alphabet = 65; //ASCII value of capital A is 65  
        //inner loop for rows  
        for (int i = 0; i <= 8; i++)  
        {  
            //outer loop for columns  
            for (int j = 0; j <= i; j++)  
            {  
                //adds the value of j in the ASCII value of A and prints the corresponding alph  
                //abet  
                System.out.print((char) (alphabet + j) + " ");  
            }  
            System.out.println();  
        }  
    }  
}
```

**Exercise 01:**

1. Create your first java program that will print, “Hello, Welcome to Object Oriented Programming!”.
  - a. Make the name of the class as ‘**HelloWorld**’.
  - b. Write the main method that will execute the print statement given.
  - c. Save the program by giving the file name same as class class and with the .java extension.
  - d. Compile the program you created.
  - e. Execute the program you created.
2. Create a class to display the following.

**Name : Sam**

**Subject: OOP**

**Duration : 4 Months**

**Grade : A+**

**Exercise 02:**

1. Create a class called **Student**. Within this class,
  - a. Define two variables namely **id** and **name**.
  - b. Initialize **id** to **1** and **name** to **Kamal**.
  - c. Create an object **s1**
  - d. Access the objects through the variable.

**Exercise 03:**

1. Create a class called **with your name**. Within this class,
  - a. Get the user input for your registration no.
  - b. Get the user input for your name.
  - c. Merge and Display both data with the same Output.

**Exercise 04:**

1. Create a class called **Employee**. Within the class,
  - a. Create the variables **empid**, **name** and **salary** (salary is a float value).
  - b. Display everything.

**Exercise 05:**

1. Create a class called **MyName** to print your name.
2. Create a class to display the following

*Java is an example for OOP*

*It is a pure Object Oriented language*

3.
  - Create a class called **Rectangle**. Within the class,
    - I. Create the variables **length** and **width**.
    - II. Find the **Area** of the rectangle.

**Exercise 06:**

Write a Java program to calculate a bike's average consumption from the given total distance (integer value) traveled (in km) and spent fuel (in liters, float number – 2 decimal point).

Hint :- (distance/Fuel liters)

**Exercise 07:**

Write a Java program to print the following characters in a reverse way.

Test Characters: 'X', 'M', 'L' -> 'L', 'M', 'X'

**Exercise 08:**

Write a java program to read 05 numbers from the keyboard and find their sum and average.

**Exercise 09:**

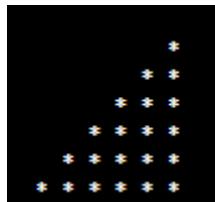
Write the java program to Print all elements of 2d array given below the numbers Using for Loop

```
1
-2
3
-4
-5
6
9
7
```

**Exercise 10:**

Write the java program to print given below the patterns

a.



b.

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
22 23 24 25 26 27 28
```

c.

```
A
B B
C C C
D D D D
E E E E E
F F F F F F
G G G G G G G
H H H H H H H H
I I I I I I I I I
J J J J J J J J J J
```

## Discussion

- Class.
- Variable.
- Single Array.
- 2D Array
- 3D Array
- Reverse in java.
- Star Pattern
- Number Pattern
- Character Pattern