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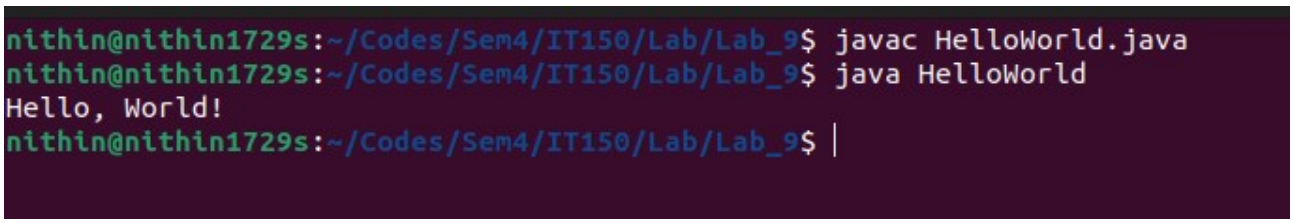
IT150 Lab Assignment

Q1.Write, save, compile and run the HelloWorld program in JAVA.

Code

Output

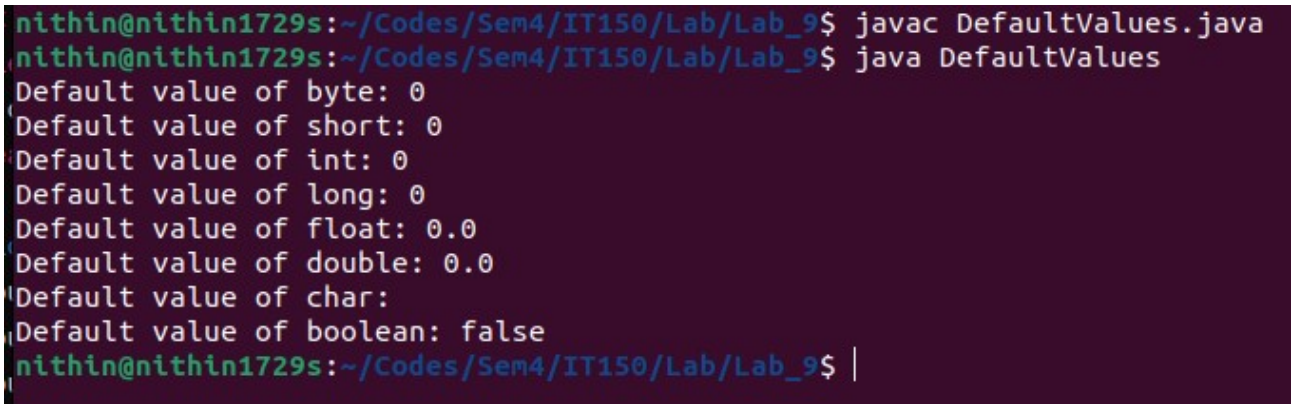


Q2.Write a JAVA program to display default value of all primitive data type of JAVA

Code

```java
public class DefaultValues {
    static byte byteDefault;
    static short shortDefault;
    static int intDefault;
    static long longDefault;
    static float floatDefault;
    static double doubleDefault;
    static char charDefault;
    static boolean booleanDefault;

    public static void main(String[] args) {
        System.out.println("Default value of byte: " + byteDefault);
        System.out.println("Default value of short: " + shortDefault);
        System.out.println("Default value of int: " + intDefault);
        System.out.println("Default value of long: " + longDefault);
        System.out.println("Default value of float: " + floatDefault);
        System.out.println("Default value of double: " + doubleDefault);
        System.out.println("Default value of char: " + charDefault);
        System.out.println("Default value of boolean: " + booleanDefault);
    }
}
```

OUTPUT



```
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ javac DefaultValues.java
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ java DefaultValues
Default value of byte: 0
Default value of short: 0
Default value of int: 0
Default value of long: 0
Default value of float: 0.0
Default value of double: 0.0
Default value of char:
Default value of boolean: false
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$
```

Q3.Write a JAVA program to Calculate Sum & Average of an Array

Code

```java
public class ArraySumAverage {
    public static void main(String[] args) {
        int[] arr = {2, 4, 6, 8, 10};
        int sum = 0;
        double average;

        for (int num : arr) {
            sum += num;
        }

        average = (double) sum / arr.length;

        System.out.println("Sum of array elements: " + sum);
        System.out.println("Average of array elements: " + average);
    }
}
```

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ javac ArraySumAverage.java
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ java ArraySumAverage
Sum of array elements: 30
Average of array elements: 6.0
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$
```

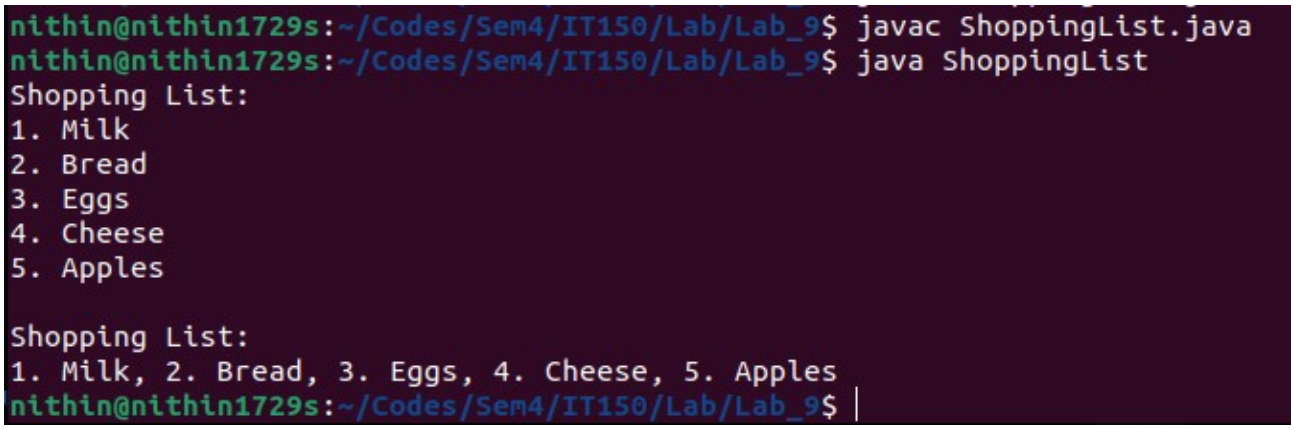
Q4.Write a program named ShoppingList:
a. that prints a shopping list, where each item to buy resides on its own line.
b. that prints a shopping list, where each item to buy is separated from another with a
comma.

Code

ShoppingList.java > ...

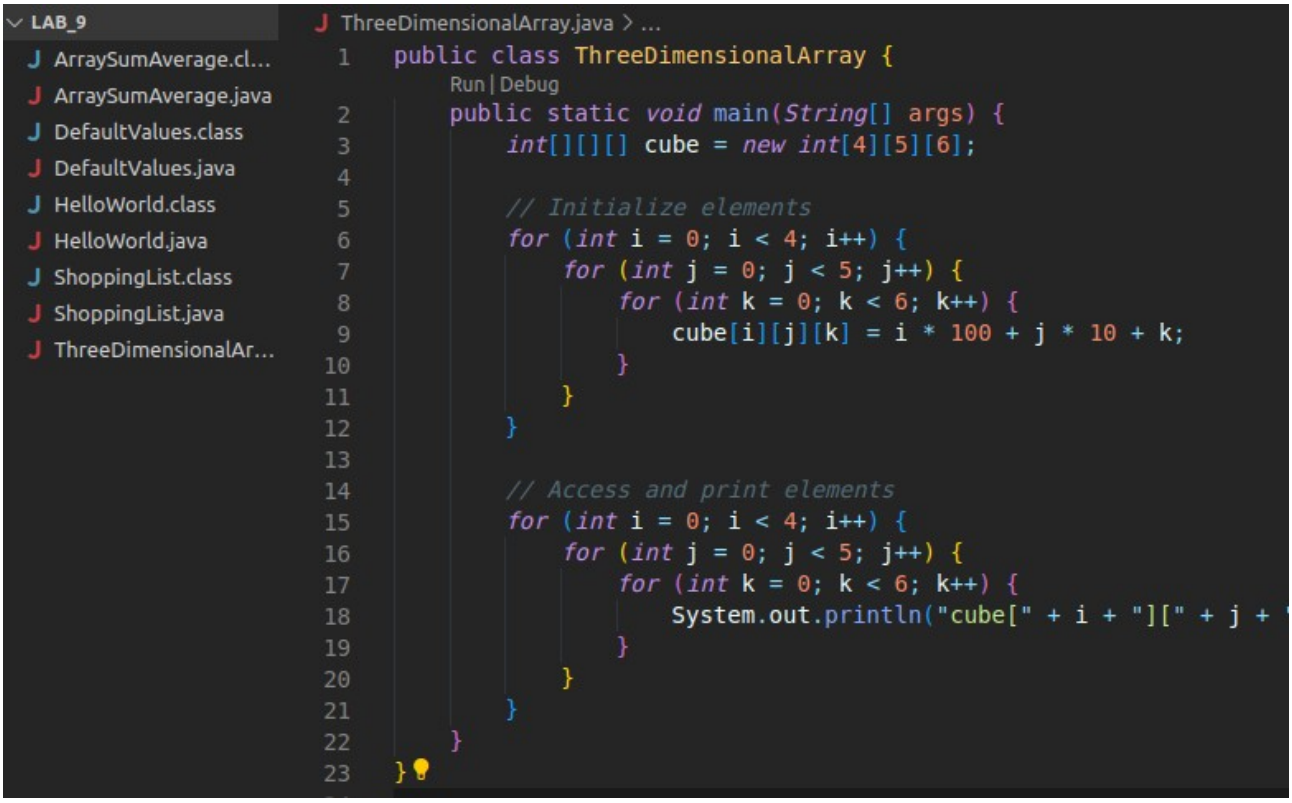
```java
public class ShoppingList {
    Run | Debug
    public static void main(String[] args) {
        printShoppingListNewLine();
        System.out.println();
        printShoppingListCommaSeparated();
    }

    public static void printShoppingListNewLine() {
        System.out.println(x:"Shopping List:");
        System.out.println(x:"1. Milk");
        System.out.println(x:"2. Bread");
        System.out.println(x:"3. Eggs");
        System.out.println(x:"4. Cheese");
        System.out.println(x:"5. Apples");
    }

    public static void printShoppingListCommaSeparated() {
        System.out.println(x:"Shopping List:");
        System.out.println(x:"1. Milk, 2. Bread, 3. Eggs, 4. Cheese, 5. Apples");
    }
}
```

OUTPUT



Q6.Write a JAVA program to create a three-dimensional array named cube with dimensions 4x5x6.
Initialize the elements using nested loops and finally access and print the elements using three
levels of nested loops.

CODE


LAB_9
ArraySumAverage.cl...
ArraySumAverage.java
DefaultValues.class
DefaultValues.java
HelloWorld.class
HelloWorld.java
ShoppingList.class
ShoppingList.java
ThreeDimensionalAr...
ThreeDimensionalArray.java > ...
public class ThreeDimensionalArray {
Run | Debug
public static void main(String[] args) {
int[][][] cube = new int[4][5][6];
// Initialize elements
for (int i = 0; i < 4; i++) {
for (int j = 0; j < 5; j++) {
for (int k = 0; k < 6; k++) {
cube[i][j][k] = i * 100 + j * 10 + k;
}
}
}
// Access and print elements
for (int i = 0; i < 4; i++) {
for (int j = 0; j < 5; j++) {
for (int k = 0; k < 6; k++) {
System.out.println("cube[" + i + "][" + j +
}
}
}
}
}

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ javac ThreeDimensionalArray.java
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ java ThreeDimensionalArray
cube[0][0][0] = 0
cube[0][0][1] = 1
cube[0][0][2] = 2
cube[0][0][3] = 3
cube[0][0][4] = 4
cube[0][0][5] = 5
cube[0][1][0] = 10
cube[0][1][1] = 11
cube[0][1][2] = 12
cube[0][1][3] = 13
cube[0][1][4] = 14
cube[0][1][5] = 15
cube[0][2][0] = 20
cube[0][2][1] = 21
cube[0][2][2] = 22
cube[0][2][3] = 23
cube[0][2][4] = 24
cube[0][2][5] = 25
cube[0][3][0] = 30
cube[0][3][1] = 31
cube[0][3][2] = 32
cube[0][3][3] = 33
cube[0][3][4] = 34
cube[0][3][5] = 35
cube[0][4][0] = 40
cube[0][4][1] = 41
cube[0][4][2] = 42
cube[0][4][3] = 43
cube[0][4][4] = 44
cube[0][4][5] = 45
cube[1][0][0] = 100
cube[1][0][1] = 101
cube[1][0][2] = 102
cube[1][0][3] = 103
cube[1][0][4] = 104
cube[1][0][5] = 105
cube[1][1][0] = 110
cube[1][1][1] = 111
cube[1][1][2] = 112
cube[1][1][3] = 113
cube[1][1][4] = 114
cube[1][1][5] = 115
cube[1][2][0] = 120
cube[1][2][1] = 121
cube[1][2][2] = 122
cube[1][2][3] = 123
cube[1][2][4] = 124
cube[1][2][5] = 125
cube[1][3][0] = 130
cube[1][3][1] = 131
```

```
cube[2][1][4] = 214
cube[2][1][5] = 215
cube[2][2][0] = 220
cube[2][2][1] = 221
cube[2][2][2] = 222
cube[2][2][3] = 223
cube[2][2][4] = 224
cube[2][2][5] = 225
cube[2][3][0] = 230
cube[2][3][1] = 231
cube[2][3][2] = 232
cube[2][3][3] = 233
cube[2][3][4] = 234
cube[2][3][5] = 235
cube[2][4][0] = 240
cube[2][4][1] = 241
cube[2][4][2] = 242
cube[2][4][3] = 243
cube[2][4][4] = 244
cube[2][4][5] = 245
cube[3][0][0] = 300
cube[3][0][1] = 301
cube[3][0][2] = 302
cube[3][0][3] = 303
cube[3][0][4] = 304
cube[3][0][5] = 305
cube[3][1][0] = 310
cube[3][1][1] = 311
cube[3][1][2] = 312
cube[3][1][3] = 313
cube[3][1][4] = 314
cube[3][1][5] = 315
cube[3][2][0] = 320
cube[3][2][1] = 321
cube[3][2][2] = 322
cube[3][2][3] = 323
cube[3][2][4] = 324
cube[3][2][5] = 325
cube[3][3][0] = 330
cube[3][3][1] = 331
cube[3][3][2] = 332
cube[3][3][3] = 333
cube[3][3][4] = 334
cube[3][3][5] = 335
cube[3][4][0] = 340
cube[3][4][1] = 341
cube[3][4][2] = 342
cube[3][4][3] = 343
cube[3][4][4] = 344
cube[3][4][5] = 345
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ ~~
```

Q7.Write a Java application that prompts the user for side length of a square and uses a method
called SquareArea to calculate the area of the square and uses a method SquarePerimeter to
calculate the perimeter of the square.
a) In the above program declare the side length with ‘a’ and create multiple objects
to create the area and perimeter of the square.
b) Create a Rectangle class equivalent to the Square class created as above. Before
coding the class, decide which variables and methods this class must have.
c) Create a class called TestQuadrilaters that prints the details of a square and a
rectangle

CODE

```java
import java.util.Scanner;

public class Quadrilaterals {
    Run | Debug
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Prompt user for side length of a square
        System.out.print(s:"Enter the side length of the square: ");
        double sideLength = scanner.nextDouble();

        // Create multiple objects for square and calculate area and perimeter
        Square square1 = new Square(sideLength);
        Square square2 = new Square(side:7); // Example with different side length

        System.out.println(x:"Square 1:");
        System.out.println("Area: " + square1.calculateArea());
        System.out.println("Perimeter: " + square1.calculatePerimeter());

        System.out.println(x:"\nSquare 2:");
        System.out.println("Area: " + square2.calculateArea());
        System.out.println("Perimeter: " + square2.calculatePerimeter());

        // Create a rectangle and calculate area and perimeter
        Rectangle rectangle = new Rectangle(length:4, width:6);
        System.out.println(x:"\nRectangle:");
        System.out.println("Area: " + rectangle.calculateArea());
        System.out.println("Perimeter: " + rectangle.calculatePerimeter());

        // Test Quadrilaterals
        TestQuadrilaterals test = new TestQuadrilaterals(square1, rectangle);
        test.printDetails();
    }
}

class Square {
    private double side;

    public Square(double side) {
        this.side = side;
    }

    public double calculateArea() {
        return side * side;
    }

    public double calculatePerimeter() {
        return 4 * side;
    }
```

```
    public double calculateArea() {
    }

    public double calculatePerimeter() {
        return 4 * side;
    }
}

class Rectangle {
    private double length;
    private double width;

    public Rectangle(double length, double width) {
        this.length = length;
        this.width = width;
    }

    public double calculateArea() {
        return length * width;
    }

    public double calculatePerimeter() {
        return 2 * (length + width);
    }
}

class TestQuadrilaterals {
    private Square square;
    private Rectangle rectangle;

    public TestQuadrilaterals(Square square, Rectangle rectangle) {
        this.square = square;
        this.rectangle = rectangle;
    }

    public void printDetails() {
        System.out.println(x:"\nTesting Quadrilaterals:");
        System.out.println(x:"Square details:");
        System.out.println("Area: " + square.calculateArea());
        System.out.println("Perimeter: " + square.calculatePerimeter());

        System.out.println(x:"\nRectangle details:");
        System.out.println("Area: " + rectangle.calculateArea());
        System.out.println("Perimeter: " + rectangle.calculatePerimeter());
    }
}
```

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ javac Quadrilaterals.java
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ java Quadrilaterals
Enter the side length of the square: 5
Square 1:
Area: 25.0
Perimeter: 20.0

Square 2:
Area: 49.0
Perimeter: 28.0

Rectangle:
Area: 24.0
Perimeter: 20.0

Testing Quadrilaterals:
Square details:
Area: 25.0
Perimeter: 20.0

Rectangle details:
Area: 24.0
Perimeter: 20.0
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$
```

Q8.Write a JAVA program to create a Mydetails with data members Roll no, name and department.
The constructor Mydetails () should initialize the Roll no, name and the department. The member
function display() should display the values of Roll no, name and the department. In the main()
method, an object ‘m’ of class Mydetails to be created with values 1010,”xxx” and “xxdeptxx”.
Then the display() method should be called

CODE

```java
public class Mydetails {
    private int rollNo;
    private String name;
    private String department;

    public Mydetails(int rollNo, String name, String department) {
        this.rollNo = rollNo;
        this.name = name;
        this.department = department;
    }

    public void display() {
        System.out.println("Roll No: " + rollNo);
        System.out.println("Name: " + name);
        System.out.println("Department: " + department);
    }

    Run | Debug
    public static void main(String[] args) {
        Mydetails m = new Mydetails(rollNo:1010, name:"xxx", department:"xxdeptxx");
        m.display();
    }
}
```

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ javac Mydetails.java
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ java Mydetails
Roll No: 1010
Name: xxx
Department: xxdeptxx
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$
```

Q5. Create a new JAVA file named SayMyName that prints out your name as in the following
example:

Code

```java
public class AsciiArt {
    Run | Debug
    public static void main(String[] args) {
        System.out.println(x:".__    __.   __  .___________. __    __   __  .__   __. ");
        System.out.println(x:"|  \\ |  | |  | |           ||  |  |  | |  | |  \\ |  | ");
        System.out.println(x:"|   \\|  | |  | `---|  |----`|  |__|  | |  |   \\|  | ");
        System.out.println(x:"|  . `  | |  |     |  |     |   __   | |  | |  . `  | ");
        System.out.println(x:"|  |\\   | |  |     |  |     |  |  |  | |  | |  |\\   | ");
        System.out.println(x:"|__| \\__| |__|     |__|     |__|  |__| |__| |__| \\__| ");
        System.out.println(x:"                                                       ")
    }
}
```

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ javac AsciiArt.java
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$ java AsciiArt
.__    __.   __  .___________. __    __   __  .__   __.
|  \ |  | |  | |           ||  |  |  | |  | |  \ |  |
|   \|  | |  | `---|  |----`|  |__|  | |  |   \|  |
|  . `  | |  |     |  |     |   __   | |  | |  . `  |
|  |\   | |  |     |  |     |  |  |  | |  | |  |\   |
|__| \__| |__|     |__|     |__|  |__| |__| |__| \__|

nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_9$
```