

----CORE JAVA ASSIGNMENT----

DATE-15/06/2023

1 .//Write an application that sums the integers from
//1 to n. Save the file as SumofIntegers.java.

```
package DucatAssignments;

import java.util.Scanner;

public class SumofIntegers {

    public static void main(String[] args) {

        System.out.println("Enter the number :");

        Scanner sc=new Scanner(System.in);

        int n=sc.nextInt();

        int sum = calculateSum(n);

        System.out.println("The sum of integers from 1
to " + n + " is: " + sum);

    }

    public static int calculateSum(int n) {

        int sum = 0;

        for (int i = 1; i <= n; i++)

        {

            sum += i;

        }

    }

}
```

```
return sum;
```

```
}
```

```
}
```

OUTPUT

Enter the number :

100

The sum of integers from 1 to 100 is: 5050

2 **./Write an application to calculate how many days it is from today**

until the end of the current year.Save the file as YearEnd.java.

```
package DucatAssignments;
```

```
import java.time.LocalDate;
```

```
import java.time.temporal.ChronoUnit;
```

```
public class YearEnd {
```

```
    public static void main(String[] args) {
```

```
        // Get the current date
```

```
        LocalDate currentDate = LocalDate.now();
```

```
        // Get the last day of the current year
```

```
        LocalDate endOfYear = LocalDate.of(currentDate.getYear(), 12, 31);
```

```
        // Calculate the number of days until the end of the year
```

```
long daysUntilYearEnd = ChronoUnit.DAYS.between(currentDate,  
endOfYear);  
  
System.out.println("Number of days until the end of the year: " +  
daysUntilYearEnd);  
  
}  
}
```

OUTPUT

Number of days until the end of the year: 200

3. **//Write an application that throws and catches an
ArithmeticException when you attempt to take the
//square root of a negative value .Prompt the user for
an input value and try the math.sqrt() method
//on it. The application either display the square root
or catches the thrown Exception and displays an
//appropriate message. Save the file a
//SqrtException.java.**

```
package DucatAssignments;  
  
import java.util.Scanner;  
  
public class SqrtException {
```

```
public static void main(String[] args) {  
    Scanner scanner = new Scanner(System.in);  
    System.out.print("Enter a number: ");  
    double number = scanner.nextDouble();  
    try {  
        double result = Math.sqrt(number);  
        System.out.println("Square root: " +  
result);  
    } catch (ArithmeticException e) {  
        System.out.println("Error: " +  
e.getMessage());  
    }  
}
```

OUTPUT

Enter a number: 144

Square root: 12.0

4 **./Write an application that concatenates three strings that hold one of your favorite quotations, the**

//Name of the person who said it , and the dates the person lived. Display each String and the concatenated string. Save the file as JoinString.java.

```
package DucatAssignments;

public class JoinStrings {

    public static void main(String[] args) {

        String quotation = "Be the change you wish to see in the world.";

        String author = "Mahatma Gandhi";

        String dates = "1869-1948";

        String concatenatedString = quotation + " - " + author + " (" + dates + ")";

        System.out.println("Quotation: " + quotation);

        System.out.println("Author: " + author);

        System.out.println("Dates: " + dates);

        System.out.println("Concatenated String: " + concatenatedString);

    }

}
```

OUTPUT

Quotation: Be the change you wish to see in the world.

Author: Mahatma Gandhi

Dates: 1869-1948

Concatenated String: Be the change you wish to see in the world. - Mahatma Gandhi (1869-1948)

5 .//Write an application that can hold five integers in an array. Display the integers from first to last //and then display the integers from last to first. Save the file as IntArray.java.

```
package DucatAssignments;

public class IntArray {

    public static void main(String[] args) {

        // Create an array to hold five integers
        int[] numbers = new int[5];

        // Assign values to the array elements
        numbers[0] = 10;

        numbers[1] = 20;

        numbers[2] = 30;

        numbers[3] = 40;
```

```
numbers[4] = 50;

// Display the integers from first to last
System.out.println("Integers from first to
last:");

for (int i = 0; i < numbers.length; i++) {
    System.out.println(numbers[i]);
}

// Display the integers from last to first
System.out.println("Integers from last to
first:");

for (int i = numbers.length - 1; i >= 0; i--) {
    System.out.println(numbers[i]);
}
}
```

OUTPUT

Integers from first to last:

10

20

30

40

50

Integers from last to first:

50

40

8

30

20

10

6. **//Write a java application to displays an attractive
//layout of the information in a typical business
//card. Data items in a typical business card include a
//name, address, city, state, zip code, home
//home phone number , and work phone number. Save the
//file as CardLayout.java.**

package DucatAssignments;

import java.awt.Color;

import java.awt.Font;

import javax.swing.JFrame;

import javax.swing.JLabel;


```
import javax.swing.JPanel;

public class CardLayout {

    public static void main(String[] args) {

        // Create a JFrame to hold the business card
        layout

        JFrame frame = new JFrame("Business Card");

        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

        frame.setSize(400, 300);

        // Create a JPanel to hold the business card
        information

        JPanel panel = new JPanel();

        panel.setBackground(Color.white);

        panel.setLayout(null);

        // Create and customize the labels for each data
        item

        JLabel nameLabel = createLabel("MANOJ YADAV",
        30, 20, 340, 30);

        JLabel addressLabel = createLabel("DEHLI GATE
        2", 30, 60, 340, 20);

        JLabel cityStateZipLabel =
```

```
createLabel("ANUPSHAHR, UTTAR PRADESH, 202421", 30, 80,  
340, 20);
```

```
JLabel homePhoneLabel = createLabel("Home:  
9627587187", 30, 120, 340, 20);
```

```
JLabel workPhoneLabel = createLabel("Work:
```

```
9627587187", 30, 140, 340, 20);
```

```
// Add the labels to the panel
```

```
panel.add(nameLabel);
```

```
panel.add(addressLabel);
```

```
panel.add(cityStateZipLabel);
```

```
panel.add(homePhoneLabel);
```

```
panel.add(workPhoneLabel);
```

```
// Add the panel to the frame and make it  
visible
```

```
frame.add(panel);
```

```
frame.setVisible(true);
```

```
}
```

```
// Helper method to create and customize a JLabel
```

```
private static JLabel createLabel(String text, int  
x, int y, int width, int height) {
```

```

JLabel label = new JLabel(text);

label.setBounds(x, y, width, height);

label.setFont(new Font("Arial", Font.BOLD, 16));

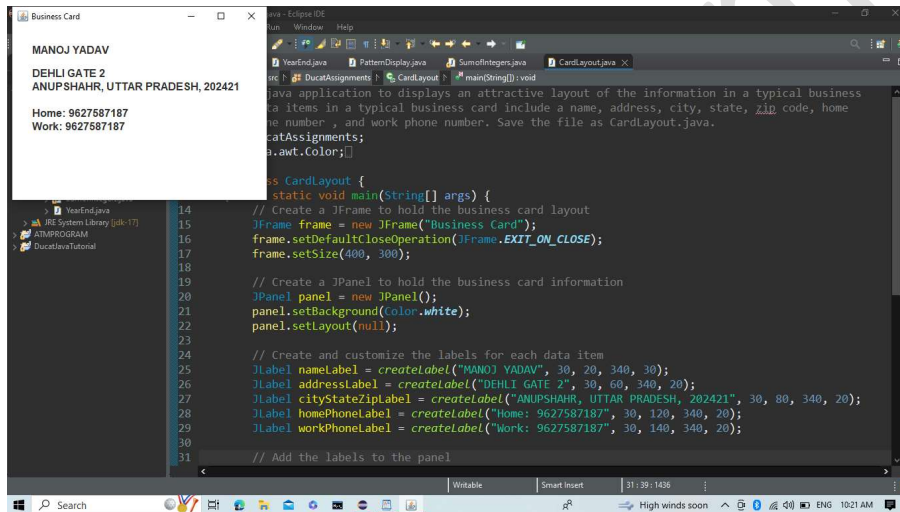
return label;

}

}

```

OUTPUT



7. **//Write a program that accepts a temperature in Fahrenheit from a user and convert it to Celsius by subtracting 32 from the Fahrenheit value and multiplying the result by 5/9. Display both values. save the class as FahrenheitToCelsius.java.**

```
package DucatAssignments;

import java.util.Scanner;

public class FahrenheitToCelsius {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter temperature in
        Fahrenheit: ");

        double fahrenheit = scanner.nextDouble();

        double celsius = (fahrenheit - 32) * 5 / 9;

        System.out.println("Temperature in Fahrenheit: "
        + fahrenheit);

        System.out.println("Temperature in Celsius: " +
        celsius);

    }

}
```

OUTPUT

Enter temperature in Fahrenheit: 100

Temperature in Fahrenheit: 100.0

Temperature in Celsius: 37.77777777777778

8 .//Create an application named TestMethodswhose

main() //method holds two integers variables.

// Assign values to the variables. In turn, pass each

//value to methods named displayIt(),

//displayItTimesTwo(), and displayItPlusOneHundred().

//Create each method to perform the task

//its name implies . save the application as

//TestMethods.java.

package DucatAssignments;

public class TestMethods {

public static void main(String[] args) {

int num1 = 5;

int num2 = 10;

displayIt(num1);

displayIt(num2);

displayItTimesTwo(num1);

displayItTimesTwo(num2);

displayItPlusOneHundred(num1);

```
displayItPlusOneHundred(num2);  
  
}  
  
public static void displayIt(int num) {  
    System.out.println("Displaying: " + num);  
}  
  
public static void displayItTimesTwo(int num) {  
    int result = num * 2;  
    System.out.println("Displaying " + num + " times  
two: " + result);  
}  
  
public static void displayItPlusOneHundred(int num)  
{  
    int result = num + 100;  
    System.out.println("Displaying " + num + " plus  
one hundred: " + result);  
}  
}
```

OUTPUT

Displaying: 5

Displaying: 10

Displaying 5 times two: 10

Displaying 10 times two: 20

Displaying 5 plus one hundred: 105

Displaying 10 plus one hundred: 110

9. **//Write an application that calculates and displays the amount of money a user would have if his or her money could be invested at 5% interest for one year. Create a method that prompts the user for the starting value of the investment and returns it to the calling program. Call a separate method to do the calculation and return the result to be displayed. save the program as interest.java.**

```
package DucatAssignments;
import java.util.Scanner;
public class Interest {
    public static void main(String[] args) {
        double startingValue = getStartingValue();
        double finalAmount =
```

```
calculateInterest(startingValue);

displayResult(startingValue, finalAmount);
}

public static double getStartingValue() {
    Scanner scanner = new Scanner(System.in);
    System.out.print("Enter the starting value of
the investment: ");
    return scanner.nextDouble();
}

public static double calculateInterest(double
startingValue) {
    double interestRate = 0.05; // 5% interest rate
    double interest = startingValue * interestRate;
    return startingValue + interest;
}

public static void displayResult(double
startingValue, double finalAmount) {
    System.out.println("Starting value: ₹" +
startingValue);

    System.out.println("Interest earned: ₹" +
(finalAmount - startingValue));
```



```
System.out.println("Final amount after one year:  
₹" + finalAmount);  
}  
}
```

OUTPUT

Enter the starting value of the investment: 1000

Starting value: ₹1000.0

Interest earned: ₹50.0

Final amount after one year: ₹1050.0

10 (a). //Create a class named Invoice that contains fields for an item number, name, quantity, price, and //total cost. Create instance methods that set the item name, quantity, and price. Whenever the price //or quantity is set, recalculate the total(price times quantity). Also include a displayLine() method //that displays the item number, name, quantity, price, and total cost. Save the class as Invoice.java

```
package DucatAssignments;
```

```
public class Invoice {  
    private int itemNumber;  
    private String itemName;  
    private int quantity;  
    private double price;  
    private double totalCost;  
    public void setItemName(String name) {  
        this.itemName = name;  
    }  
    public void setQuantity(int quantity) {  
        this.quantity = quantity;  
        calculateTotalCost();  
    }  
    public void setPrice(double price) {  
        this.price = price;  
        calculateTotalCost();  
    }  
    private void calculateTotalCost() {  
        this.totalCost = this.quantity * this.price;  
    }  
    public void displayLine() {
```

```
System.out.println("Item Number: " +
itemNumber);

System.out.println("Item Name: " + itemName);

System.out.println("Quantity: " + quantity);

System.out.println("Price: ₹" + price);

System.out.println("Total Cost: ₹" + totalCost);

}

}
```

(b). Create a class named TestInvoice whose main() method declares three Invoice items. Create a method that prompts the user for and accepts values for the item number, name, quantity, and price for each Invoice. Then display each completed object. Save the application as TestInvoice.java.

```
package DucatAssignments;

import java.util.Scanner;

public class TestInvoice {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        // Declare three Invoice objects

        Invoice invoice1 = new Invoice();
```

```
Invoice invoice2 = new Invoice();

Invoice invoice3 = new Invoice();

// Prompt the user for input and set values for
invoice1

System.out.println("Enter details for Invoice
1:");

System.out.print("Item Number: ");
int itemNumber1 = scanner.nextInt();
scanner.nextLine(); // Consume the newline
character

System.out.print("Item Name: ");
String itemName1 = scanner.nextLine();
System.out.print("Quantity: ");
int quantity1 = scanner.nextInt();
System.out.print("Price: ");
double price1 = scanner.nextDouble();
invoice1.setItemName(itemName1);
invoice1.setQuantity(quantity1);
invoice1.setPrice(price1);

// Prompt the user for input and set values for
invoice2
```

```
System.out.println("\nEnter details for Invoice  
2:");
```

```
System.out.print("Item Number: ");
```

```
int itemNumber2 = scanner.nextInt();
```

```
scanner.nextLine(); // Consume the newline
```

```
character
```

```
System.out.print("Item Name: ");
```

```
String itemName2 = scanner.nextLine();
```

```
System.out.print("Quantity: ");
```

```
int quantity2 = scanner.nextInt();
```

```
System.out.print("Price: ");
```

```
double price2 = scanner.nextDouble();
```

```
invoice2.setItemName(itemName2);
```

```
invoice2.setQuantity(quantity2);
```

```
invoice2.setPrice(price2);
```

```
// Prompt the user for input and set values for  
invoice3
```

```
System.out.println("\nEnter details for Invoice  
3:");
```

```
System.out.print("Item Number: ");
```

```
int itemNumber3 = scanner.nextInt();
```

```
scanner.nextLine(); // Consume the newline
character

System.out.print("Item Name: ");

String itemName3 = scanner.nextLine();

System.out.print("Quantity: ");

int quantity3 = scanner.nextInt();

System.out.print("Price: ");

double price3 = scanner.nextDouble();

invoice3.setItemName(itemName3);

invoice3.setQuantity(quantity3);

invoice3.setPrice(price3);

// Display each completed object

System.out.println("\nInvoice 1:");

invoice1.displayLine();

System.out.println("\nInvoice 2:");

invoice2.displayLine();

System.out.println("\nInvoice 3:");

invoice3.displayLine();

}

}
```

OUTPUT

Enter details for Invoice 1:

Item Number: 1

Item Name: PIZZA

Quantity: 2

Price: 120

Enter details for Invoice 2:

Item Number: 2

Item Name: BURGER

Quantity: 2

Price: 80

Enter details for Invoice 3:

Item Number: 3

Item Name: DOSA

Quantity: 2

Price: 100

Invoice 1:

Item Number: 0

Item Name: PIZZA

Quantity: 2

Price: ₹120.0

Total Cost: ₹240.0

Invoice 2:

Item Number: 0

Item Name: BURGER

Quantity: 2

Price: ₹80.0

Total Cost: ₹160.0

Invoice 3:

Item Number: 0

Item Name: DOSA

Quantity: 2

Price: ₹100.0

Total Cost: ₹200.0