----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.

```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;

  }

}
```

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.

```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.

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

```java
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

```java
//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.

```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;
```

```java
    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

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.

```java
package DucatAssignments;

import java.awt.Color;

import java.awt.Font;

import javax.swing.JFrame;

import javax.swing.JLabel;

import javax.swing.JPanel;
```

```java
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,
```

```java
        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);
```

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

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

        return label;

    }

}
```
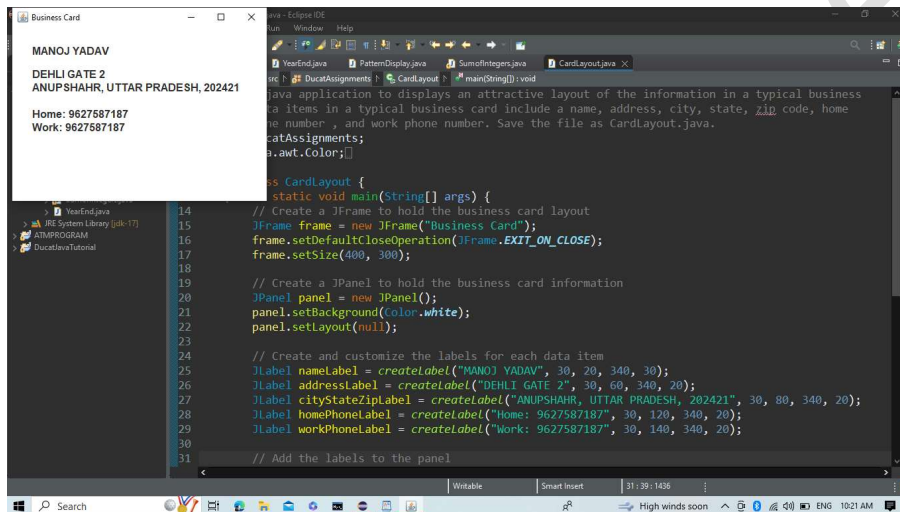
OUTPUT

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.

```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);
```

```java
        }

    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.

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

```java
    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 {

```java
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: " +
```

```java
                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 TestInvoicewhose 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.**

```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();
```

```java
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
```

```java
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
```

```java
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