ASSIGNMENT DAY 3

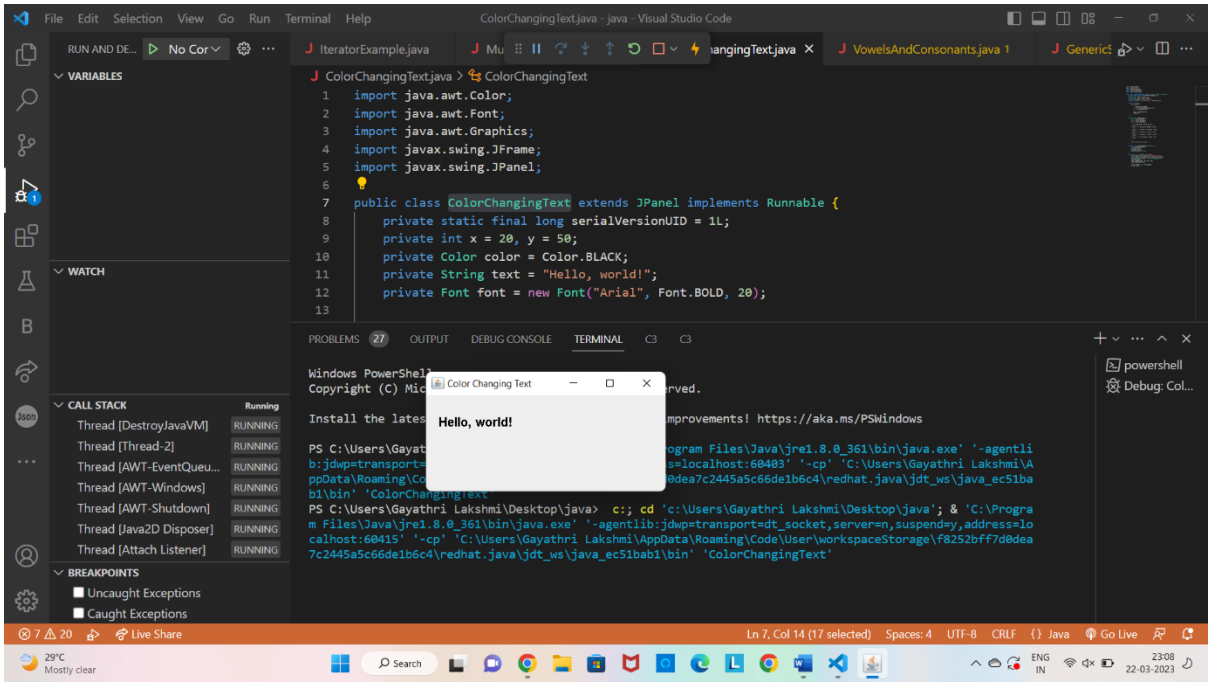
QUESTION 1

```
import java.awt.Color;

import java.awt.Font;

import java.awt.Graphics;

import javax.swing.JFrame;

import javax.swing.JPanel;


public class ColorChangingText extends JPanel implements Runnable {

    private static final long serialVersionUID = 1L;

    private int x = 20, y = 50;

    private Color color = Color.BLACK;

    private String text = "Hello, world!";

    private Font font = new Font("Arial", Font.BOLD, 20);


    public void run() {

        while (true) {

            try {

                Thread.sleep(1000);

            } catch (InterruptedException e) {

                e.printStackTrace();

            }

            color = getNextColor();

            repaint();

        }

    }


    private Color getNextColor() {

        int r = color.getRed();
```

```
    int g = color.getGreen();
    int b = color.getBlue();

    if (r == 255 && g < 255 && b == 0) {
        g++;
    } else if (r > 0 && g == 255 && b == 0) {
        r--;
    } else if (r == 0 && g == 255 && b < 255) {
        b++;
    } else if (r == 0 && g > 0 && b == 255) {
        g--;
    } else if (r < 255 && g == 0 && b == 255) {
        r++;
    } else if (r == 255 && g == 0 && b > 0) {
        b--;
    }

    return new Color(r, g, b);
}

protected void paintComponent(Graphics g) {
    super.paintComponent(g);
    g.setFont(font);
    g.setColor(color);
    g.drawString(text, x, y);
}

public static void main(String[] args) {
    JFrame frame = new JFrame("Color Changing Text");
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    ColorChangingText panel = new ColorChangingText();
```

```
        frame.add(panel);
        frame.setBounds(100, 100, 400, 200);
        frame.setVisible(true);

        Thread thread = new Thread(panel);
        thread.start();
    }
}
```

OUTPUT:



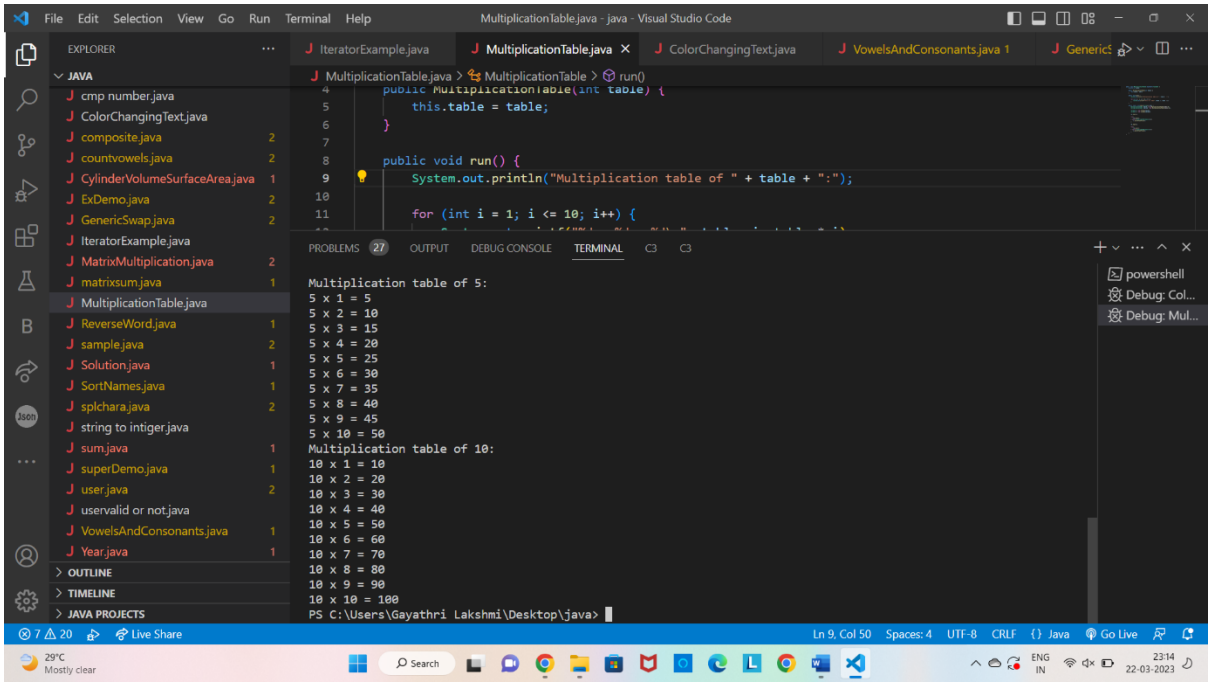
QUESTION 2:

```
public class MultiplicationTable implements Runnable {
    private int table;

    public MultiplicationTable(int table) {
```

```
    this.table = table;
}

public void run() {
    System.out.println("Multiplication table of " + table + ":");

    for (int i = 1; i <= 10; i++) {
        System.out.printf("%d x %d = %d\n", table, i, table * i);
    }
}

public static void main(String[] args) {
    MultiplicationTable table5 = new MultiplicationTable(5);
    MultiplicationTable table10 = new MultiplicationTable(10);

    Thread t1 = new Thread(table5);
    Thread t2 = new Thread(table10);

    t1.start();

    try {
        t1.join();
    } catch (InterruptedException e) {
        e.printStackTrace();
    }

    t2.start();

    try {
        t2.join();
    } catch (InterruptedException e) {
```

```
            e.printStackTrace();
        }
    }
}
```

OUTPUT:



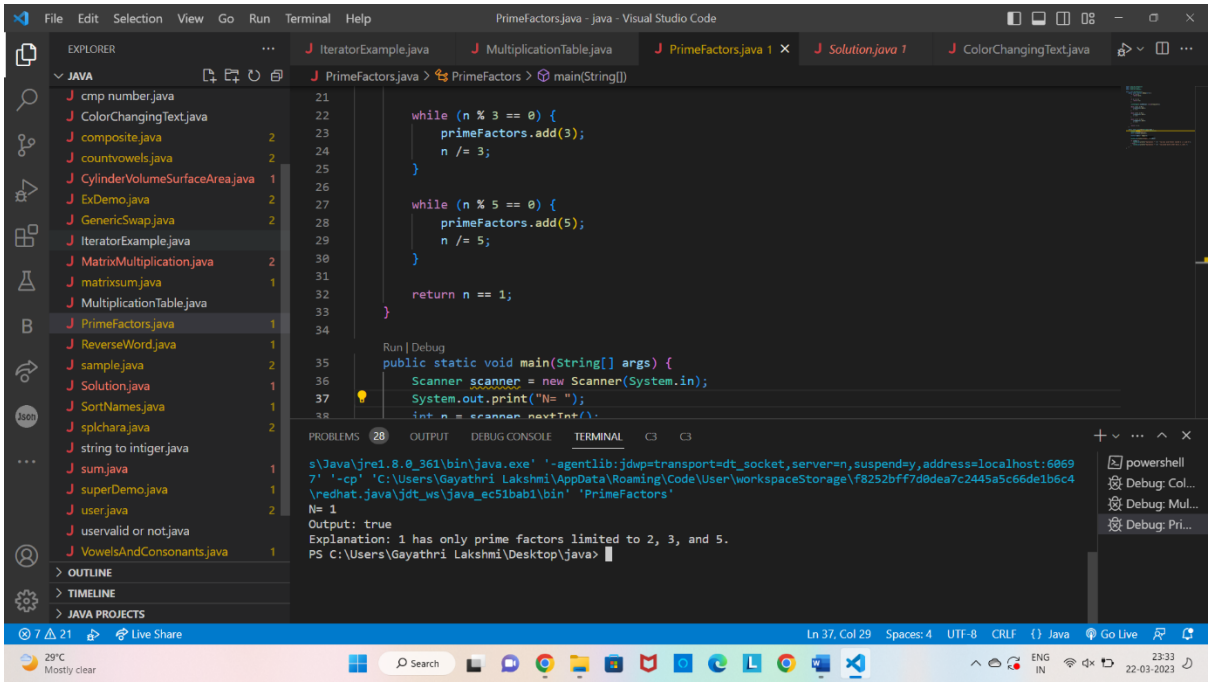
QUESTION 3:

```
import java.util.ArrayList;
import java.util.List;
import java.util.Scanner;

public class PrimeFactors {
    public static boolean isUgly(int n) {
        if (n <= 0) {
            return false;
        }
```

```
    if (n == 1) {
        return true;
    }

    List<Integer> primeFactors = new ArrayList<>();

    while (n % 2 == 0) {
        primeFactors.add(2);
        n /= 2;
    }

    while (n % 3 == 0) {
        primeFactors.add(3);
        n /= 3;
    }

    while (n % 5 == 0) {
        primeFactors.add(5);
        n /= 5;
    }

    return n == 1;
}

public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    System.out.print("N= ");
    int n = scanner.nextInt();

    boolean isUgly = isUgly(n);
```

```
        System.out.println("Output: " + isUgly);

        if (isUgly) {
            System.out.println("Explanation: " + n + " has only prime factors limited to 2, 3, and 5.");
        } else {
            System.out.println("Explanation: " + n + " has prime factors other than 2, 3, and 5.");
        }
    }
}
```

OUTPUT:

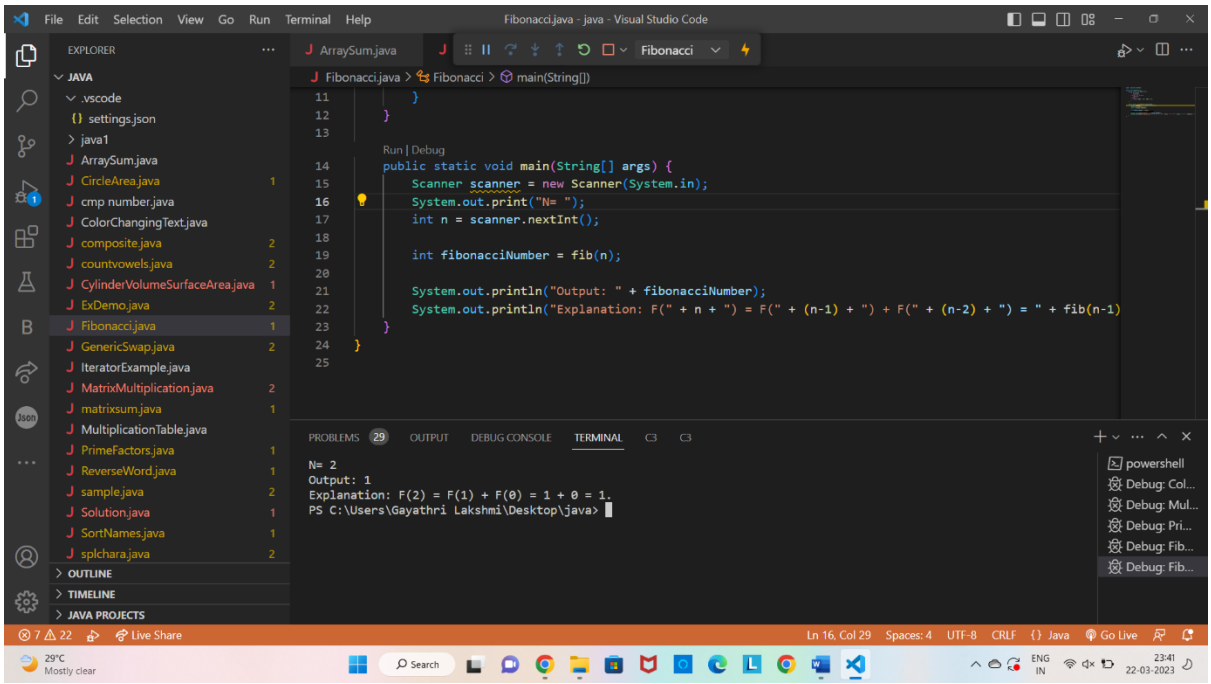


QUESTION 4:

```
import java.util.Scanner;

public class Fibonacci {
    public static int fib(int n) {
        if (n == 0) {
            return 0;
        } else if (n == 1) {
```

```
        return 1;
    } else {
        return fib(n - 1) + fib(n - 2);
    }
}

public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    System.out.print("N= ");
    int n = scanner.nextInt();

    int fibonacciNumber = fib(n);

    System.out.println("Output: " + fibonacciNumber);
    System.out.println("Explanation: F(" + n + ") = F(" + (n-1) + ") + F(" + (n-2) + ") = " + fib(n-1) + " + " + fib(n-2) + " = " + fibonacciNumber + ".");
  }
}
```

OUTPUT:

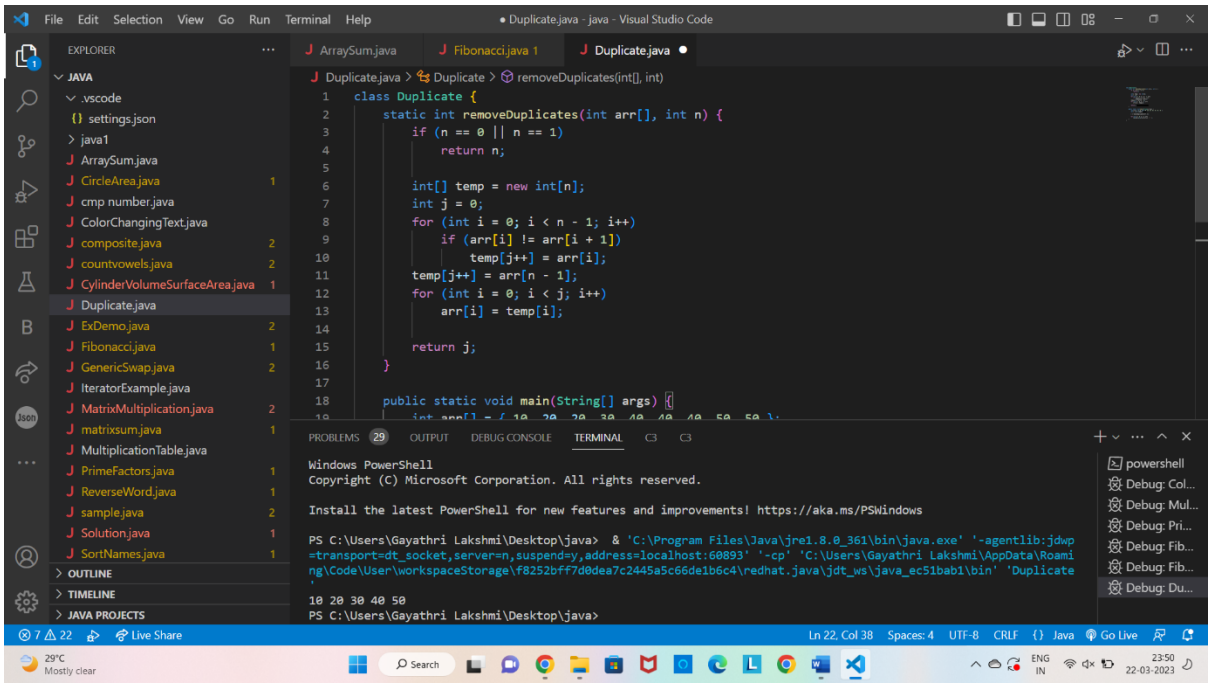


ERROR CORRECTION:

QUESTION 5

```
class Duplicate {
    static int removeDuplicates(int arr[], int n) {
        if (n == 0 || n == 1)
            return n;

        int[] temp = new int[n];
        int j = 0;
        for (int i = 0; i < n - 1; i++)
            if (arr[i] != arr[i + 1])
                temp[j++] = arr[i];
        temp[j++] = arr[n - 1];
        for (int i = 0; i < j; i++)
            arr[i] = temp[i];

        return j;
    }

    public static void main(String[] args) {
        int arr[] = { 10, 20, 20, 30, 40, 40, 40, 50, 50 };
        int n = arr.length;

        n = removeDuplicates(arr, n);

        for (int i = 0; i < n; i++)
            System.out.print(arr[i] + " ");
    }
}
```

OUTPUT:


File Edit Selection View Go Run Terminal Help
• Duplicate.java - java - Visual Studio Code
EXPLORER
JAVA
.vscode
settings.json
java1
ArraySum.java
CircleArea.java
cmp number.java
ColorChangingText.java
composite.java
countvowels.java
CylinderVolumeSurfaceArea.java
Duplicate.java
ExDemo.java
Fibonacci.java
GenericSwap.java
IteratorExample.java
MatrixMultiplication.java
matrixsum.java
MultiplicationTable.java
PrimeFactors.java
ReverseWord.java
sample.java
Solution.java
SortNames.java
OUTLINE
TIMELINE
JAVA PROJECTS
ArraySum.java
Fibonacci.java 1
Duplicate.java
Duplicate.java > Duplicate > removeDuplicates(int[], int)
class Duplicate {
static int removeDuplicates(int arr[], int n) {
if (n == 0 || n == 1)
return n;
int[] temp = new int[n];
int j = 0;
for (int i = 0; i < n - 1; i++)
if (arr[i] != arr[i + 1])
temp[j++] = arr[i];
temp[j++] = arr[n - 1];
for (int i = 0; i < j; i++)
arr[i] = temp[i];
return j;
}
public static void main(String[] args) {
PROBLEMS 29
OUTPUT
DEBUG CONSOLE
TERMINAL
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS C:\Users\Gayathri Lakshmi\Desktop\java> & 'C:\Program Files\Java\jre1.8.0_361\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:60893' '-cp' 'C:\Users\Gayathri Lakshmi\AppData\Roaming\Code\User\workspaceStorage\f8252bff7d0dea7c2445a5c66de1b6c4\redhat.java\jdt_ws\java_ec51bab1\bin' 'Duplicate'
10 20 30 40 50
PS C:\Users\Gayathri Lakshmi\Desktop\java>
powershell
Debug: Col...
Debug: Mul...
Debug: Pri...
Debug: Fib...
Debug: Fib...
Debug: Du...
Live Share
Ln 22, Col 38
Spaces: 4
UTF-8
CRLF
Java
Go Live
29°C
Mostly clear
Search
ENG
IN
23:50
22-03-2023