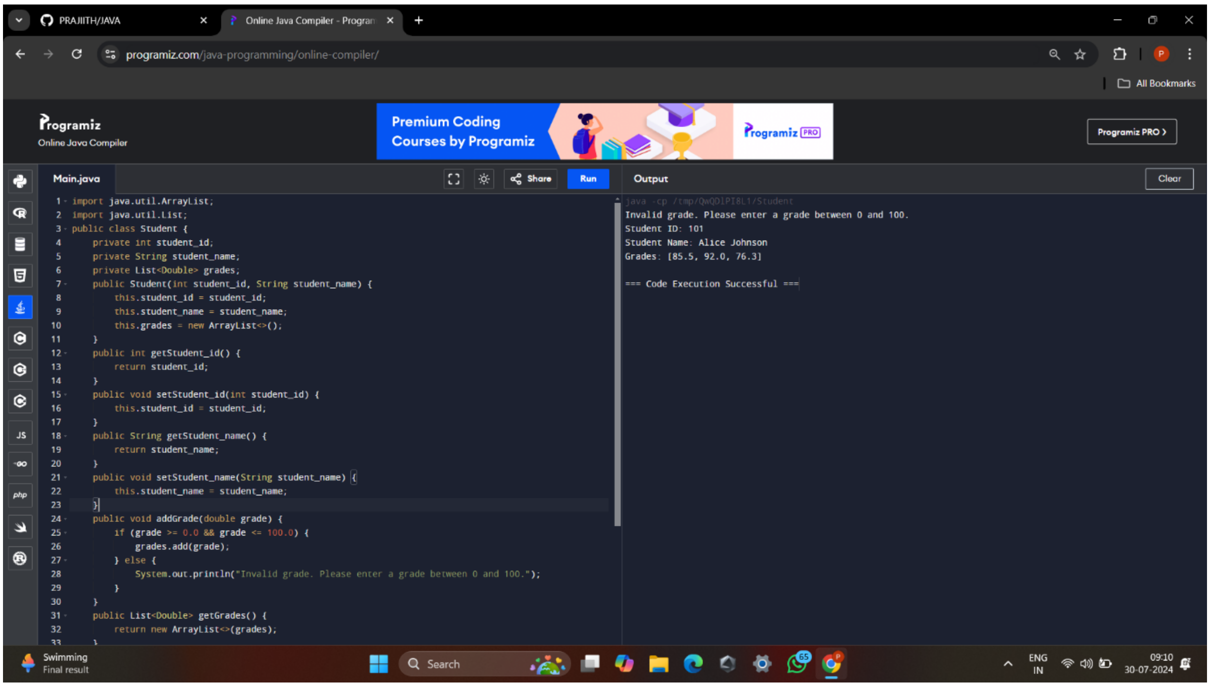
1. . Write a Java program to create a class called Student with private instance variables student_id, student_name, and grades. Provide public getter and setter methods to access and modify the student_id and student_name variables. However, provide a method called addGrade() that allows adding a grade to the grades variable while performing additional validation.

```
import java.util.ArrayList;
import java.util.List;
public class Student {
    private int student_id;
    private String student_name;
    private List<Double> grades;
    public Student(int student_id, String student_name) {
        this.student_id = student_id;
        this.student_name = student_name;
        this.grades = new ArrayList<>();
    }
    public int getStudent_id() {
        return student_id;
    }
    public void setStudent_id(int student_id) {
        this.student_id = student_id;
    }
    public String getStudent_name() {
        return student_name;
    }
    public void setStudent_name(String student_name) {
        this.student_name = student_name;
    }
    public void addGrade(double grade) {
        if (grade >= 0.0 && grade <= 100.0) {
            grades.add(grade);
        } else {
            System.out.println("Invalid grade. Please enter a grade between 0 and 100.");
        }
    }
    public List<Double> getGrades() {
        return new ArrayList<>(grades);
    }
    public void displayStudentInfo() {
        System.out.println("Student ID: " + student_id);
        System.out.println("Student Name: " + student_name);
        System.out.println("Grades: " + grades);
    }

    public static void main(String[] args) {
        Student student = new Student(1, "Alice");
        student.setStudent_id(101);
        student.setStudent_name("Alice Johnson");
        student.addGrade(85.5);
        student.addGrade(92.0);
        student.addGrade(76.3);
        student.addGrade(150.0);
        student.displayStudentInfo();
    }
}
```

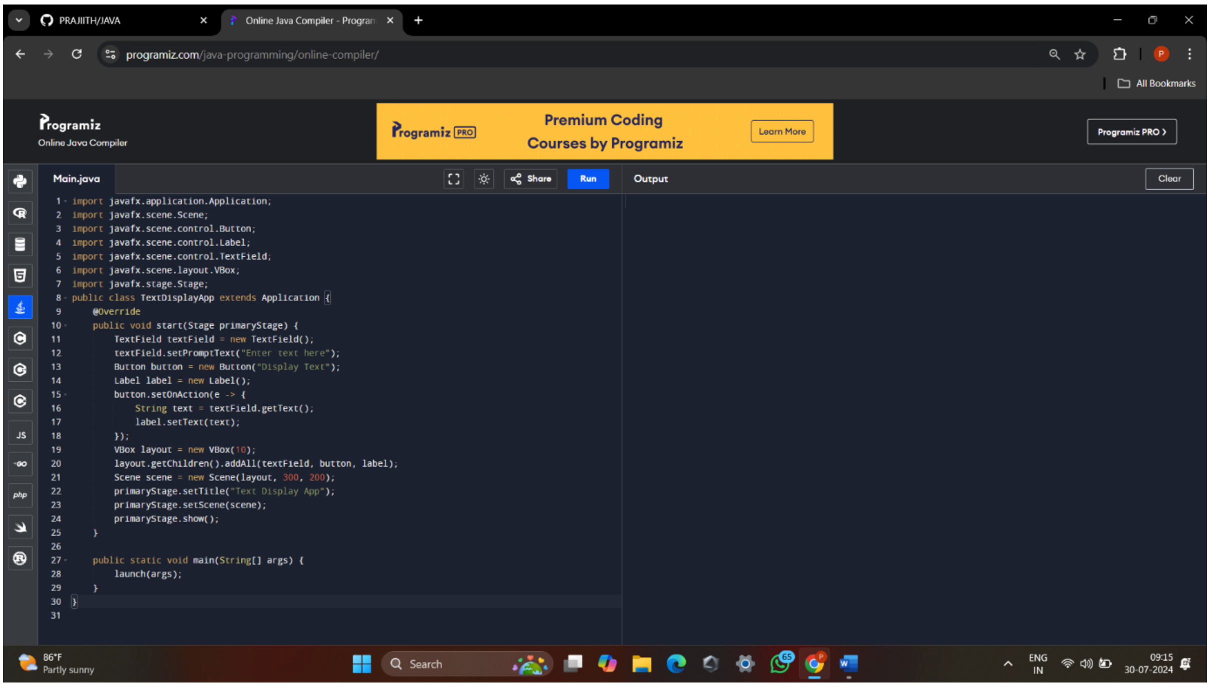


```java
import java.util.ArrayList;
import java.util.List;
public class Student {
    private int student_id;
    private String student_name;
    private List<Double> grades;
    public Student(int student_id, String student_name) {
        this.student_id = student_id;
        this.student_name = student_name;
        this.grades = new ArrayList<>();
    }
    public int getStudent_id() {
        return student_id;
    }
    public void setStudent_id(int student_id) {
        this.student_id = student_id;
    }
    public String getStudent_name() {
        return student_name;
    }
    public void setStudent_name(String student_name) {
        this.student_name = student_name;
    }
    public void addGrade(double grade) {
        if (grade >= 0.0 && grade <= 100.0) {
            grades.add(grade);
        } else {
            System.out.println("Invalid grade. Please enter a grade between 0 and 100.");
        }
    }
    public List<Double> getGrades() {
        return new ArrayList<>(grades);
    }
```

```
java -cp /tmp/QwQDlPI8L1/Student
Invalid grade. Please enter a grade between 0 and 100.
Student ID: 101
Student Name: Alice Johnson
Grades: [85.5, 92.0, 76.3]

=== Code Execution Successful ===
```

2. Write a JavaFX application with a text input field and a button. When the button is clicked, display the text entered in the input field in a label.

```java
import javafx.application.Application;

import javafx.scene.Scene;

import javafx.scene.control.Button;

import javafx.scene.control.Label;

import javafx.scene.control.TextField;

import javafx.scene.layout.VBox;

import javafx.stage.Stage;

public class TextDisplayApp extends Application {

    @Override

    public void start(Stage primaryStage) {

        TextField textField = new TextField();

        textField.setPromptText("Enter text here");

        Button button = new Button("Display Text");

        Label label = new Label();

        button.setOnAction(e -> {

            String text = textField.getText();
            label.setText(text);
        });
        VBox layout = new VBox(10);
        layout.getChildren().addAll(textField, button, label);
        Scene scene = new Scene(layout, 300, 200);
        primaryStage.setTitle("Text Display App");
        primaryStage.setScene(scene);
        primaryStage.show();
    }

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

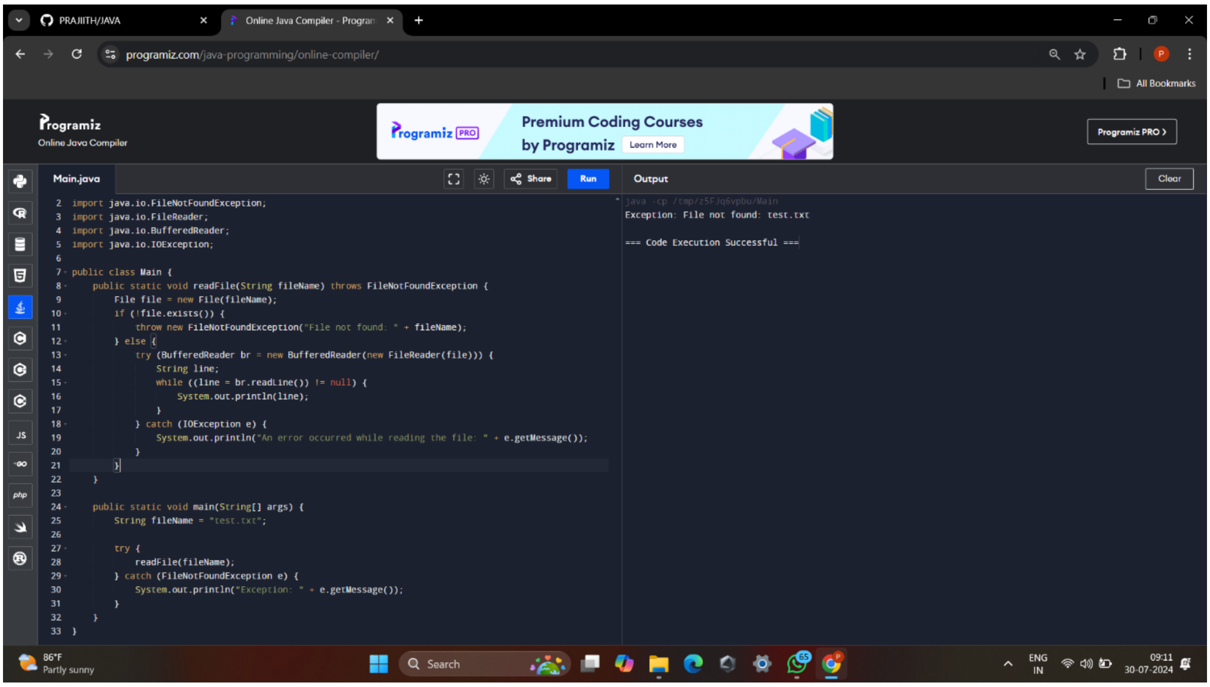


```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.scene.control.Label;
import javafx.scene.control.TextField;
import javafx.scene.layout.VBox;
import javafx.stage.Stage;
public class TextDisplayApp extends Application {
    @Override
    public void start(Stage primaryStage) {
        TextField textField = new TextField();
        textField.setPromptText("Enter text here");
        Button button = new Button("Display Text");
        Label label = new Label();
        button.setOnAction(e -> {
            String text = textField.getText();
            label.setText(text);
        });
        VBox layout = new VBox(10);
        layout.getChildren().addAll(textField, button, label);
        Scene scene = new Scene(layout, 300, 200);
        primaryStage.setTitle("Text Display App");
        primaryStage.setScene(scene);
        primaryStage.show();
    }

    public static void main(String[] args) {
        launch(args);
    }
}

```

3. Write a Java program to create a method that reads a file and throws an exception if the file is not found

```
import java.io.File;
import java.io.FileNotFoundException;
import java.io.FileReader;
import java.io.BufferedReader;
import java.io.IOException;

public class Main {
  public static void readFile(String fileName) throws FileNotFoundException {
    File file = new File(fileName);
    if (!file.exists()) {
      throw new FileNotFoundException("File not found: " + fileName);
    } else {
      try (BufferedReader br = new BufferedReader(new FileReader(file))) {
        String line;
        while ((line = br.readLine()) != null) {
          System.out.println(line);
        }
      } catch (IOException e) {
        System.out.println("An error occurred while reading the file: " + e.getMessage());
      }
    }
  }

  public static void main(String[] args) {
    String fileName = "test.txt";

    try {
      readFile(fileName);
```

```
        } catch (FileNotFoundException e) {
            System.out.println("Exception: " + e.getMessage());
        }
    }
}
```



```java
import java.io.FileNotFoundException;
import java.io.FileReader;
import java.io.BufferedReader;
import java.io.IOException;

public class Main {
    public static void readFile(String fileName) throws FileNotFoundException {
        File file = new File(fileName);
        if (!file.exists()) {
            throw new FileNotFoundException("File not found: " + fileName);
        } else {
            try (BufferedReader br = new BufferedReader(new FileReader(file))) {
                String line;
                while ((line = br.readLine()) != null) {
                    System.out.println(line);
                }
            } catch (IOException e) {
                System.out.println("An error occurred while reading the file: " + e.getMessage());
            }
        }
    }

    public static void main(String[] args) {
        String fileName = "test.txt";

        try {
            readFile(fileName);
        } catch (FileNotFoundException e) {
            System.out.println("Exception: " + e.getMessage());
        }
    }
}
```

```
java -cp /tmp/z5FJq6vpbu/Main
Exception: File not found: test.txt

=== Code Execution Successful ===
```