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ASSIGNMENT - 6

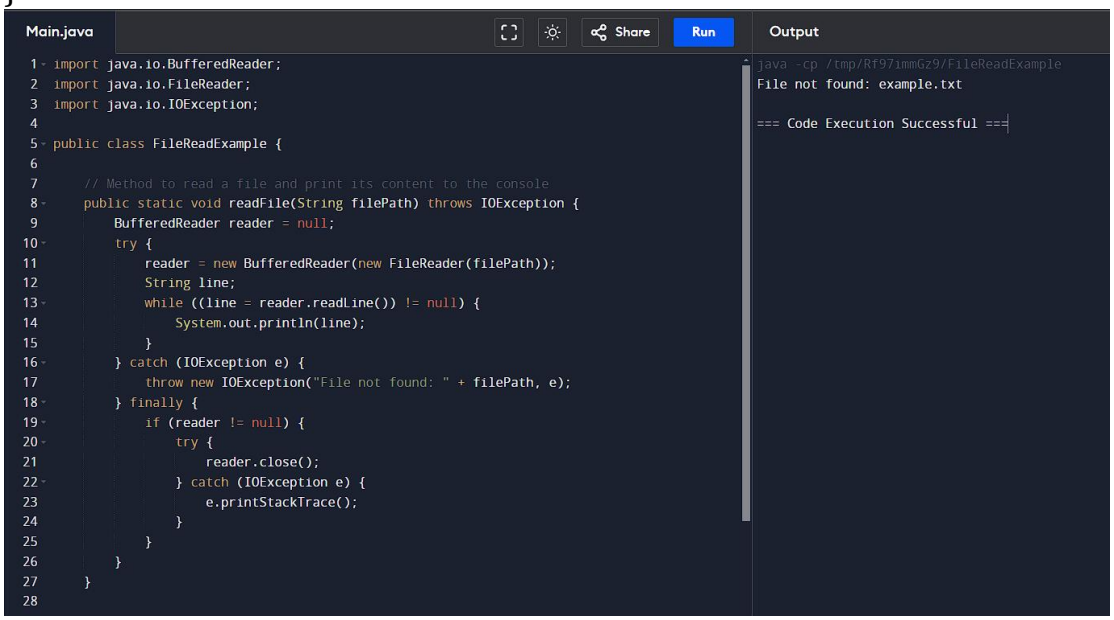
Question 1 :

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

Code :

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

public class FileReadExample {

   // Method to read a file and print its content to the console
   public static void readFile(String filePath) throws IOException {
      BufferedReader reader = null;
      try {
         reader = new BufferedReader(new FileReader(filePath));
         String line;
         while ((line = reader.readLine()) != null) {
            System.out.println(line);
         }
      } catch (IOException e) {
         throw new IOException("File not found: " + filePath, e);
      } finally {
         if (reader != null) {
            try {
               reader.close();
            } catch (IOException e) {
               e.printStackTrace();
            }
         }
      }
   }

   public static void main(String[] args) {
      String filePath = "example.txt"; // Change this to your file path

      try {
         readFile(filePath);
      } catch (IOException e) {
         System.err.println(e.getMessage());
```

```
    }
  }
}
```



Question 2 :

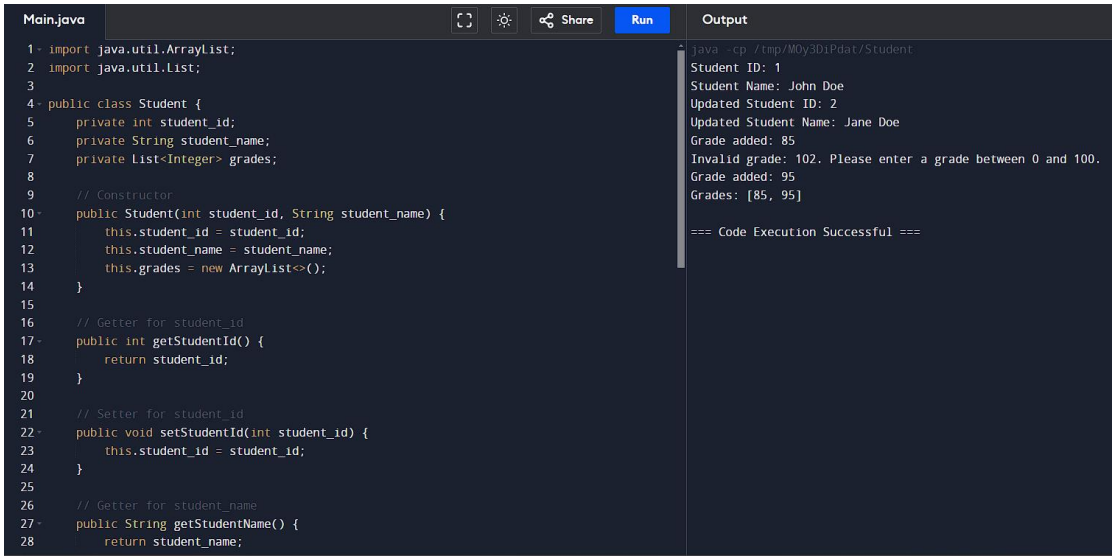
Write a Java program to create a class called Student with private instance variables student_id, student_name, and grades. Provide public getter and setter methods to access and modify the student_id and student_name variables. However, provide a method called addGrade() that allows adding a grade to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

Code:

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

public class Student {
    private int student_id;
    private String student_name;
    private List<Integer> grades;

    // Constructor
    public Student(int student_id, String student_name) {
        this.student_id = student_id;
        this.student_name = student_name;
        this.grades = new ArrayList<>();
    }
```

```
    // Getter for student_id
    public int getStudentId() {
        return student_id;
    }

    // Setter for student_id
    public void setStudentId(int student_id) {
        this.student_id = student_id;
    }

    // Getter for student_name
    public String getStudentName() {
        return student_name;
    }

    // Setter for student_name
    public void setStudentName(String student_name) {
        this.student_name = student_name;
    }

    // Method to add a grade with validation
    public void addGrade(int grade) {
        if (grade >= 0 && grade <= 100) {
            grades.add(grade);
            System.out.println("Grade added: " + grade);
        } else {
            System.out.println("Invalid grade: " + grade + ". Please enter a grade between 0 and 100.");
        }
    }

    // Method to get all grades
    public List<Integer> getGrades() {
        return grades;
    }

    // Main method to test the class
    public static void main(String[] args) {
        Student student = new Student(1, "John Doe");

        // Testing getter and setter methods
        System.out.println("Student ID: " + student.getStudentId());
        System.out.println("Student Name: " + student.getStudentName());

        student.setStudentId(2);
        student.setStudentName("Jane Doe");

        System.out.println("Updated Student ID: " + student.getStudentId());
        System.out.println("Updated Student Name: " + student.getStudentName());
```

```
        // Testing addGrade method
        student.addGrade(85);
        student.addGrade(102);  // Invalid grade
        student.addGrade(95);

        // Displaying all grades
        System.out.println("Grades: " + student.getGrades());
    }
}
```



Question 3 :

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.

Code :

```
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 TextInputDisplayApp extends Application {

    @Override
    public void start(Stage primaryStage) {
        // Create a TextField for user input
        TextField textField = new TextField();
```

```
        textField.setPromptText("Enter some text");

        // Create a Label to display the text
        Label displayLabel = new Label();

        // Create a Button to trigger the display action
        Button displayButton = new Button("Display Text");

        // Set the button action to display the text from the TextField in the Label
        displayButton.setOnAction(event -> {
            String text = textField.getText();
            displayLabel.setText(text);
        });

        // Create a VBox layout and add the TextField, Button, and Label
        VBox vbox = new VBox(10, textField, displayButton, displayLabel);

        // Create a Scene and set it on the primary stage
        Scene scene = new Scene(vbox, 300, 200);
        primaryStage.setTitle("Text Input Display Application");
        primaryStage.setScene(scene);
        primaryStage.show();
    }

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