Assignment 6

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.util.Scanner;

```java
public class Main {
    public static void main(String[] args) {
        try {
            readFile("example.txt");
        } catch (FileNotFoundException e) {
            System.out.println(e.getMessage());
        }
    }


    public static void readFile(String fileName) throws FileNotFoundException {
        try {
            File file = new File(fileName);
            Scanner scanner = new Scanner(file);
            while (scanner.hasNextLine()) {
                System.out.println(scanner.nextLine());
            }
            scanner.close();
        } catch (FileNotFoundException e) {
            throw new FileNotFoundException("The file " + fileName + " was not found.");
        }
    }
}
```

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;

```java
    }

    public void setStudent_name(String student_name) {
        this.student_name = student_name;
    }
    public void addGrade(double grade) {
        if (grade < 0 || grade > 100) {
            System.out.println("Invalid grade. Please enter a grade between 0 and 100.");
        } else {
            grades.add(grade);
        }
    }
    public void printStudentInfo() {
        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, "John Doe");
        student.addGrade(90);
        student.addGrade(85);
        student.addGrade(95);
        student.printStudentInfo();
    }
}
```

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 TextInputApp extends Application {

    @Override
    public void start(Stage primaryStage) {
        TextField textField = new TextField();

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

        Label label = new Label();


        button.setOnAction(e -> {
            String inputText = textField.getText();
            label.setText(inputText);
        });


        VBox layout = new VBox(10);
```

```java
        layout.getChildren().addAll(textField, button, label);

        Scene scene = new Scene(layout, 300, 200);
        primaryStage.setTitle("Text Input Display App");
        primaryStage.setScene(scene);
        primaryStage.show();
    }

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