Software Engineering
Project Report for Grade Calculator

1. Problem Solving:

The main goal of the project is to use modern technology to completely transform the grading process. Our goal is to reduce errors and save time by automating calculations. This will enable educators to use a dependable and effective tool for transparent and equitable student assessments.

2. Scenario of a Student:

Total marks	100
Homework	15%
Quiz	5%
Mid-Term Exam	25%
Final Term	30%
Project	25%

Grading Criteria

Grade	Marks
A	90 – 100
B	80 – 89
C	70 – 79
D	60 – 69
F	0 – 59

3. Requirements:

1. Functionality:

The code is designed to encapsulate functions for grade calculation, as well as receiving and validating marks across various categories.

2. Usability:

The code prioritizes user-friendliness, presenting a clear interface with descriptive prompts for input. It also incorporates error-handling mechanisms to guide users through potential input mistakes.

3. Reliability:

The code establishes reliability by enforcing input constraints, ensuring that only integer values are accepted. The use of a do-while loop reinforces reliability by persistently prompting users until valid input is provided.

4. Performance:

While the grading calculator's performance is satisfactory for its simplicity, it avoids resource-intensive computations. The implementation also safeguards against proceeding with invalid data, contributing to a stable performance.

5. Extensibility:

The code exhibits modularity with distinct functions handling input, validation, calculation, and grading. This modular structure enhances extensibility, allowing for easy integration of additional features or modifications.

4. Project Management:

Using GitHub to facilitate teamwork and version control.

5. Difficulties Encounter:

- Handling user input and navigating the initial complexities.
- Making sure that weights and grades were calculated accurately was a significant challenge.
- Validating inputs added an additional challenge to the development process.

6. Validation Screenshots:

```
Enter Homework 1 score (out of 100): 90
Enter Homework 2 score (out of 100): 80
Enter Homework 3 score (out of 100): 70
Enter Homework 4 score (out of 100): 80
Enter Homework 5 score (out of 100): 90
Enter Homework 6 score (out of 100): 100
Enter Homework 7 score (out of 100): 0
Enter Homework 8 score (out of 100): 30
Enter Quiz 1 score (out of 100): 100
Enter Quiz 2 score (out of 100): 50
Enter Quiz 3 score (out of 100): 80
Enter Quiz 4 score (out of 100): 10
Enter Quiz 5 score (out of 100): 29
Enter Midterm Exam 1 score (out of 100): 97
Enter Final Exam 1 score (out of 100): 87
Enter Final Project 1 score (out of 100): 82
Total Grade: 83.66499999999999
Letter Grade: B
```

```
Enter Homework 1 score (out of 100): 100
Enter Homework 2 score (out of 100): 100
Enter Homework 3 score (out of 100): 90
Enter Homework 4 score (out of 100): 80
Enter Homework 5 score (out of 100): 104
Invalid input. Score must be between 0 and 100. Please try again.
Enter Homework 5 score (out of 100): 20
Enter Homework 6 score (out of 100): 10
Enter Homework 7 score (out of 100): 70
Enter Homework 8 score (out of 100): 100
Enter Quiz 1 score (out of 100): 100
1Enter Quiz 2 score (out of 100): 100
Enter Quiz 3 score (out of 100): 100
Enter Quiz 4 score (out of 100): 100
Enter Quiz 5 score (out of 100): 100
Enter Midterm Exam 1 score (out of 100): 100
Enter Final Exam 1 score (out of 100): 100
Enter Final Project 1 score (out of 100): 90
Total Grade: 93.1875
Letter Grade: A
```