Final Project Report - CS 151

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Project Topic: Grade Calculator

1. Project Introduction:

The Grade Calculator is a JavaFX-based application developed to simplify grading processes for educators and students. In today's educational landscape, managing and calculating grades can be time-consuming and complex. The Grade Calculator aims to address these challenges by providing a user-friendly interface for organizing categories, inputting grades, and tracking academic progress.

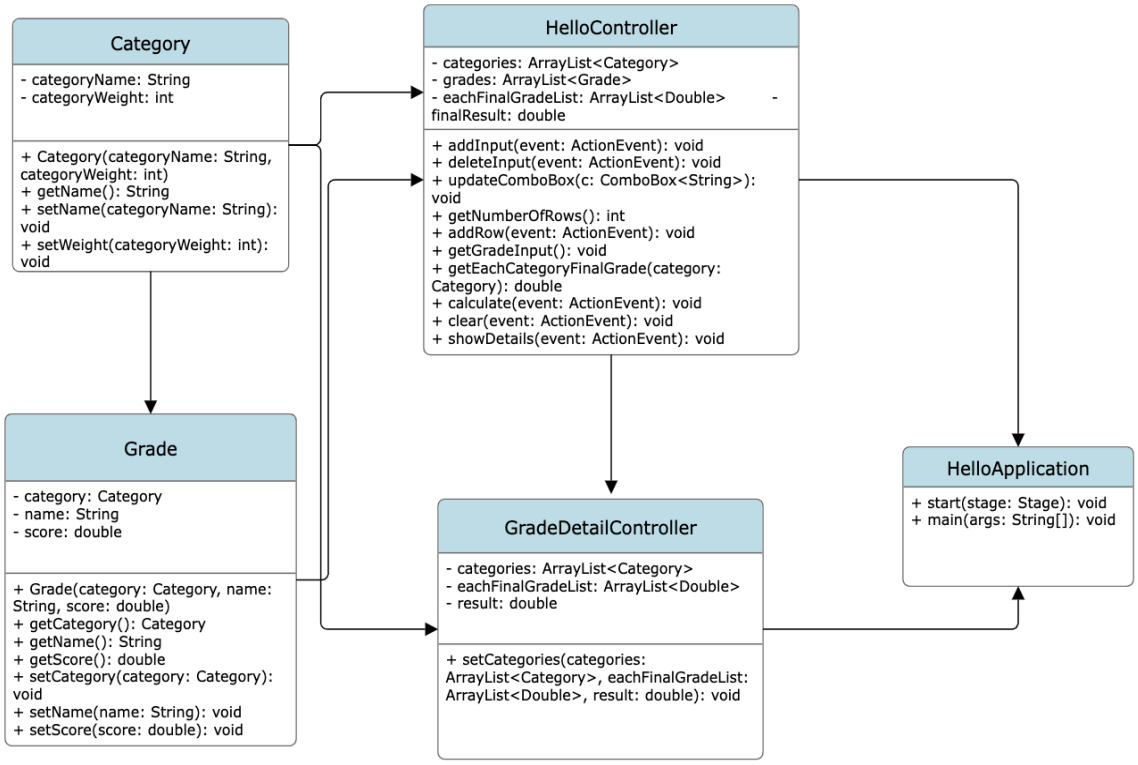
2. Objective:

The primary objective of the Grade Calculator is to streamline grading processes, making it easier for educators to manage grades across multiple categories and for students to monitor their academic performance. By leveraging modern technology and object-oriented design principles, we aim to create an efficient and intuitive tool that enhances productivity and promotes better educational outcomes.

3. Project High-Level Design:

The Grade Calculator follows the Model-View-Controller (MVC) design pattern to separate concerns and promote modular architecture. The model layer includes classes such as Category and Grade, which represent data entities and encapsulate business logic. The view layer consists of FXML files defining the user interface layout, while the controller layer comprises the HelloController and GradeDetailController classes, responsible for handling user interactions and updating the UI.

4. Class Diagram:



5. Detailed Description of Design Patterns:

The Grade Calculator employs the Model-View-Controller (MVC) design pattern to separate concerns and promote code organization and maintainability.

Model : The Category and Grade classes represent the data model of the application.These classes encapsulate the data and logic related to categories and grades, such as their properties and behavior.

View : The FXML files define the user interface layout and structure. The HelloController and GradeDetailController classes serve as the controller for the view, handling user interactions and updating the UI based on changes in the model. Elements such as text fields, labels, and combo

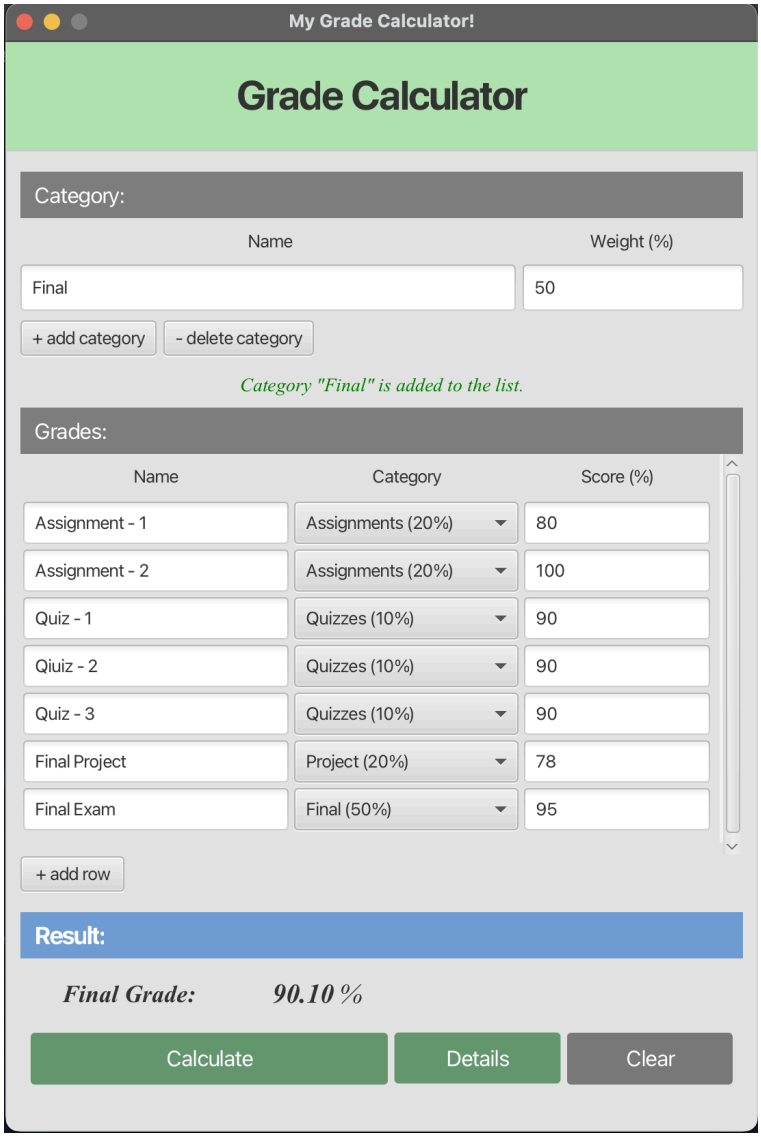
boxes in the FXML files are bound to properties and methods in the controller to enable interaction with the user interface.

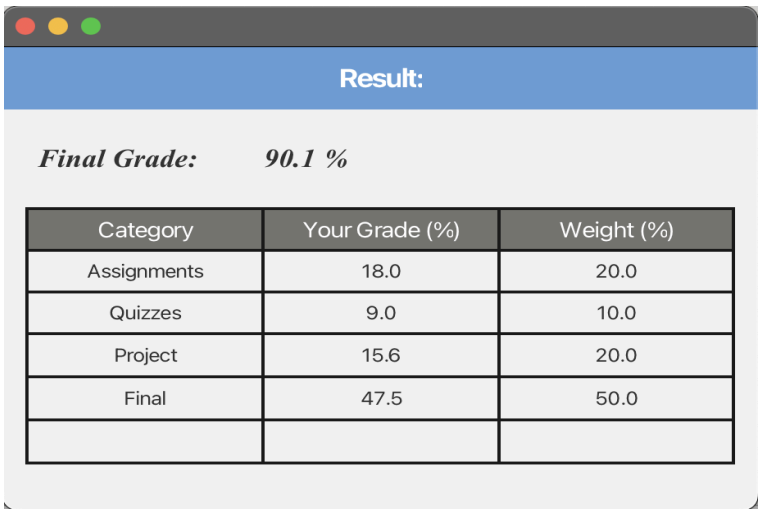
Controller : The HelloController and GradeDetailController classes act as the controller component in the MVC pattern. It contains event-handling methods for user interactions, such as adding categories, calculating grades, and clearing inputs.The controller mediates between the view (UI components) and the model (data and business logic), updating the view in response to changes in the model and vice versa.

6. Results:

Initial testing of the Grade Calculator has shown promising results, with an excellent and intuitive interface to work with. Teachers we have consulted have praised the accessibility of the app and praised its user friendly nature. They said with an app like this they are much more likely to update the course grades in a timely manner.

7. Screenshots or Demonstrations of Key Functionalities:





8. **Contribution/Work Done by Each Team Member:**
    - ***Aung Bo Bo*** - Conceptualized the application and designed the user interface. Led the back-end development, including the core algorithms for calculating grades. Oversaw the overall project design and implementation.
    - ***Pranav Abhyankar*** - Created visuals and presentations to effectively showcase the application. Assisted with the development process, and drafted the project report.
    - ***Tanish Shah*** - Helped create slides and presentations for the project, and assisted with the development process.

9. **References/Any Additional Sources:**
    - JavaFX Documentation: https://openjfx.io/
    - Object-Oriented Design Principles: https://www.geeksforgeeks.org/object-oriented-programming-oops-concept-in-java/
    - Stack Overflow : https://stackoverflow.com/
    - GitHub Repository: https://github.com/aungbbo/Grade-Calculator