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DE Intro to Discrete Structures and Object-Oriented Programming

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222.02 Description

For the 222.02 Variables assignment, I made a student grading simulator that implements a graphical user interface (GUI) with swing graphics. My program contains a grade calculator, an overall GPA calculator, and a GPA comparison page. The grade calculator allows users to calculate their numerical and letter grades with the individual GPA for a particular course. The grade calculator takes the course difficulty (i.e., college prep, honors, or AP) and the grading system (i.e., weighted, unweighted percent, or points) to determine the final grade. The overall GPA calculator allows users to calculate their overall GPA by entering the individual course GPAs calculated by the grade calculator. Lastly, the GPA comparison page lets users enter their overall GPA, with the system telling users how their GPA compares to the national average, which is approximately 3.0. A supplementary message informs the user how competitive they are in college applications. For example, inputting a 3.5 GPA conveys to users that they can enter many universities nationwide. The program also contains instructions and a title screen. This program is useful for students who want to confirm their grades or predict their average GPA.

My project meets the assignment's requirements. The assignment asks for two different layouts; I use a CardLayout with panels each implementing a GridBagLayout. The assignment wants two different action listeners; each of the four panels has a separate ActionListener that performs various tasks. The assignment also states that the program has at least five unique Swing components. My program has the JButton, JTextField, JRadioButton, JLabel, JFrame,

JPanel, and the ButtonGroup classes. Moreover, the assignment wants at least two classes whose objects interact through methods. My project has multiple packages of classes, with fields and local variables, that interact to create user-impacted output displayed on the GUI. Specifically, the classes of the calculations package provide computations for input taken in from the graphics classes, which manage the GUI displayed on a frame instantiated in the run package.