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APCS End-of-Year Assignment Outline

My project will be a reproduction of the computer game Snake, in which a digital snake is graphically represented on-screen and then controlled by the user such that the snake moves and contacts graphically shown “food,” eating the food and growing in length. The game ends when the snake contacts either its own body or the walls of the game. My reproduction will involve the original game as well as embellishments, such as a menu, music, and options, thus giving this problem four parts.

My plan for solving the problem of the original game is to create a new class that extends JPanel. This class will utilize Snake, Segment, and Food classes, all of which will also be defined and written by me. The panel class will graphically display one instance of a Snake, which will be digitally “made up” of Segment instances, and one instance of Food, which can be eaten by the Snake. If a Snake eats Food, it will gain in Segments, and the score will increase. The panel will manipulate the Snake by using methods contained within the Snake class to change the Snake’s positions, direction, and speed. The panel class will also keep and display score, receive user input, and progress the game. The Graphics class will be used to graphically display the game, a KeyListener will allow keyboard input to be received, and Listeners working in tandem with Timers will allow animation and other time dependent processes to be used.

My plan for the menu involves creating a separate class that also extends JPanel, but will instead run the menu. The panel will contain JButtons which will initiate the panel class that runs the main game, as well as allow the user to load the options panel and other relevant but not as important screens such as instructions and credits (which will likely be simply JDialogPanes).

My plan for the music involves creating a new class. This class can be instantiated and will feature several methods that plays a music file particular to that instance. In this way, any panel can use music. More research will be necessary to understand how to define such a class.

My plan for the options involves creating yet another class that extends JPanel. This one will contain a GUI for options, such as JButtons and JRadioButtons that allow the user to change options. This panel will be contained within the menu panel and can be accessed through the menu using buttons.

A driver will initiate the menu panel, from which options and the Snake game itself can be accessed.

An ArrayList will be used within the Snake class. The ArrayList will consist of Segment instances, which will essentially consist of the Snake; each Segment will know its own (x,y) coordinates, color, and size, but because the Segments are connected within the ArrayList, a Snake concept will be built. Using an ArrayList allows me to easily define methods where Segments can be added and removed from anywhere within the list and to easily modify the Snake, such as manipulating its position, direction, and speed.

Because I am the lone group member, I will complete all of the above work. I will research the concept of the game, I will finalize the program, I will write the Stubs, and I will write my individual project report.

Simple sketch of the game: