

John Francis
CSE 210
Final Project Design
3/15/2023

Snake Game

I have decided to do an open-ended project as my final. I want to write the classic snake game from scratch. This will require all the principles of programming with classes. I also want to have my game display on an external window, which I will have to learn how to program.

Classes:

1. Segment
2. Head : Segment
3. Body : Segment
4. Food
5. Window
6. Menu
7. Game
8. Leaderboard

Abstraction: My program will use abstraction by breaking the game down into parts. The window will be a display for the information. First, the menu will show. Second, the game class will display. The game will handle the gameplay including the snakes movement, adding body segments, as well as the score class. Finally, the Leaderboard class will take the score and put it in order, then save the list of scores to a file.

Encapsulation: My program will demonstrate encapsulation by only revealing necessary information to other classes. For example, the game class will need to access the `_direction` of the head segment to control it, but the window class does not need that info.

Inheritance: There will be an abstract class called "Segment." The Head and Body are Segments. They will each have the same "move" function but the head needs a `ChangeDirection` function as well. It will be nice to have them as Child classes when we need `RenderSections` or `UpdatePositions` functions.

Polymorphism: The Head and Body functions will both have a function "Move," but I will need polymorphism to change that Move function for the Body segments so the Body will follow the next segment as opposed to the Head who will move freely.