Brian Sandon

IGME 202 Section 2

Humans Vs Zombies

List of user functionality:

-Press 1 to switch to and from debug mode.

-In debug mode:

>Left click to create a human

>Right click to create a zombie

>Center click to delete the human or zombie at the mouse pointer. Note: the characters are hard to click on when moving, and sometimes processing fails to register a click.

>Press 2 to go to Options

-In Options:

>Click on a slider to select it. The slider moves with the mouse while selected.

>Click anywhere else on the program to deselect all sliders.

>Press 2 to return to debug mode.

Reasoning behind design choices:

The program uses simple graphics the background and trees are colored shades of green to resemble grass and trees. The characters are simple group PShapes that contain a rectangle and an ellipse, the design is meant to appear like the head and shoulders of a person seen from above. The humans and zombies have different color schemes to help viewers tell them apart. The humans have brown hair and grey clothes, whereas the zombies have sickly green skin and white hospital clothes.

Obstacles (trees), Humans, and Zombies all implement the vehicle class, and all use common methods and values because of that. Obstacles are kept in their own list to reduce the number of objects that Humans and Zombies need to check for avoidance. Zombies and Humans are keeping in separate lists so zombies only have to check the human list when calculating collisions.

This program keeps universal variables for the specific weighting for each steering force. I did not declare these values as finals so the user can change the values through sliders in the Options menu. Both Human and Zombie classes have variances in the maxSpeed and maxForce of instances of those classes to reflect the variation in speed and agility in real humans. The ranges for both maxSpeed and maxForce are stored in a series of four final floats so they can be easily adjusted without having to change the values in the two to three constructors each class maintains. Although each class has variation the range for zombies is lower than humans, but there is some overlap for max speed. However, a human that is turned into a zombie can never be faster or more agile than it was before zombification. Although, maxSpeed and maxForce are varied by individual instances of the class, the values for predictionDistance (used to calculate how far ahead vehicles predict other vehicles’ movements) are constant for all instances of a class. Humans have a longer prediction distance than zombies, since the zombies’ ability to think ahead and predict another’s actions have atrophied with death.

Pressing 1 will take the user to debug mode. In this mode the boundary of the park is displayed with a black outline. Every Human and Zombie shows its forward vector in red, right vector in green, its steering vector in blue, and a grey line between the Vehicle and any Human, Zombie, or Obstacle it is trying to seek, flee, or avoid. In addition, while in debug you can use the mouse to create and remove Humans and Zombies (see user functionality).

Brief Description of Above and Beyond Features:

The rubric asks that some form of user interactivity is added in the Debug mode. Among the suggestions for added interactivity one suggestion is being able to add and remove humans and zombies. I programed the code so that users can add humans at a location by left clicking on that location and add zombies by right clicking. I also added the feature to allow the removal of humans and zombies by clicking on them using the scroll wheel, in case a person decides there are too many Vehicles or too many Vehicles of a specific type. It is important to note for these functions that Processing sometimes fails to register mouse clicks, and the speeds at which the humans and zombies travel make it hard for the program to detect when a mouse click is occurring next to or on a human or zombie.

I also added an Options menu with sliders that allow the user to control the weights of various steering forces. I also programed my own slider GUI elements for the menu to use. This menu can be accessed by pressing 2 in debug mode.