CSCI 2113 Zombie Project 2 Implementation

The Zombie Project is made up of eight classes: actor, building, city, direction, dotpanel, human, zombies, and zombiesim. Each individual class will be broken down below:

Actor: The class actor is the super class of both human and zombies. In other words, all the methods not overridden in those two classes (some of the accessor methods and the direction moving methods) are by default carried out by those two classes as well. There are two constructors to determine the specific properties of the actor. The initialize method sets the surroundings of the city. The update method monitors the direction a certain actor is traveling in based on what is around it; if there is a building directly in front of it, the method is designed to change the direction so that the actor faces the other way. If there are no obstacles in the way, the actor continues walking in the same direction. Note that the toString() method is not re-implemented in either the zombies or human class.

Building: The building class is responsible for creating buildings within the city and ensuring that they do not cross the boundaries of it, at the time in which it is initialized. As long as these conditions are met, the drawBuilding method carries out this function. The function is also responsible for ensuring multiple objects do not overlap each other; if such an event takes place, a building will not be placed at that location. Finally, no human or zombie should be able to go through the building (they’re not superheroes!).

City: The city class handles interactions between all objects. A certain number of humans, zombies, and buildings are placed in the city, in a black layout. The city update method calls the update method from each object’s respective class to update every move that takes place, which includes the conversion of a human to zombie to a different color as shown on the screen. Finally, within the class a map of all the relative positions of the objects in the range of city is created and denoted with a specific symbol in the toString() method.

Direction: An enumeration type, sets all possible directions (north, south, east, west), as well as no direction (nil).

DotPanel: All of the program’s graphical components are created in this class. Every color is initialized. The properties include the size of each dot representing an actor, the dimensions of the panels, the pen and paint colors involved, and drawing in clearing when updated.

Human: The human class, which “is-a” extension of the actor class, has individual id’s to keep track of each human, a determination of whether it has been infected or not (the relative color of the human will change). When update is called within this class, the human will change color to yellow if it is continuously moving in the same direction. An interaction method determines whether a human has come in contact with a zombie, and if so, the relative color of that human will change. The program is designed for the human to “run” if the zombie is within a certain distance, but of course not all are successful from fleeing (The Walking Dead will show you that!).

Zombies: Similarly to the human class, the zombies have a “is-a” relationship to the actor class. They also have individual id’s given. A certain number are initialized beforehand and given a red color. The findhuman method looks for a yellow or white color in the radius of where the current position of the zombie is, and if found, the zombie object begins chasing (or moving towards) it. Based on the direction in which this object has been found, the zombie will begin to move in that direction.

ZombieSim: Finally, the ZombieSim class puts all of these components mentioned above together. It mostly covers the creation of the GUI and the relative window that pops out to the screen. In other words, it serves as the main to the entire program. It detects whether the user has chosen to close or minimize the current window, and displays everything of which has been described above.

Special Effect: The Zombies have started to chase the Humans during the daytime as well. The simulator shows over the course of 24 hours as the city goes from daylight to nighttime. It also tracks the paths that a zombie and human have taken.