Noorulain Irshad: Lab-02L
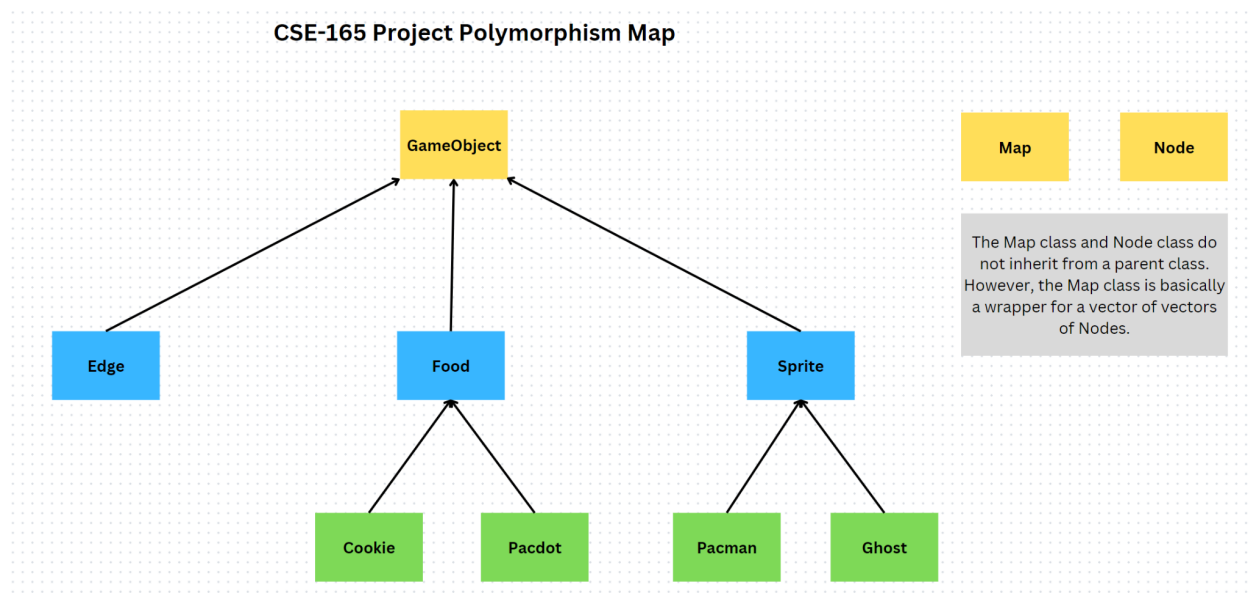Adam Crawford: Lab-05L
Wendy Haw: Lab-04L

CSE-165 Project Report

The application that we created is a version of the popular arcade game, Pac-man. Using SFML, a C++ graphics library, we open a window that displays the game. SFML also allows us to take input from the keyboard so players can move Pacman.

Noorulain was responsible for sprite logic and pathfinding logic.
Adam was responsible for game logic and pathfinding logic.
Wendy was responsible for graphics and pathfinding logic.

CSE-165 Project Polymorphism Map

The Map class and Node class do not inherit from a parent class. However, the Map class is basically a wrapper for a vector of vectors of Nodes.

We had 3 main parts of the code that interacted with each other: the map, food (things Pac-man can eat excluding ghosts when they are in "blue mode", and sprites (Pac-man and the ghosts). The map was built using nodes, a class that stores information about where it is on the map and knows what other classes are at the same position on the map. The ghost sprites follow Pac-man by using a pathfinding algorithm which looks at Pac-man's position and moves in the direction that gets the ghost closer to Pac-man. The ghosts also have a limitation where they are not allowed to go to a node if they have been there in the last 5 frames. Although this does not produce optimal pathfinding, it makes it less likely that the ghost will do a loop. The food logic consists of cookies (the smaller dots), Pacdots (the bigger dots that turn the ghosts into "blue mode"), and ghosts when in "blue mode". In "blue mode", ghosts become edible for 5

seconds, and each ghost pathfinds to a unique corner. When the timer is finished, they return to targeting nodes near Pac-man's location.

Additional comments: Due to the simplicity of the pathfinding algorithm we chose to implement, the ghosts would get stuck in their initial starting location. Due to time constraints, we decided to remove the left and right sides of the box. SFML was our chosen library to handle the graphics due to the fact that it made the graphics easy to implement. We decided against using Qt, as not all of us were familiar with the software and SFML was able to cover all of our needs. We used a github repository to store our code. Most of our work was done via Visual Studio Live Share extension, which allowed us all to work in one workspace concurrently. Due to the way Visual Studio Code shared sessions work, the group mate who started the shared session was the one that had to commit the changes at the end of the session. Because the edges were blue, we decided to make the ghosts orange during the "blue mode" so users would be able to see the ghosts better instead of confusing them with an edge. Also due to time limitations, our code is not very uniform. We have getters and setters that aren't used but instead we reach directly into classes to access member variables. Also, we were inconsistent about use of the "position" structure that was meant to handle all of the positions. In many cases we just used 2 integers to represent the x and y position of objects. Given more time, we would have focused on code quality and done significant code clean-up.

The code can be found here: https://github.com/AdamJCrawford/Pacman