Introduction

For this final project, I implemented a simple game engine using NCurses and successfully built a Tetris game using my own game engine. However, I did not manage enough time to finish building my second Pac-Man game.

Overview

The game engine is implemented using MVC architecture with the console terminal as view, keyboard as controller and a model that manages the user interaction with the game interface. Inside the game engine, it has two major classes, one is the “Entity” class that manages and places the actual ascii objects and the other is the “Movement” class that represents the various transformations these Entities could undergo. I then had two derived classes “Character”,”Compound” for “Entity”. Character is the simplest form of entity and other entities(compound) are all built out of a set of characters so that when compound entity needs to update, it just needs to update all the characters it consists of. For Movement class, I also had a similar composition, where I made a distinction between simple and complex movement where simple movement are those moves can be done in a single frame while the complex movement consists of a sequence of simple movements to be performed during multiple frames.

Design (describe the specific techniques you used to solve the various design challenges in the project)

One of the design challenges I faced when implementing the movement class was that movement transforms the entity differently depending on whether it is a compound entity or a single character. For example, when teleporting to certain locations, for a single character, we can just update its x and y coordinates correspondingly. However, for a compound entity such as a rectangle, we need to define a center point so that we can think the teleportation as transforming each character in the shape by some offsets calculated using the center point. Thus, I had two transforms for each movement class, one for the single character and one for other compound object.

Final Question (the question in this document).

If I had the chance to start over, I would start doing the project much earlier. The timing turned out to be much tighter than I originally planned, especially as I had final exams for other courses to review. Besides that, if I had a chance to redesign my game engine, I would look more into how other game engines are implemented and make my design more general and easier to use. For example, I would like to build a standalone collision system so rather than doing the collision detection on the entities themselves, I would be doing collision checks on the collider the objects have. This gives the user more flexibility. Also, I haven't utilized the z coordinate of the entity class yet. If I were to do it again, I would like to utilize this feature and design more intricate games.