Mario Kart 112

Project Description

- Mario Kart 112 is a game where the player can race against multiple opponents on different race tracks which they can unlock along the way. Race tracks have different power ups that the player can collect along the way, and the player is also able to customize their character and vehicle before the match.

Similar Projects

- There are very similar projects on the Term Project Gallery on the 15112 website, some of which include Mario Kart 12, Mario Kart Rainbow Road, and 3D Mario Kart. My project will be most similar to Mario Kart 12, because there is a character select menu. However, I intend to create multiple tracks, so that the user can race through different maps which they can unlock by winning the previous maps.

Structural Plan

- I plan on creating functions for:
    - The character select menu
    - The vehicle select menu
    - All the keyboard functions
    - Moving the race car
    - Moving the camera
    - Item select
    - Hitting an obstacle
    - Running the game
    - And much more
- I plan on creating classes for:
    - The actual race
    - The items themselves

Algorithmic Plan

- The most difficult part of the project is panning the camera while the track is curving in addition to maintaining the 3D aspect of the game. I am planning on using a mathematical approach for both creating the 3D graphics and turning the race car while the race track curves

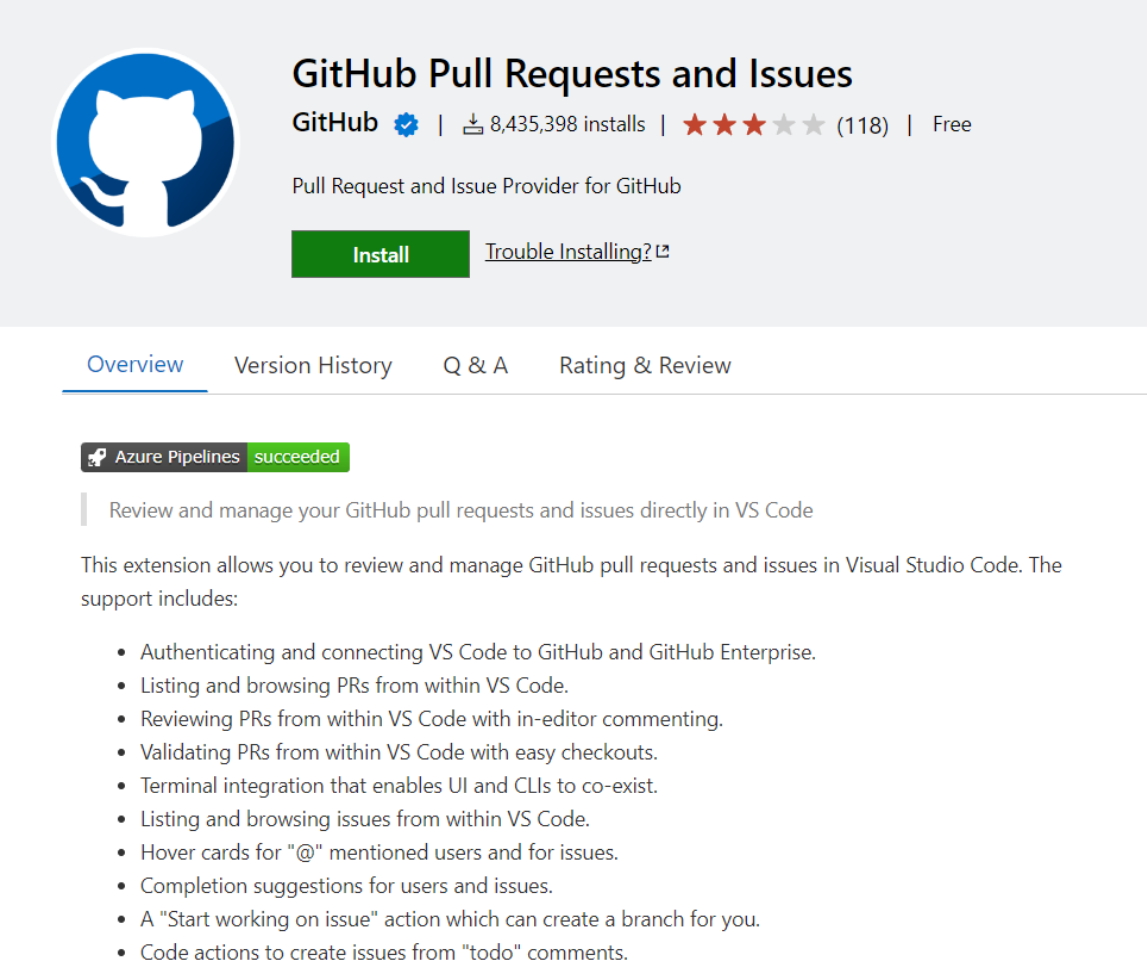
Timeline

- By TP1, I am aiming to finish up the starting menu and make good progress on the 3D portion of the project. By TP2, I am aiming to finish up the character and vehicle select

menus, while also making good progress on the item class and the camera movement. By TP3, I expect to have all parts of the project completed.

Version Control Plan

- I plan on using GitHub for version control because I am able to keep my project on while also being able to push and commit changes to my code whenever I need to. I also plan on installing a VSCode extension that allows me to manage my GitHub pull requests.



Module List

- I will not be using any modules.

TP1 Update

Updates

- I have made no changes to my project design.

TP2 Update

Updates

- I thought it was a little too difficult to have the player customize their character AND kart so the player won't be able to customize their vehicle, but they will still be able to customize their character.
- Because raycasting makes it so that you are looking in the 1st-person POV, racing will be in the first-person, so the player won't be able to see the kart as you normally would in the 3rd-person (aka Mode7).
- To make the racing experience a little bit easier for the player, I will have two separate "windows": The 3D raycast window and the 2D track window. This allows for the player to look at where they are on the 2D track while they are moving in the 3D racetrack to make sure that they aren't colliding with any walls.
- I had a lot of trouble drawing enemy players on the 3D raycast window and scaling their respective images properly based on how far they are from the player, so enemy cars will be invisible in the racing window, but are visible in the 2D track window.

TP3 Update

Updates

- I am completely removing enemy AI because I found it too difficult, so I changed the objective of the game to getting the fastest time on a certain map (like a time trial)
- When the game is over, the total time will be displayed along with the all-time high score
- I will be limiting the number of random items to just 4: mushroom, banana, golden mushroom, and fake item box.
- I will add a help menu for the user to learn the commands before playing the actual game