Project Proposal

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**CMU Buggy Racers**

Cmu buggy racers is a 3rd person racing game that includes features such as random track generation, opponent AI, and side scrolling. Players will be able to use the keyboard to “race” their buggies around a track. Edges of the track and other obstacles will slow them down while staying on the track will increase speed slowly. The goal is for the completed project to have background music, character choices, and a competitive AI opponent. Also, I would like to be able to have pictures for the “buggies” that look like CMU buggies.

* **Competitive Analysis** [2.5 pts]: A 1-2 paragraph analysis of similar projects you've seen online, and how your project will be similar or different to those.
* **Structural Plan**

MyModalApp

I’m using mymodal app classes to create the different screens for my game. Most of the code will be in the GameMode class.

StartMode

This is just a splashscreen for the game that goes to the MenuMode when any button is pressed. I

plan to put a picture of CMU or of Buggy on this screen.

MenuMode

This will be used for any extra screens I need like instructions, picking characters, and starting the game.

GameMode

This is where the actual game code will be. I will draw the track and racers here, as well as do controls for speed and stuff.

PickPlayerMode

Just going to have like different colored buggies to choose from. Has a back button to go back to the menu.

Racer class

This will build the characters, both the player and the opponents. Opponent will be a subclass of racer most likely. Contains information such as the name, color, coordinates, x and y speeds and pictures.

Create Track

I basically used the maze solver code as starter code for this and adapted it to fit my own needs. This just like takes the empty grid and produces and random track starting from the bottom middle and ending at the top middle of the grid.

* **Algorithmic Plan** [2.5 pts]: A detailed algorithmic plan for how you will approach the trickiest part of the project. Be sure to clearly highlight which part(s) of your project are algorithmically most complex, and include details of the algorithm(s) you are using in those cases.

creating a track

For this I used backtracking logic like solving a maze. Also, I make sure to check if a box is next to one that’s already in the visited list to it’s more of a path shape and avoids making “blobs” of track. Also, I make sure to shuffle the list of possible directions to try to avoid creating the same path every time.

Opponent AI

Controlling the player

The arrow keys are used to control the players “movements” which is shown with the side scrolling. There is a variable for how much it should scroll for both the x and y components, which can be maxed out. Also, as the timer fires, these variables subtract the value “friction” making it slow down over time and come to a stop. Currently working on keeping the player within the walls of the path, making it come to a stop if it runs into a wall. The player is represented with images of the “buggy” instead that I made with Snapchat lol. There are 5 different pictures to show different angles, sideways left, turning 45 degrees left, straight ahead, turning 45 degrees right, and sideways right. I have a variable number that is changed every time an arrow key is pressed to represent the direction that the buggy should be facing.

* **Timeline Plan**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 11/29 | 11/30 | 12/1 | 12/2 | 12/3 | 12/4 | 12/5 |
| Player able to drive around track with a finish line | Random track generator done |  |  | AI component working | Pictures/graphics |  |
| 12/6 | 12/7 | 12/8 | 12/9 | 12/10 | 12/11 | 12/12 |
| Adding items | Adding music |  | Due date |  |  |  |

* **Version Control Plan** [1.5 pts]:

I’m using Github to back up my code.

Graphical user interface, text, website

Description automatically generated

A screenshot of a computer screen

Description automatically generated

* **Module List**
  + N/a

Sources:

http://www.cs.cmu.edu/~112/notes/notes-animations-part3.html#sidescrollerExamples

<https://twitter.com/cmubuggy>

<https://www.cmu.edu/brand/brand-guidelines/visual-identity/colors.html>