1. Game: Racer

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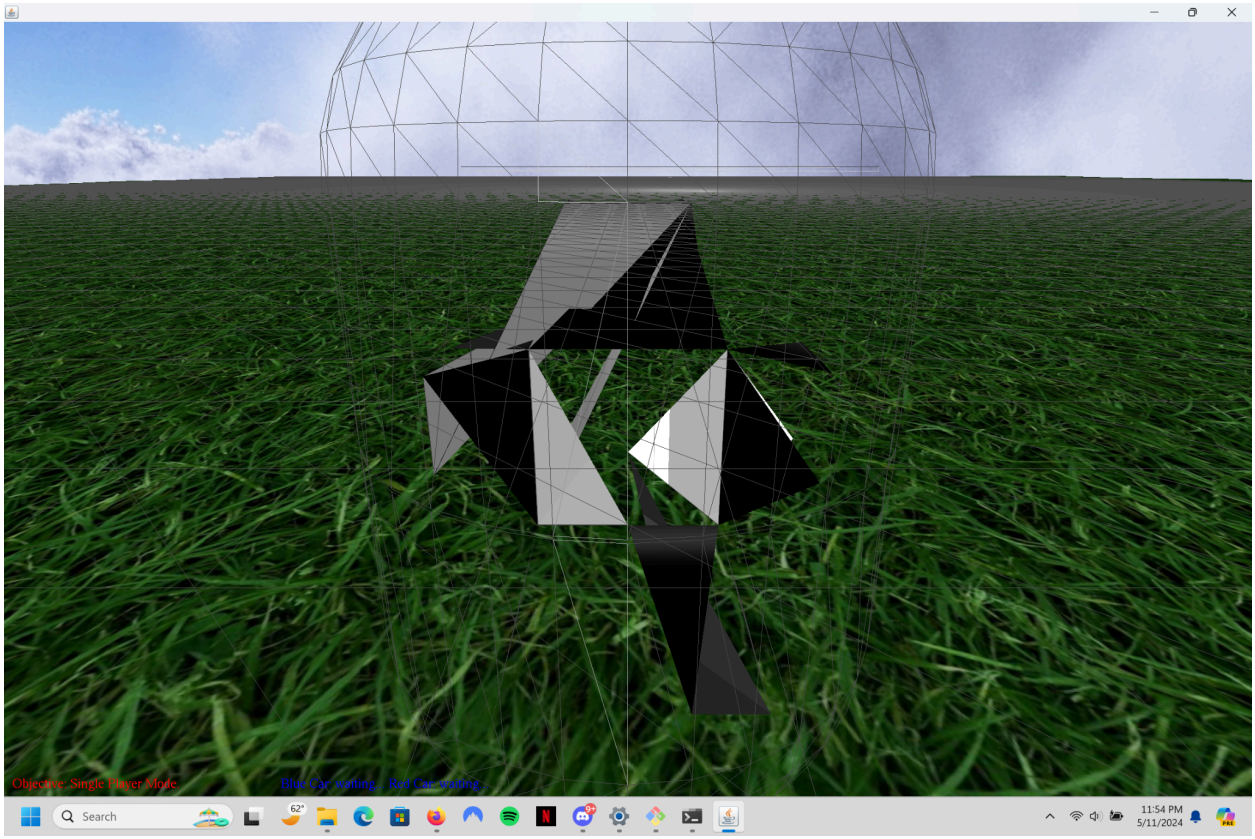
   Sections: 01 and 02 respectively

2. 


3. For the full experience, compile and run the server first in the ainpc folder. Then compile and run the game as normally in the racer folder.
4. The game is primarily designed to be played using only the keyboard. However, there is the option to use a gamepad to play the game.
5. After two players have joined and selected the red and blue cars, they will compete to get to the finish line while avoiding npc mobs and other obstacles in their way.
6. Controls:

   Gamepad Up Button: Move the car forwards

   Gamepad Down Button: Move the car backwards

Gamepad Left Button: Turn the car left

Gamepad Right Button: Turn the car right

Keyboard W Key: Move the car forwards

Keyboard S Key: Move the car backwards

Keyboard A Key: Turn the car left

Keyboard D Key: Turn the car right

Keyboard H/F Key: Used to orbit camera

Keyboard T/G Key: Used to modify radius of camera

Keyboard Q/E Key: Used to change elevation of camera

Keyboard 5 Key: Disable spotlight.

7. No changes were made to the network protocol besides adding support for NPCs and to support the changing of ghost avatars.
8. Changes to TAGE engine:

   We added a class to manage inputs and orbit the camera around an avatar. This was in a previous assignment but we also added support to change the avatar the camera orbits around. We also added modifications from the first assignment, which adds support for turning the avatar.
9. Genre: Racing

   Theme: Obstacle Course

   Dimensionality: 3D

   Activities: accelerating, steering, overtaking opponents, avoiding obstacles
10. Indicate where requirements are satisfied

    External Models: We have 2 custom made models created by ourselves. The first is the

starting avatar that's used to select a car. The second model is a car which comes in either red or blue. This car is used to race.

Networked Multi-Player: Our game is meant for 2 players. While it is possible to play offline in single player, 2 players are needed to start and finish the game. Players are able to see each other move as well as change their avatar which is also visible to both players. Avatar changes are broadcasted using the hud which indicates which driver is driving what color car.

SkyBox and Terrain: We have a skybox that shows clouds and the sky like in real life. We also have terrain with a height map implemented which is grass.

Lights: In addition to the default ambient light, there is a positional light near spawn. There is also a spotlight over the finish line that can be toggled off by pressing the 5 key.

HUD: We used the HUD to broadcast which player is driving which car, as well as to give the players an objective.

3D sound: When the game is started, the finish line will constantly emit a sound that can be heard from all positions. Additionally there is background music. There is also a thump sound that plays when a player touches a trampoline.

Animation: Both the red and blue car feature an animation of the wheels spinning.

NPCs: NPCs wander and act as obstacles for the players as they race to the finish line. If a player touches an npc, they will get launched backwards. There are also 2 NPCs used for players to select an avatar. You must run into a car to select it as an avatar.

Physics:

For physics we have obstacles that have different physical effects on players. There are blocks of wood that are meant to prevent the player from going through it. When a player tries to go through it, they are forced backwards. Another obstacle is trampolines which are the darker color obstacles. These give the player a jump boost. Npcs are also part of the physics which send the player much further back than the wood if they are touched by a player. Physics also handles all collisions.

11. Requirements not implemented:

    -Hierarchal Scenegraph

12. Additional feature:

    -No additional features were added.

13. Team member contributions:

    Abel:

    - Physics
    - Collision detection
    - Networking
    - Npcs
    - Skybox
    - 3D sound
    - HUD
    - Gaming mechanics
    - Avatar selection
    - Offline mode

Juan:

-Car models

-Animations

-Lighting

-Terrain

-Documentation

14. Objects made by us:

-car obj and animated models

-model of human used throughout the game

-heightmap image

-car uv_textures

-thump sound effect

Objects borrowed from class:

-skybox textures borrowed from TAGE engine

15. Objects borrowed from other sources:

-grass texture

- finish line texture and wood texture from same source

Black And White Geometric Abstract Lines - Free Texture (freestocktextures.com)

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16. Our project was tested on the SNEEZYMUD and RAYMAN machines in RVR-5029.