River Racer

River Racer is a two-player game which features racing with another player and computer boats on a river, with a handful of power-up options and challenging obstacles, and a goal to be the first one to reach the finish line.

**PART I: User Guide**

1. Intro Scene

Run the game and there will be an intro scene that gives you an overview of the whole landscape. Press "Enter" to pause the scene and view the menu.

Intro Scene

2. Controlling Scheme
- Direction Keys - Forward, Backward, Rotate Left, Rotate Right
  Player 1 - w, s, a, d (without gamepad), or as shown in the image below (with gamepad)
  Player 2 - up, down, left, right
- Drift Key
  Player 1 - left Shift
  Player 2 - right Shift
- Power-up Keys - Select, Apply
  Player 1 - left Alt, left Ctrl
  Player 2 - right Alt, right Ctrl
- River Force Key
  Player 1 - z
 Player 2 - /
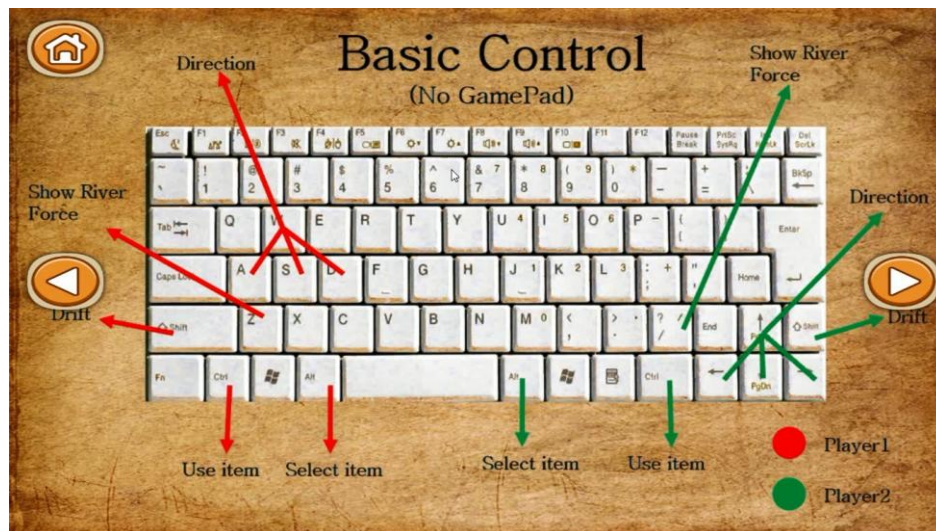
Controlling Scheme (no gamepad)

Controlling Scheme (with gamepad)

3. Power-ups

Different types of power-ups are generated randomly if boat hits the green rotating box on the track, and will be added to the bottom part of the scene for corresponding player.

* Water mine - Floating on the river when applied. Brings the player back to the location where he/she was 5 seconds ago.
* UFO - slow down all opponent boats
* Control reverse - Reverses the controlling scheme for all opponent boats
* Oil barrel - Floating on the river when applied. Makes the river slippery so that boats are harder to control when running into it.
* Boost - Boosts the speed of one's own boat
* Shield - Shields one's own boat from all other power-ups, whose effect will diminish once applied.
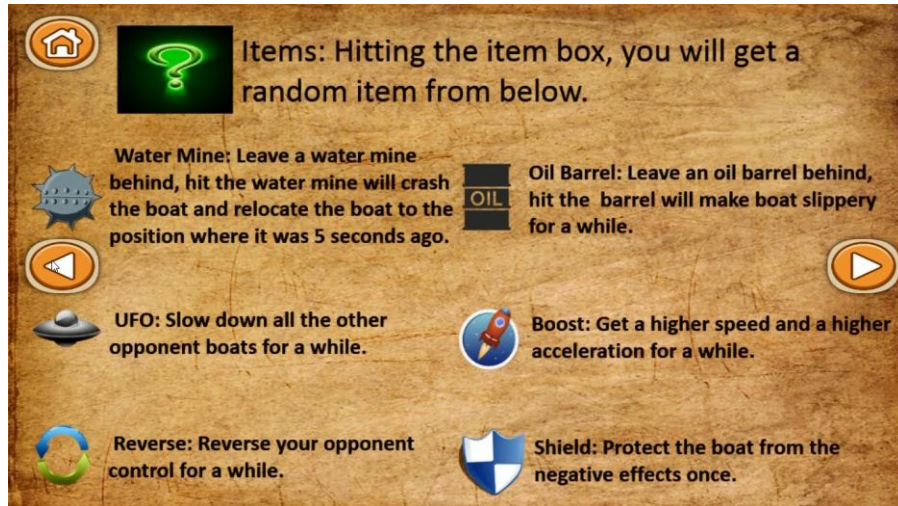
Power-ups

4. Gameplay Scene Component
- River - The racing is on a river so boats are subjected to random river force
- Vortex - Rotating sparkles on the river that will suck the boats in if boats hit it
- Log - Obstacles in the river that will slow down the boat gently
- Rock - Obstacles in the river that will slow down the boat greatly
- Border - Confine the boats within the racing track
- Camera - Two separate third-person cameras following the two players
- Computer boats - Apart from the two players, there will be 3 computer boats, which will also apply power-ups on players
- Speed Sign - Shows the speed of each player boat
- Rank Sign -Shows the rank of each player boat out of all boats
- Timer Sign -Shows the used time since the start of the race
- Power-up Collection -Shows the power-ups the player has collected
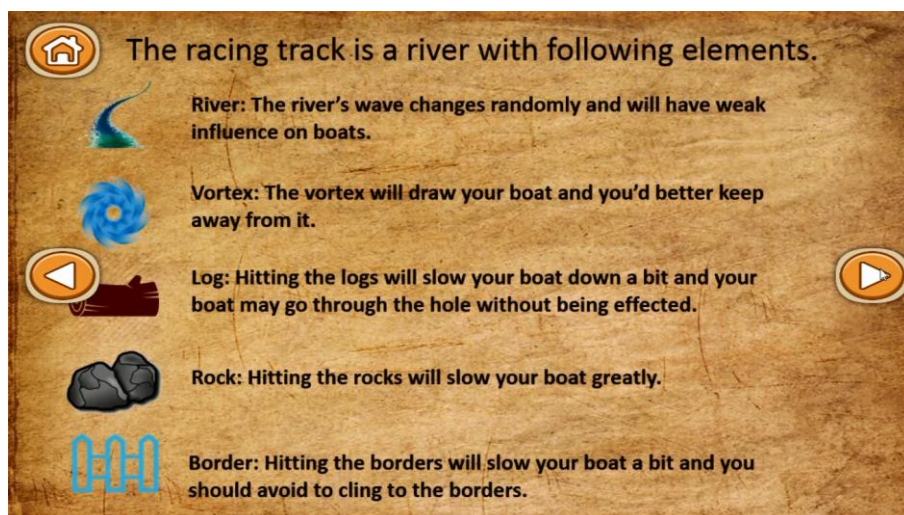
Gameplay Scene Components

Gameplay Scene

5. End Scene

When both player boats reach the finish line, the game ends and there will be an end scene that shows the winner of the game. Player can press "Enter" to pause the end scene and view the menu.

End Scene

PART II: Game Features

The implemented game features include:

- River Force - Because the race is on a river, all boats are subjected to randomly generated river force, and will be pushed to the force direction. The force is minor in order for the boats to be easily controllable. If the player do not control the boat, it will float around in response to the river force. Also, to make the game more fun, we implemented vortex, which will suck the boat into it if the boat hits it.

- Computer Boats - We added 3 computer boats to make the racing more exciting. Their speed is randomly set, and they do not worry about obstacles. When they run into power-ups, they will immediately apply the power-up on all opponent boats, which means

the two player boats are also affected. Therefore, players must have a good racing skill to beat the compute boats.

◆ Power-ups Variance - There are different types of power-ups to assist both the leading boats and the followers to have a better chance to win the game. When the player boats run into a power-ups, it will be added to his/her own power-up collections, and the players can select and apply the power-up at the right time.

◆ Random Obstacles - Obstacles including rocks and logs are randomly generated on the river. Hitting them will slow the boats down and so it is better for the players to navigate through them by rotating the boats. The log is hollow inside so sometimes player can choose to go through it from underneath without hitting it.

◆ Gamepad - We enable gamepad controlling scheme. It's easy to configure since all you need to do is to plug it into the computer. It's also a more fun and convenient way to control for a racing game.

◆ Intro and End Scene - Apart from exciting game play scene, we also implemented an intro scene which give you an overview of the landscape, and an end scene that shows only the winner in pride.

PART III: Plug-ins and Assets

1. River Modeling Tool: models the curved river with splines
https://www.assetstore.unity3d.com/en/#!/content/15783
2. Boat models
https://www.assetstore.unity3d.com/en/#!/content/17049
3. Tree modles
https://www.assetstore.unity3d.com/en/#!/content/14485
4. Special Effects: special effects applied when using power-ups
https://www.assetstore.unity3d.com/en/#!/content/10419
5. Special Fonts: fonts used on UI
https://www.assetstore.unity3d.com/en/#!/content/4254
6. Buttons and labels: buttons and labels used on UI
https://www.assetstore.unity3d.com/en/#!/content/15351
7. Power-up models
https://www.assetstore.unity3d.com/en/#!/content/6021