FreeGearToronto Manual

Welcome to FreeGearToronto, a racing game where you'll be driving on a crazy path in Toronto. The objective of the game is to complete the track in the shortest time possible. In this document, we will guide you through the steps required to play the game using the DE1-SoC.

Step 1: Game Controls

In FreeGearToronto, you'll be using the keys on the DE1-SoC board to control your car. The controls are as follows:

Key 0 (leftmost) - Move left
Key 1 - Move right
Key 2 - Move up
Key 3 (rightmost) - Reset the game

To move your car left or right, press the corresponding keys. To move up, press the key 2. You need to keep the key 2 pressed to move accelerate forward. Press the key 3 to reset the game. You'll need to press this key again to restart the game after you've completed it or if you wish to start again from the start while in gameplay.

Step 2: Gameplay

Once the game has started, your car will start moving automatically. Use the left and right keys to steer your car and the up key to accelerate. Try to stay on the track as much as possible, as driving on the grass will slow your car down.

As you progress through the game, you'll encounter various obstacles, such as sharp turns and narrow passages. You'll need to navigate these obstacles carefully to maximize your game time.

Step 3: Game Completion

The game is complete when you cross the finish line. Your final time will be displayed on the screen. You can choose to reset the game by pressing the key 3.

In conclusion, FreeGearToronto is an exciting racing game that provides a fun and challenging experience. With these simple steps, you can start playing the game and aim to beat your best time. Remember to use the controls carefully and avoid crashing to complete the game successfully.

Attribution Table

Assignee	Task & Description
Ammar Vora	- Worked on connecting the keys of the DE1-SoC board to the motion of the car, enabling the player to control the car using the board's keys. - Developed the dynamic car graphics and programmed them to display different images based on the car's motion or turning direction, creating a more realistic and immersive gaming experience. - Implemented double buffer to optimize the game's graphics and improve its overall performance. - Curved the lanes on the racetrack to make the game more challenging and interesting, and programmed the motion of the car to navigate the curves smoothly and realistically.
Shreya Jain	- Implemented dynamic background that moves according to the curves the car takes, providing a realistic experience for the user. - Displayed the timer, laps, and finish text for the game. - Created road signs that indicate curve left and right and implemented them on upcoming curvature. This helps player know whether a left/right curve is approaching. - Added finish line and lap lines that update immediately when the user completes a lap and reflected this with text. - Implemented the win conditions for the game. - Worked on the reset functionality of the game using key on the DE1-SoC.
Ammar & Shreya	- Worked on drawing the lanes and lines on the racetrack. - Implemented clipping to ensure that objects on the screen are only displayed within the game window. - Developed the grass graphics and programmed its movement to match the perspective of the game. - Collaborated on implementing perspective to give the game a more realistic and immersive feel. - Wrote a script to pre-load data for the grass graphics to optimize performance and improve the game's overall functionality. - Worked together on drawing the car and its animations to ensure it moves realistically and smoothly on the track. - Collaborated on the initial setup of the game, including selecting the game engine and programming environment, as well as establishing the game's basic functionality and design.