American International University-Bangladesh (AIUB)

Course Name: Computer Graphics

Section: [H]

Project Tittle: Retro Car Racing 2.0

Group Members

Name	ID	Contribution
MOJIBUL HOQUE JIHAD	21-45954-3	10%
KANIJ FATEMA BORSA	22-46144-1	10%
TANVIR AHMED TUHIN	22-46475-1	30%
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Supervised By

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Introduction: **The Retro Car Racing 2.0** project offers a nostalgic dive into the realm of classic arcade gaming, reimagined through modern computer graphics technology. Developed using the OpenGL Utility Toolkit (GLUT). This is a multiple user-controlled game, for this the game transports players to an era defined by pixelated landscapes, vibrant colors, and adrenaline-fueled racing action.

Objectives: The main objective of this **Retro Car Racing 2.0** project is to recreate the immersive experience of vintage arcade games using a computer graphics environment. This game is constructed using GLUT. As a result, this game aims to showcase the versatilities and capabilities of Open GL for developing engaging 2d game experience.

Features:

- ✓ Vintage experience: Retro Car Racing 2.0 gives the charm of a classic arcade game with pixelated graphics.
- ✓ Multiple User based control: This game can be controlled by two different users.
- ✓ GLUT Integration: The project seamlessly integrates GLUT functionalities to facilitate window management, user interaction, and rendering of graphics elements, ensuring smooth and responsive gameplay.
- ✓ Environmental Change: In the time of racing, the environmental change is noticeable in this project.
- ✓ Scoring system: This project conducts a competition of passing the maximum amount of distance the selective car has passed.
- ✓ Limited Life frame: Each car has three lifes. Whenever a car is crashed with another obstacle it losses its life. The car that survived after losing its life is the winner of this game.
- ✓ Sound Effect: Sound effects of menu selection, start of game and different obstacles are available.

Methodology:

I. **Conceptualization:** The main concept of this game is to make a vintage racing game. Two car will be in a race in this game. Two car can be controlled by two different user. While racing, the environment is changing. The game road has traffic. The game is viewed from top like an eye of bird. Each car has three limited life. Whenever a car is crashed with other car or obstacles, it losses its life. There is truck, normal cars, police car and barricade as traffic and obstacles.

The score system is counted by Distance. The car that have maximum life in the end is the winner of this game.

II. Static Design of Graph Paper:
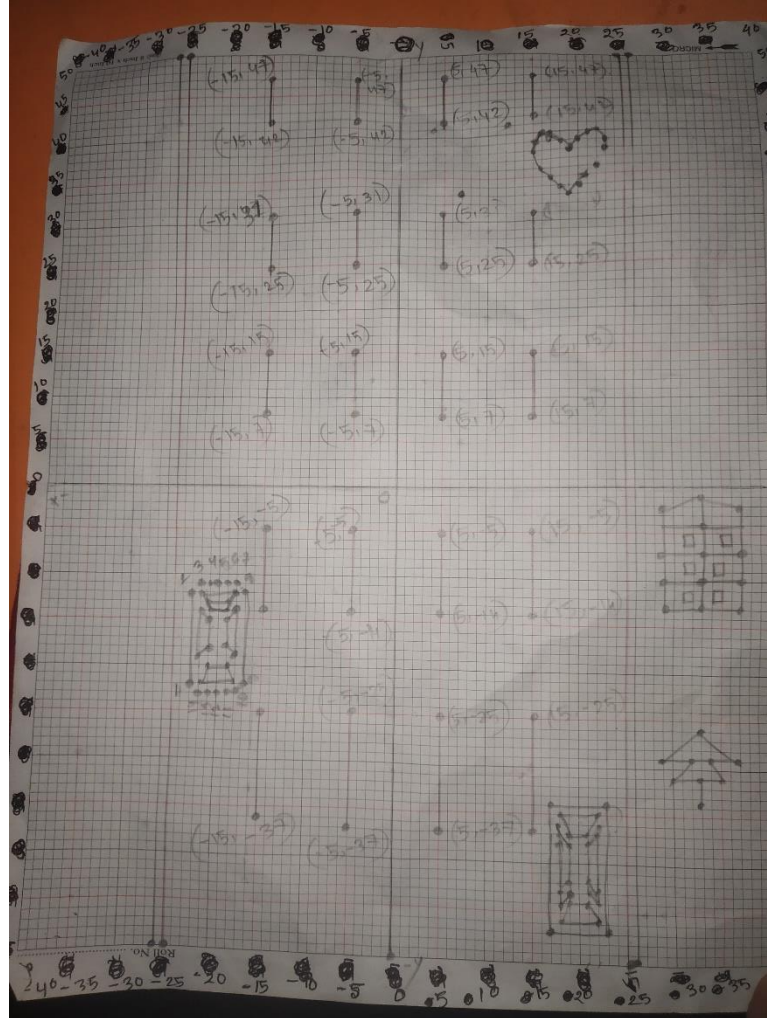
III. Environmental Setup: In this project, CodeBlocks IDE was used. OpenGL/Glut packages were installed in MinGW section. Also linkers were connected to the IDE's linker section.

IV. Implementation: At first, a static design was made. Basically, road with side area was implemented in that design. Then added pine tree, building and lake. Later car was designed and added. After that, transition was added to both environment and road section. Later, traffic cars and obstacles are added. Then started implementing logics.

Conclusion: In conclusion, Retro Car Racing stands as memorable days of vintage racing game for contemporary audiences. By using the power of GLUT and OpenGL, the project delivers a visually stunning and engaging gaming experience that pays homage to the golden age of video games. With its aesthetics, dynamic gameplay, and seamless integration of modern graphics technology, Retro Car Racing 2.0 invites players to embark on an exhilarating journey through pixelated landscapes and adrenaline-pumping races.

Referencing:

I. GitHub Link: https://github.com/rootanvir/car_racing__GLUT_-single_road-.git
II. YouTube Link: https://youtu.be/zjWhfGgrvv4
III. Help for Concept: https://www.youtube.com/watch?v=nsaSqHw-QdQ&t=1s

Screen Shot of the System:

Instruction for playing Retro Car Racing 2.0

Player 1

        Car : Blue;

        Control:

        Left –>a

        Right –>d

_ _

Player 2

        Car : Red;

        Control:

        Left –>left arrow

        Right –>right arrow

Both have limited fuel, have 3 life and can gain abilities while racing by earn them.

Press Shift+f for full screen

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Player 1 won the race   Player 1 won the race   Player 1 won the race   Player 1 won the race   Shift+x to exit
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