Dept. of Computer Science & Engineering,
University of Dhaka.
Project Report
Fundamentals of Programming Lab
(CSE-1211)

Project Name
Game.exe
Game Name
Unlimited Racing

Submitted By
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Introduction

This is a single player 2D platform based game.Basically this a bike racing game where a player can race up to level 3.There are three levels in this game.First we have to start the first level,then if we gain some heart symbol our score will be enough and we can proceed to level 2.If we run long time we the score will also be increased.It will also help a player to level up.There are also barrier in this game and these are cars which moves in the road.If a player crashes with this barrier the game will over.Also a player can see her/his highscore,can read instructions before starting the game or also can exit if a player get bored after playing this game a long time.

Game Controls

In this game,it is easy to control the bike just using left and right cursors.Also we can speed up the bike using front button and slow using back button.

Objectives

It has been said in introduction that the game has 3 levels.

Though roads and other views will be same in level 2 but there will be an extra barrier a man will cross the road.So, a player has to be very careful in level 2 while driving because if the bike will crash with the man,the game will also over.Finally we will update some new barrier in level 3.

Project Modules

new_project/main.cpp

Game starts from this file. When the game launches main() function gets called.Main function first sets some initial variable for the game states like if the game is over or has started or is won.Then the bool init() function is called. Which sets some initial variable
value for window size and all that.Then the init() function gets called. The init function initializes sdl library, sdl image Library, sdl mixer Library and get the player's level progress from myfile.txt. If everything loads fine this function returns true.The init function calls bool init() function which loads calls functions to load
current level background, character such as bike,car and other barrier like man. If everything loads fine then this function returns true.If init() function returns true then the program calls loadMedia() function. Which

loads the Start Screen texture. If texture is loaded the game continues otherwise the program stops.If loadMedia() returns true Background music is started repeatedly on loop. Then the game loops starts.
In the game loop, first we have checked moving of a bike Then we have also checked the collision.After that we look for events or inputs from the keyboard. We check for these input:
Left arrow : Bike goes left
Right arrow : Bike goes right
Down arrow : Bike speed being slow
Up arrow : Bike speed being first

After starting the game a player should continue to play then we have checked a wide range of collision among the barrier such as car and side barrier.After that we look for input from the mouse. Here check the game state and calculate the mouse position and do things accordingly.
First, we check if the level is completed. That happens when the player reaches the end of the current level. As this happens, we increase the level if the player obtain enough score. If There is a next level we increase the level variable and save it in a score and use the information for the next level.
If game is over texGameOver texture is rendered.
If Game has not started yet loadMedia texture is rendered.

If game has started we render updated background, bike car and other barrier.We delay for (1000/FPS) microseconds to run the game in already set FPS frames per second.After the game is quit, we call the close() function to free all the pointers and memory.

Header files

menu.h
This header file basically for controlling the menubar.In this game we use left arrow for moving left,right arrow for moving right.Up arrow for speed up of bike and down arrow for speed slow.

texture.h
This header file load the texture basically for example loadsurface and grenderer.

highscore.h
This header file saves the score from highscore.txt file and every time update the process when someone get scored the high.

collision.h

This header file checks the collision among the barrier and bike if the bike collides with the barrier then the game is over and player have to start the game again.

media.h
This function is used for loading the media.Such as

- menu.png
- highscore.png
- instruction.png
- loading.bmp
- Gameover.png
- bike.png
- ultacar.png etc

initial.h
This header initialize everything such as background color,create window,default format etc

Team Member Responsibilities

Mahfuzul Islam Shawon : main.cpp(level-2),Image graphic,CharecterMovement.cpp
Abdullah Ashik : LoadEverything.cpp,main.cpp(level-1)
Ferdous Mondol : main.cpp(level-3)

Platform, Library & Tools

Platform: Linux
Library: SDL2, SDL2_Image, SDL2_Mixer
Tools: VScode, Adobe Photoshop, Photopea

Limitations

The game is limited in level 3.In level 1 and 2 we have decided that wiil up if a player score enough it will upgrade but in level we haven't done any condition that's why it is named unlimited racing.

Conclusions

We learnt about the sdl2 library, group development and building, and lots of bug fixing. We had a lot of fun making this game.We worked together as a team, and each of us was helpful to the other.Our knowledge of C and C++ has grown, and finding the best solutions to problems like barrier character and coin and heart character.