University of Dhaka
Department of Computer Science and Engineering

Project Report:
Fundamentals of Programming Lab(CSE-1211)

Project Name:
COSMO SHOOTER GAME

Group No: 13

Team Members:

1. Farzana Tasnim, Roll: 14
2. Amina Islam, Roll: 36
3.Md. Nuruzzaman, Roll : 56

1. Introduction :

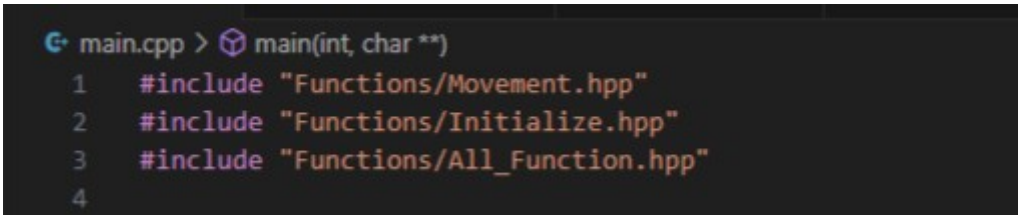
“Cosmo Shooter Game” is an SDL-based game written in C/C++ programming language. It’s a game of spaceship which goes through cosmo. The user can control the spaceship There are ufo in cosmo. The user should shoot the ufo. Point will increase when shoot is succeed. User should save the spaceship from ufo also.

2. Objectives :

1.Creating an engaging, user friendly game.
2. Implement captivating graphics and animations.
3. Develop organized and scalable code.
4. Ensure the design is memory efficient across all devices.

3. Project Features :

1. A modular code structure that’s straightforward and customizable, well-commented for clarify.



2. Utilize “class” and “structure” to enhance code readability and comprehension for fellow developers. Employ constructors , destructors, and distinguish between public and private variables to safeguard the game from unintended alterations.

3.Attractive and interactive menu to control the game.

4. Instruction page to guide the player and provide instructions.

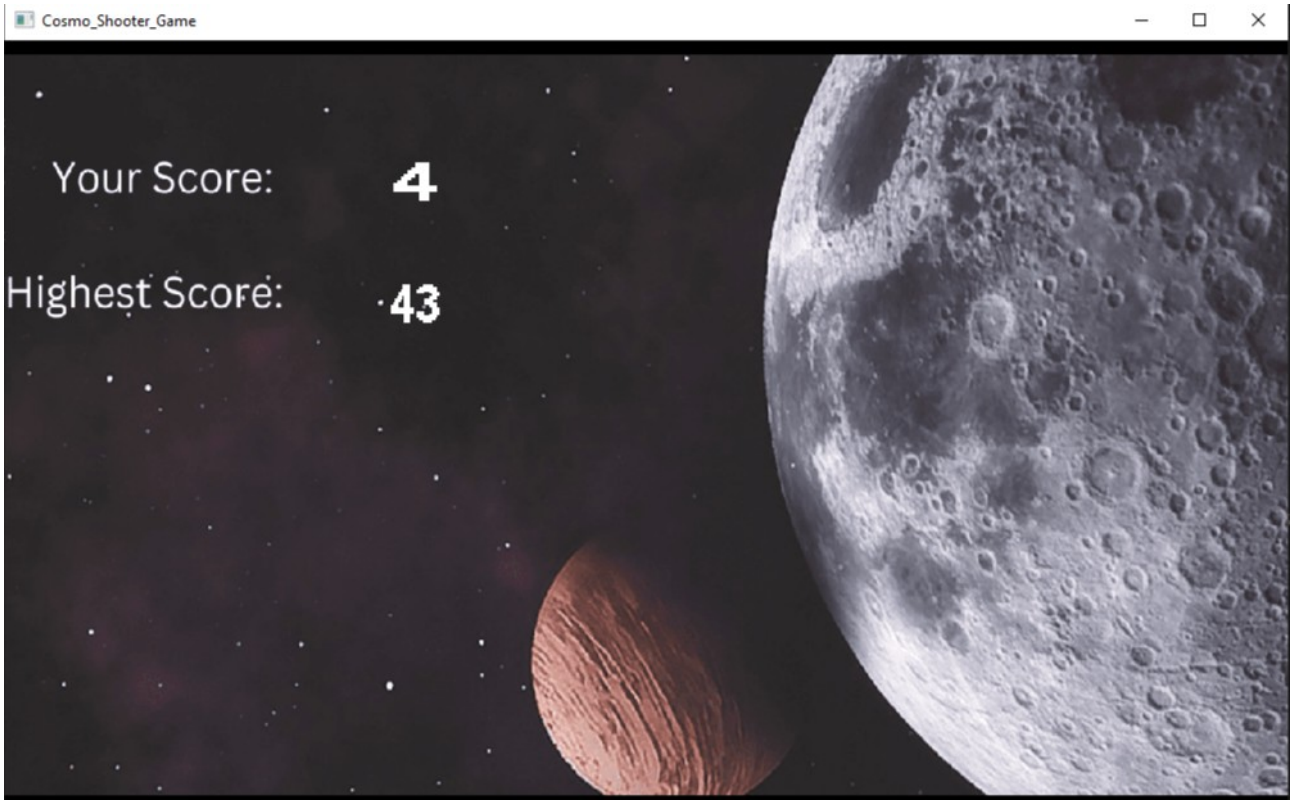
5. After clicking “Play” game will begin. Player’s score and life will show in the top.

6. Player should fire bullet.

7. If player hits ufo successfully, then points will increase. Background will change after certain times. If your spaceship is hit by ufo, then life will decrease.

8.If life goes to zero, then game will over.

9.Players score and high score will be shown.



4. Project Modules :

1. main.cpp :

Calling main function which include game variable and Load_Background, Key_Press, Handle_Collision, Final_Check functions for loading background, handling key presses, collision detect, game end checking.

2. Function folder provides “Initialize.hpp” , “Movement.hpp” and “All_Function.hpp”.

3. Inside “All_Function.hpp” ,

- The Load_background function is used to load background and change it three times.
- load_render function is used to load all images.
- Limit_Declare function is used to declare limit of shot and ufo.
- Key_Press function is used for handling key presses of user.
- Handle_Collision function is used for handling different collision.
- Final_Check function is used for checking if the player is dead , reloading the bullet, printing score and lives.
- Clean_background function is used for destroying background texture.

4. Inside “Initialize.hpp” ,
variables for running this game is declared. We use game_over class and menu class here.

5. Inside “Movement.hpp”,
we used class of spaceship_class, ufo, bullet.

6. Image folder contains all images for game like “ufo.png”, “background1.png”, “bullet.png” etc.

7. Src folder contains all header files.

5. Team Member Responsibilities :

Farzana Tasnim (Roll 14) :

- Ideation, logic Design.
- Structured game source code writing (C/C++).
- Main game loop.
- Modules : “All_Function.hpp”, “main.cpp”, “Movement.hpp”,, “Initialize.hpp”.

Amina Islam (Roll 36):

- Ideation, logic Design.
- Graphics Designing (Canva).
- Structured game source code writing (C/C++).
- Modules : “All_Function.hpp”, “Initialize.hpp”, “Movement.hpp”, “main.cpp”.

Md. Nuruzzaman (Roll 56):

- File handling.
- Modules : “All_Function.hpp”,“Initialize.hpp”, “Movement.hpp”,“main.cpp”.
- Structured game source code writing (C/C++).
- Code testing and bug fixing.

6. Platform, Library & Tools :

1. C/C++- The code of the project is written in this powerful general-purpose language.

2. SDL2- Simple Direct Media Layer is a cross-platform development library designed to provide low-level access to audio, keyboard, mouse, joystick, and graphics hardware.

3. Visual Studio Code - A powerful, free, open-source IDE that runs on all platforms.

4. Canva- Canva is a free-to-use graphic design tool.

5. Google Drive- A platform to store information in cloud.

7. Limitations :

- The game is window based.
- We tried to add music but didn’t succeed.
- Code is written in C/C++ language.

8. Conclusions :

Through our project ,we learned more about C/C++ and SDL2. But what really stood out were the skills we developed: teamwork, clear communication, organized programming and handling pressure. We searched through different websites to fix our bugs. Because SDL2 is old and internet resources focus on newer stuff, we had to dig deep and sometimes figure things out by trial and error. Pulling out all modules was

tough, but we are more confident in learning new technologies and solving problems on our own. It’s a great boost for our future in software engineering.

9. Future plan :

- To add level in game.
- Add music.
- To add life icon that will increase player’s life.

Repositories :

Drive link :

https://drive.google.com/drive/folders/1QihWqYqc0VfAFfbuIbTas0SpHiupke33?fbclid=IwAR30jfkOqNe9rtJmdvv6P5ikpeIZOyTS9fYkADRVqwQdbJVwIRYcwNkd2NY

Youtube Video:

https://www.youtube.com/watch?v=PESr5fFNJCo

References :

https://lazyfoo.net/tutorials/SDL/

https://www.canva.com/

https://wiki.libsdl.org/SDL2/Tutorials

http://www.sdltutorials.com/

https://www.youtube.com/watch?v=RMnpwICsgYo

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