University of Dhaka

Department of Computer Science and Engineering

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

Project Name:
Castlevania

Team Members
1. *Md. Shawn (47)*
2. *Md. Sadman Sakib (49)*
3. *Rafi Al Saad (24)*

Introduction

Castlevania is an SDL-based survival game written in C/C++ language.
and easily customizable code made this game distinct. This game has attractive features and a good user interface. The game is designed in two levels, the first level is finite and the second is infinite like the 90's era 2D games.

Objective

1. Improving C/C++ programming language skills
2. Applying C/C++ logic in real life problem
3. Becoming familiar with app/game development
4. Improving problem solving skill
5. Learning how to implement structured programming in practical field

Project features

1. Easily readable code and easy to change
2. Easy installation in Debian-Based Computers and flexible frame rate on every device.
3. Memory efficient and smooth player interface.
4. Dynamic menu option to control the game.
5. Introduction to the makers of the game
6. This game consists of two different levels with attractive features. Each level can be selected separately.
7. One of the unique features is that the enemies are loaded with a probability streak and distribution , while shooting the bullets are kept limited to stop spamming of bullets in the game, thus making it more strategic.
8. The enemies are shooting bullets while tracking the cannon's position and the bullets follow, making each step strategic.
9. The first level is finite but the second level infinite, creating the chances to always have a much higher scores and compete

Team Member Responsibilities

Team Member Responsibilities

Md. Shawn (Roll: 47)

1. Game logic design
2. Font, Instruction Coding
3. Source code writing in C/C++
4. Code testing and error fixing
5. Implementing SDL2 (Bullet, map, collision)

Md. Sadman Sakib (Roll: 49)

1. Developing game idea and features
2. Handling input and output, keyboard – mouse interaction
3. Graphics Designing (Photoshop)
4. Implementing SDL2 (Sound, Image)
5. Source code writing in C/C++
6. Code testing and error fixing

Rafi Al Saad (Roll: 24)

1. Game logic design
2. Font, Instruction Coding
3. Source code writing in C/C++
4. Code testing and error fixing
5. Implementing SDL2(rest of the game)

Platform and Tools

Platform, Library & Tools

▪ Platform: LINUX Kernel based OS – UBUNTU 22.04 LTS
▪ Library: SDL2 (Simple DirectMedia Layer is a cross-platform development library designed to provide low level access)
▪ Language: C, C++

▪ Tool: VS Code, gedit text editor

Limitations

1. Animation works are limited
2. We were unable implement story style which would have multiple gaming modes
3. No object-oriented code written or used
4. Game saved mode not activated

Conclusions

We gathered a mass amount of knowledge and experience through this project. We now know how to create game using SDL header libraries, have knowledge of the fundamentals of game production. Furthermore, we developed our ability to solve issues on our own. We collaborated as a team, which improved our ability to communicate and plan. initially looked difficult, it boosted our coding abilities, taught us useful new skills, our capacity for problem-solving also improved. Apart from learning new languages and technologies, this game project taught us cooperation,stress management, peer communication - We collaborated as a team, which improved our ability to communicate and plan, and a variety of other necessary skills.

Future Plan

As we are still at the beginner level, we couldn't implement all the features we wanted in our game. Also, there is a lack of useful components in SDL2/C++ to make a high-quality game. We aspire to make it across all platforms (Android, IOS, Windows) 3D game using the power of Unreal Engine, Unity, Autodesk, Blender etc. later. With all necessary knowledge we will learn In the coming days, we will fulfill our desire and make an outstanding game with fantastic features.

Repositories

GitHub Repositories: https://github.com/ssadman887/CASTLE-VANIA

YouTube Video: https://youtu.be/88i6brJg7vA

References

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

2. https://wiki.libsdl.org/SDL2/FrontPage

3. https://stackoverflow.com/

4. https://www.geeksforgeeks.org/sdl-library-in-c-c-with-examples/

5. https://www.geeksforgeeks.org/header-files-in-c-cpp-and-its-uses/