



Kingdom Of Soldier

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Submitted By

Md. Khairul Islam

Roll: 22102017

Reg. No: 10823

Session: 2021-22

Mst. Rokeya Akther

Roll: 22102018

Reg. No: 10824

Session: 2021-22

Supervised By

Dr. A. H. M. Kamal

Professor

Department of Computer Science and Engineering, JKNIU

Department of Computer Science and Engineering
Jatiya Kabi Kazi Nazrul Islam University, Mymensingh

The project titled “Kingdom Of Soldier” progress have been submitted by Md. Khairul Islam, Roll: 22102017, Session: 2021-22 and Mst. Rokeya Akther, Roll No: 22202018, Session: 2021-22, has been accepted as satisfactory in partial fulfillment of the requirement for the first year second semester promotion of the study in Computer Science and Engineering on Date-of-Defense.

BOARD OF EXAMINERS

Signature

1. Name of Supervisor

Dr. A. H. M. Kamal

Designation: Professor

Department of CSE, JKKNIU

Signature

2.Name of the 2nd Examiner

Designation:

Address:

Signature

3. Name of the 3rd Examiner

Designation:

Address:

CANDIDATE'S DECLARATION AND SUPERVISOR'S APPROVAL

We declare that this project is our own work and has not been submitted in any other form for another degree or diploma at any university or other institute of tertiary education. Information derived from the published and unpublished work of others has been acknowledged in the text and a list of references is given.

Date: 15.01.2024

Signature of the Candidates

Md. Khairul Islam

Mst. Rokeya Akther

As a supervisor, I authorize that the work is done under my close guidance. I have given approval to submit that report to go for evaluation.

Date: 15.01.2024

Signature

Dr. A. H. M. Kamal

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Chapter 1

INTRODUCTION

A video game is an electronic game that involves interaction with a user interface or input device such as a joystick, controller, keyboard, or motion sensing devices, to generate visual feedback for a player. Video games are defined based on their platform, which include arcade games, console games, and PC games. More recently, the industry has expanded onto mobile gaming through smartphones and tablet computers, virtual and augmented reality systems, and remote cloud gaming. Video games are classified into a wide range of genres based on their type of gameplay and purpose. A hero shooter is a subgenre of shooter games that cover both the first-person shooter and third-person shooter genres. These games emphasize "hero" characters that have distinctive abilities and/or weapons that are specific to them. The genre shares common traits with other shooter games, which in turn makes it fall under the heading action game.

2.1: Super Mario Comparison

1.1. Introduction

This report describes the process and user manual in making a 2D game using Pygame. We make a game where enemy and player both have ability to shoot each other, if player can avoid the bullet of enemy then he will go to the next level. In this report, I discuss on game design, development, implementation, testing and expected outcome from the game. Then I focus on the game overview including game description and game play.

1.2. Game Overview

The name of our game is **Kingdom Of Soldier**. It is a ninja shooter game. This game have three levels.

This game involves a single player entering into an enemy territory with a gun as the weapon after selecting the start button from menu. The territory is inhabited by enemies that will attack the player if he goes into the area that the enemies inhabiting. In every level player have to kill all of the enemy in the level where

player in . After completing the current level player will be teleported into next level. Player have three life we called it health , if enemy attack the player and bullet touch the player body then the health of the player will be decreasing by one, if the health became zero then game will be restart automatically .

1.3. Motivation

Game development has been a passion of mine since my teenage years. As a teenager, I spent countless hours playing a wide variety of games on different platforms, and I became fascinated with the process of creating games. I was particularly interested in the way games could transport players to different worlds, and how they could evoke a wide range of emotions.

As I grew older, I realized that I wanted to be a part of the process of creating games. I started by learning the basics of game development and this is the first project my game development.

1.4. Game Objectives

The major objectives of this game project are:

- To create a third person shooter game that will have all the functionality of traditional third person shooter games
- To implement gun attack and ninja attack as the ability instead of usual sword attack
- To implement the player power option we called it to health
- To implement enemies that have the purpose to simply attack the player until the death of the player
- To add sound effects to player, enemies, weapons, environment and other objects like birds
- To design the game levels that will be simple yet beautiful
- To make a User Friendly Interface that will be pleasant to look at
- To add animations to all sorts of game objects like player, enemies, tree, birds, etc

1.5. Game Background

The games industry has had much growth in recent years. It is a great industry to get involved in as it allows creativity, innovation and freedom for developers and hobbyists. They get a chance to experiment with all forms of media including sound design, environment design and programming.

As I was a hobbyist, I started game development project.

There has been an explosion of the new market of games, the gaming industry now allows smaller-scale games to be developed and released more freely than in the past. Today it has become so easy to create a game. A large studio is no longer needed and the freely available tools make it so simple to create an idea from the comfort of your own home. Indie games show more innovation and developers are willing to take risks on their games.

I put a lot of research into trying to find out what users want from a game. I had to decide between a first person shooter or a third person shooter, and what type of environment would be best to build my game. I finally decided to go with a third person shooter in a hero and ninja shooter style environment.

Chapter 2

COMPARE WITH RELATED GAME

2.1. Introduction

Video games have come a long way since their inception in the 1970s. Today, there are countless different types of games available, each with their own unique set of features and gameplay mechanics. Some popular types of games include first-person shooters (FPS), role-playing games (RPGs), sports games, racing games, and puzzle games. FPS games, such as Call of Duty and Halo, focus on fast-paced, action-packed gameplay, often set in a first-person perspective. RPGs, like World of Warcraft and The Elder Scrolls, are known for their rich, complex worlds and deep storylines. Sports games, like FIFA and NBA 2K, simulate real-world sports and offer realistic gameplay. Racing games, such as Forza and Gran Turismo, put players behind the wheel of cars and let them race against others. Puzzle games, such as Tetris and Candy Crush, challenge players to solve increasingly difficult problems. The variety of different games available ensures that there is something for everyone to enjoy.

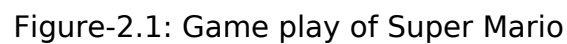
2.2. Analysis on related video games

The related existing video games has been analyzed in terms of functions, types information and problem solving. Three applications have been studied which are Super Mario and Storm Ops.

2.2.1 Super Mario

Super Mario is a classic video game series created by Nintendo. The original game, Super Mario Bros., was released in 1985 for the Nintendo Entertainment System (NES) and has since been followed by many sequels and spin-offs. The games typically feature Mario, a plumber and the series' main protagonist, as he journeys through various worlds to rescue Princess Peach from the series' main antagonist, Bowser. The games are known for their platforming gameplay, in which players

Mario as he jumps and runs through levels, collecting coins and power-ups while avoiding obstacles and enemies.

Table 2.1: Super Mario Comparison

2.2.2. Storm Ops

Storm Ops game more is one of the shooting game that can be played on PC. The purpose of this game is to clear all the enemy before the enemy make a bit hit on our base . Refer Figure 2.2 and 2.3



Figure – 2.2: Storm Ops



Figure- 2.3: Storm Ops game play

Advantage	Disadvantage
<ul style="list-style-type: none">• 3D game• Bad visualization• Helpful for improving shooting skill	<ul style="list-style-type: none">• Can not move the character• Enemy can not hit the character buy can hit the our base• Enemy came from same direction

Table-2.2: Storm Ops

We wanted to develop a game which have some common feature from the games Storm ops and Super Mario.

The controlling system and the environment of our game is similar with Super Mario. As like as Mario, the hero of our game can jump over obstacle, go left and right. Our game has similar type environment as Mario Run, it has level, obstacle. But Mario of 'Super Mario' game was plumber and then he did have any ability to shoot. He can only avoid the enemy. On the other hand the hero of our developed game "Kingdom Of Soldier" is a commando and go to the area of enemy territory. So we need to add shooting ability to the enemy and player such as storm ops.

Chapter 3

METHODOLOGY

3.1. Introduction

This chapter will discuss about the development process of the game. The flow of the project will discuss briefly to give more understanding of the design and development of this application. There are many methods that can be used for developing this project. The methodology used in this project is ADDIE Model. The ADDIE model is the generic process which instructional designers and training developers traditionally used. The five phases in the ADDIE model are analysis, design, development, implementation, and evaluation. The ADDIE model is a dynamic flexible guideline for developing effective training and performance support tools.

3.2. Analysis Process

In the analysis phase, the problem of instruction is explained, the learning goals and objectives are set, and the current knowledge and skills of the learner are established. The analysis phase involves are requirement analysis, task analysis and instructional analysis. The activities involve are identifying the problem statement, the goals and objectives of the Kingdom Of Soldier, existing knowledge and any other relevant characteristics and the content of video games. The analysis is carried out by doing analysis on existing articles and existing games. So, the weakness of the existing application here been identified and Kingdom Of Soldier will full fill all of the weakness.

3.3. Design Phase

Design phase is the second phase in making Kingdom Of Soldier. The design phase should be systematic and specific. Systematic means a logical, mathematically correct , orderly method of identifying, developing and evaluating a set of planned strategies targeted for attaining the project's goals. Specific means each element of the instructional design plan needs to be executed with attention to details. In this phase, Main menu and assets and background have been developed.

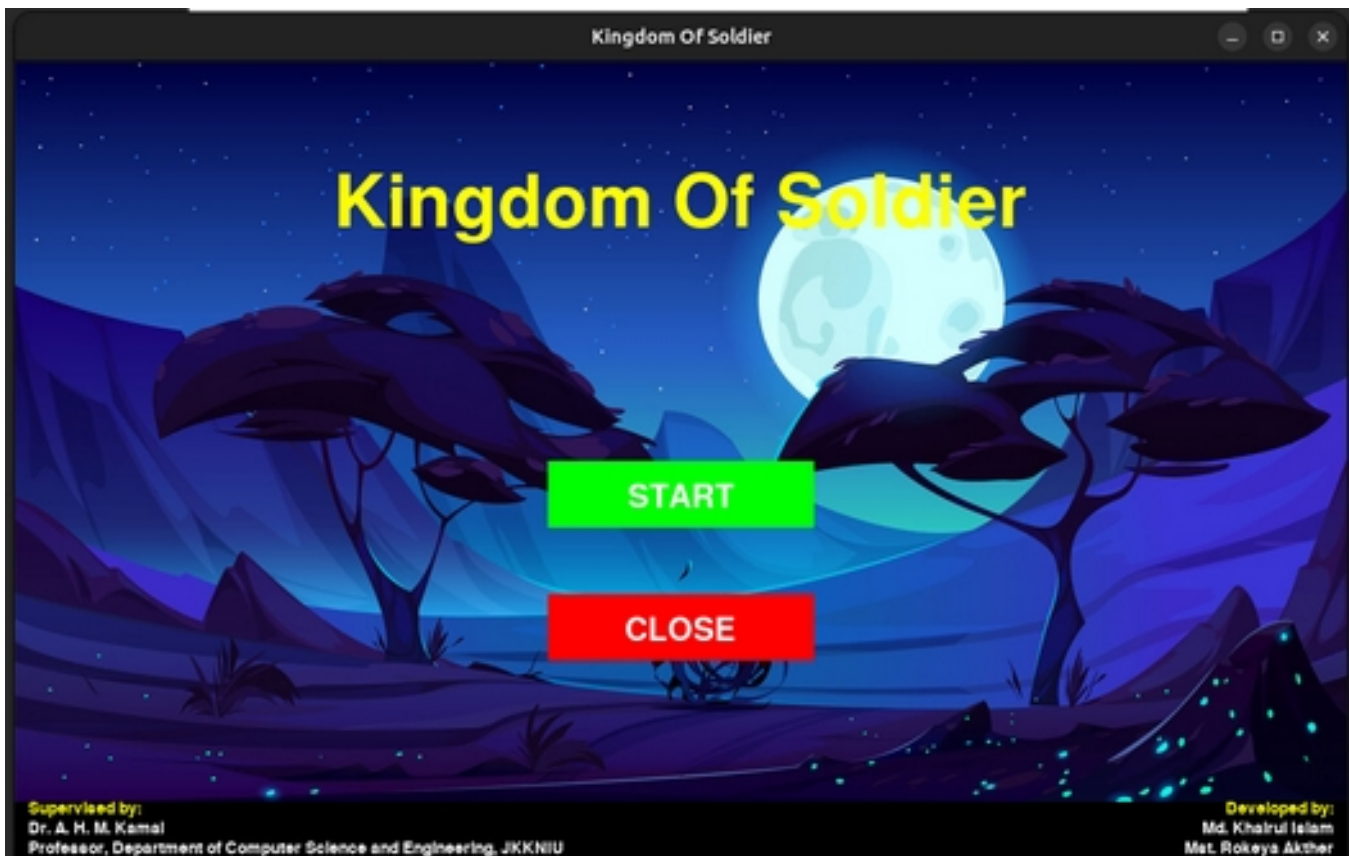


Figure 3.1 : Game Menu

3.4. Development Process

The phase of development is where developers create and organize the product assets created during the design phase. Programmers are focused on technology development and/or integration. Testers execute procedures for debugging. Depending on any feedback given, the project is reviewed and revised. In this phase, Aseprite, Adobe illustrator and Canva are used to develop our game character and background, and we use mathematics knowledge to design the map.

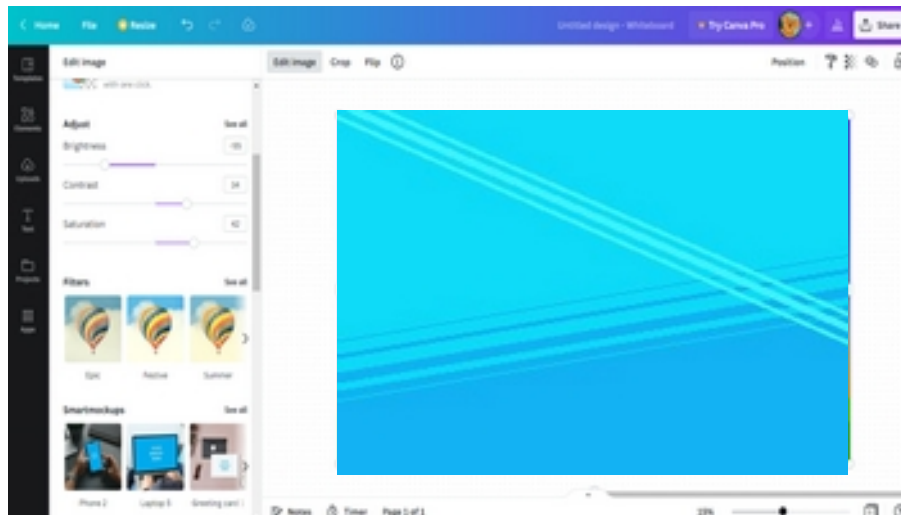


Figure 3.2 : Canva Software

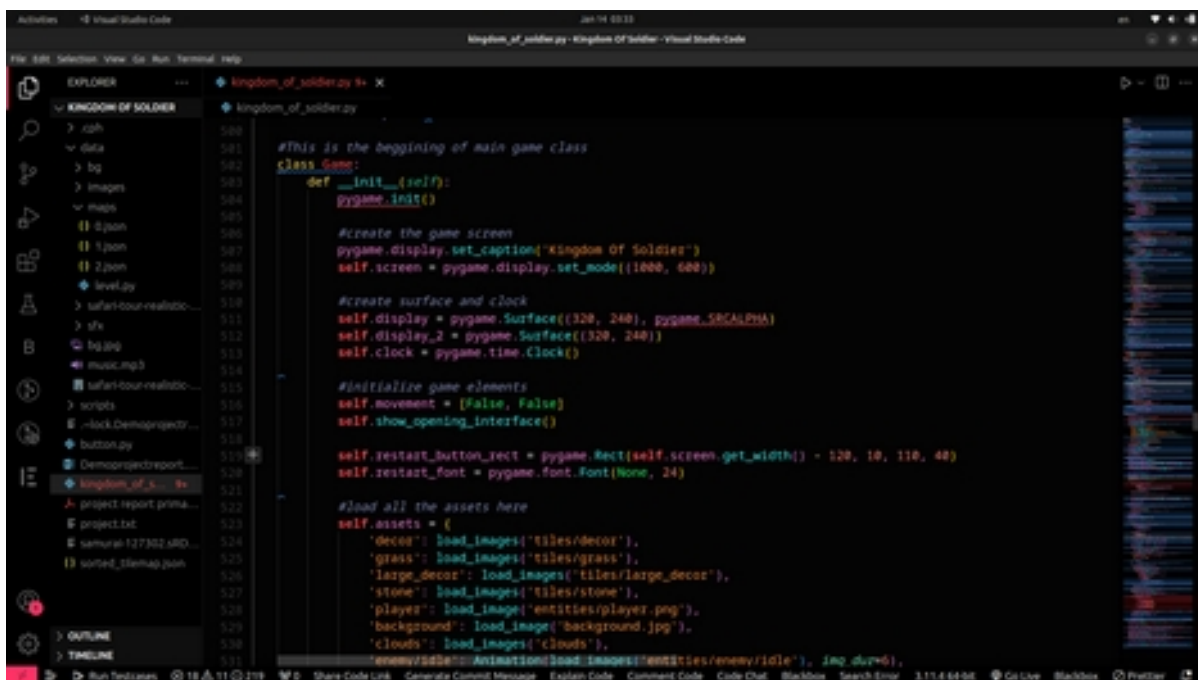


Fig 3.3 shows the VS code software in where we write our code.

3.5. Implementation

The phase of implementation is a test phase. The supervisor and friend test completed application and give response. The aim of testing is to identify the weakness and detect any unrecognized errors during the authoring process. The supervisor openly commented and criticized during the test for making improvements, and any mistakes can be corrected. This is to ensure the project is

easy to use and to run accordingly. User test run is sent a demo version for alpha and testers to ensure that the project meets their requirements before presenting the final product. Criticisms and constructive feedback are taken into account to be implemented later on.

3.6. Evaluation Process


The final phase, which is the evaluation phase. If the design is found to be incomplete or unsatisfactory, improvements or addition will be made based on the user's feedback, response in presentation, and commented from supervisor. For the first time in this iteration, only the prototype with the base function is generated most of the time and decisions on further iteration. Further iteration of the verification phases and changes will take place to add features such as the different viewpoint, the advanced way and so on. The iteration will not stop until the application is perfect or the application will satisfy the user.

3.7. Hardware and Software Requirement

In order to creating video games we need to working on some hardware to test the game and software to develop the game. There are lot of software that recently use for game developer.

3.7.1 Hardware Requirement

Hardware is the important in ensuring the research of this project is success. In order to do this research, every hardware has its own function. The hardware to develop this project is shown as below.

Hardware	Uses
PC or Laptop 	To create the sketches for the characters, background and create scripts or documents related to application. Also used for on the go coding and 2D model.
External Hard Disk	To backup all project data






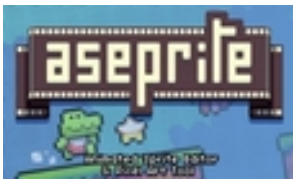
	
Headphones 	Used for development and test runs of the projects as well as used for the finished project to amplify immersion.
Keyboard 	Used for typing the coding and design the 2D model.
Mouse 	Mouse is used during coding and 2D modelling process.

Table 3.1: List of Hardware requirement

3.7.2. Software Requirement

To develop this project, choosing the best software can be a lot of choices, because the software selection depends on the requirement in this project. The software to develop this project is shown as below.

Software	Uses
Adobe Photoshop 	Used to create sketches of background, characters and posters.
Aseprite Software 	Used to create character and game assets.




Canva Software 	Used to created game Background image.
Falgo Software 	Uses for created level of game
Visual Studio Code Editor 	Uses to create a convenient environment for productive Python, web, and data science development.

Table 3.2: List of Software Requirement

3.8. Summary of the chapter

Methodology is very important in a video game development. It helps to make sure the game to develop correctly from phases to phases. In this video game, Iterative model had been chosen as a guide to build system. It also helps to ensure all the objectives can be achieved. Besides, this chapter also explains the hardware and software requirements for this system.

Chapter 4

WORKING PROCEDURE

4.1 Introduction

In this section we are going to discuss about our game working procedure. How all of the implemented code are run and successfully executed and gives us correct output or gives correct output to the game user. We are also fully describes the flow of full function and our implemented pygame or other necessary module

4.2 User Interface

In any game or any projects user interface is very much important for the developers , it represent the whole idea about the project or game. In our developed game we also use a dynamic user interface which has two button and the title of the game. We are also add the developers name who are Md. Khairul Islam and Mst. Rokeya Akther, and our Supervisor name Dr. A. H. M. Kamal, professor, CSE dept. JKKNIU.

In the opening interface if the user click on START button then the game will run and begin and user can the element of the game , all of the character in the game and other functionality that we(developers) implemented in the code. Else if the user click on the CLOSE button then the game window will be close, which means finished.

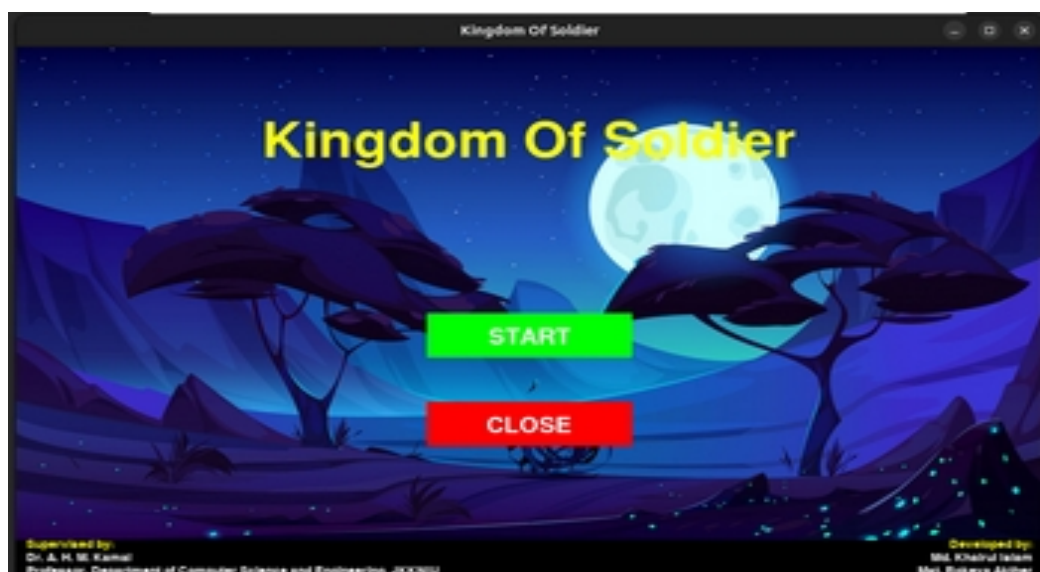


Figure-4.1: User Interface of Kingdom Of Soldier

4.3 Game Assets

To develop a game game assets is the fundamental part of the game, which a user see or interact. Without game assets no game will be developed. Also to develop the Kingdom of Soldier game we use necessary assets like, cloud, enemy character, player character, tree, décor, grass, stone, background sky , music and so on. We download some of them from online and some we developed with many online tools and aseprite apk , and for making maps we use a pygame project that we also learn from pygame series.

4.3.1 Maps

To create a game the most important part and base part is map, also in our development process we developed three maps which in .json format that is also leading the level of the game.

Here we attached picture that is a development process of maps in this game it's lead the level_1 maps

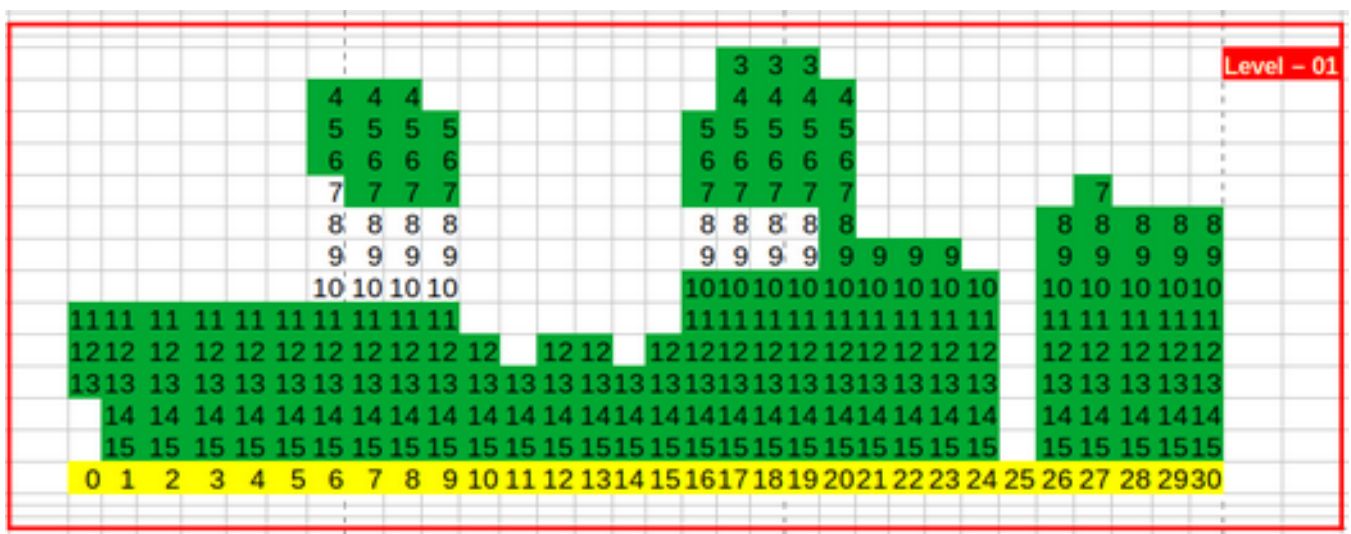


Figure-4.2: Map Designing

To develop this map here we design a primary map, then we implement it to .json file. For all of the process we need geometry of math.

4.4 Game Flow

To know a game how it is work, what next program will be execute it's very essential or time saving to create a flow chart that represent the flow of the game. For any user if he want to know about the game or overall idea about the game, it's essential for him.

For this project we also a developed a flow chart that direction us which function will be executed and so on.

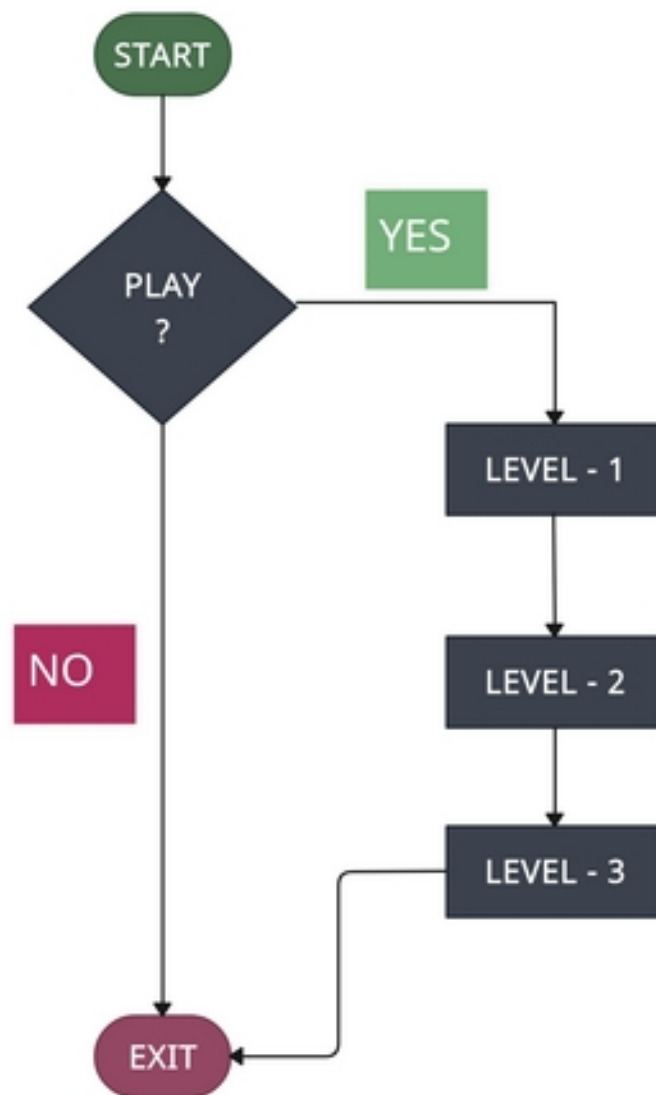


Figure 4.3 : Game Flow of Kingdom Of Soldier

Chapter 5

RESULT AND DISCUSSION

Starting the game: When we executes this program , it will show the successful output , that we design before.

Then if the user click on PLAY button game will start but if the player click on EXIT button game will be closed.

If the player died then affair to the same level on the screen. If he close the game window then the game will be close.

Player controlling: After running the game next step is play the player as user interest, in our game user can control his game by by entering button from the keyboard.

key_up button: If user enter the key up button from the keyboard then the player will be jump . We control the user by pressing this button.

key_down button: If the user enter the key down button from the keyboard then the player jump into tho bottom from respective wall or base. We control the user by pressing this button.

key_left button: If the user press the key left button from the keyboard then the player of the game move to the left. We control the user by pressing this button.

key_right button: If the user press the key right button from the keyboard then the player of the game move to the right . We control the user by pressing this buttons

space button: If the user of the game enter the space button then the player shoot to the targeting enemy . If the player dashing the enemy AI user then the enemy of the game is going to kill. This button also use for rapidly move from the enemy ai to escape from the death.

Player death: player have 3 health score. If enemy hit him once he will lose 1 score from the health. If the enemy shoot and the bullet touch the player body

then the health of the user decreasing by one, if the health of user is equal to zero then the player of the game will be killed and the game respawn to the same level where he was.

Enemy death: If enemy hit him once he will died. If the player of the match dashing and shoot to the enemy AI then the enemy of the game is killed, and this value is just one.

Shooting ability: Both player an enemy can shoot each other. From player perspective the shooting abilities is infinity that means player can shoot any number of times, it has no limitation. From enemy perspective if the player enter the enemy zone then the AI will shoot , if the bullet touch the player body then the health of player decreasing by one.

Enemy Ai: Enemy can detect and shoot the player if player come closer to the enemy, it takes some times to shooting between to shoot .

Level upgrade: if the player complete the the level by kill all enemy he will teleported to next level. It means level 1 have 3 enemy , level 2 have 12 enemy and level 3 has 18 enemy, if the player can killed all of the level 1 enemy then he teleported to the next level , also if player kill all of the level two enemy then the player teleported to the next level that is level 3 . also If the player kill all of the enemy from level 3 then the game will be over, cause after level 3 , our game is finished. We show the level id to the user.

Game score: If the player of the game kill one enemy in any level then he/she will rewarded 100 points, also if the player finished any round then he will get 1000 point as a bonus point.

If player kill in level 1 then the score will be decreased by 0 , if in level 2 , then the score will be decreased by 1300, also if in level 3 then the score will be 3500.

Chapter 5

CONCLUSION

In my opinion there are many advantages to creating this type of project. It is a chance to do something different, step outside my comfort zone and learn how games are created. I liked that I had full freedom with the creativity of the game and I could implement it with my vision in mind. Another advantage was the experience of coding in Python in modules. This was a benefit to me as this languages used to code in game and software development . I was pleasantly surprised with how much coding experience I managed to pick up. As someone who always struggled a bit with coding I tried to challenge myself by fixing errors without online help. I was able to fix these errors and after a while I was able to write whole scripts without help. This is something I did not expect to happen and it has made me more confident and eager to create more games in the future. I also got to play around with new technologies including Enemy ai algorithms.

Lots of first person shooter and third person shooter tutorials were available online and this made it easy to get inspiration and get my project off the ground. The genre of game that I chose did not limit me and I was free to make it as simple as I desired. I incorporated elements that were not planned like intractable objects, object animation. The asset store was also a huge help in getting realistic models into my game. It also gave me more time as I did not have to make these models from scratch. I really enjoyed creating the scene and making the GUI for the project. It was a chance to be creative and test out different ideas.

There are some disadvantages associated with the development of a third person shooter game. It was evident during development that this type of game is extremely large and complex to develop thus requiring a substantial amount of time to even get it to a playable state. As I have no previous experience in game development, or PyGame, it meant I had to learn how to use and navigate around a new program.

Chapter 6

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