

Battle of Survival

Final Year Project

Session 2020-2024

A project submitted in partial fulfilment of the
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of
BS in Computer Science



Department of Computer Science
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Project Detail

Type (Nature of project)	[*] Development [] Research [] R&D			
Area of specialization	Game Development			
Project Group Members				
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*The candidates confirm that the work submitted is their own and appropriate credit has been given where reference has been made to work of others

Plagiarism Free Certificate

This is to certify that, I am Muhammad Muaz Shoukat S/D/o Muhammad Shoukat Ali, group leader of FYP under registration no CIIT/SP20-BCS-148/LHR at Computer Science Department, COMSATS Institute of Information Technology, Lahore. I declare that my FYP proposal is checked by my supervisor and the similarity index is 5% that is less than 20%, an acceptable limit by HEC. Report is attached herewith as Appendix A.

Date: 4 June 2023

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Name of Supervisor: Mr. Amaid Zia

Designation: _____ Signature: _____

HoD: _____ Signature: _____

Abstract

The basic genre of the game is Adventure and survival. The main character is Jack entered the building and got stuck there. There is no way out. Now he must survive in the building and find his way out. To survive and find his way out he must solve different riddles, pass some missions, and defeat some creatures who live in that old building. To fight and defeat these monsters, he needs to find weapons. Character will lose his health if any monster attacks him and will die if health reaches zero. He must find medical kits to restore his health. As the level increases, the level of difficulty will increase with stronger appearances and the player will have to solve more difficult missions/riddles.

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1 Chapter 1: Introduction

1.1 Introduction

Video games are the most preferred method of entertainment in today's society. Games are an integral part of everyone's life today as many people play one or several games at a given period. Specifically, in mobile games, individuals have a tendency for expressing a predilection towards mobile games over console and PC games. The cause to that is that it is mobile phone which means they are always with us wherever we are going. In the case of Player there is no seated requirement for that to play the game. Now the user can play games anywhere including at its workplace when he/she takes a break from work to refresh the mind for some time. Nowadays, games or gaming is not limited to children, but adults have also embraced this type of entertainment.

1.1.1 Game Play

In the building the player will face many hurdles, he/she must solve missions and defeat enemies to survive. At the start, the player will only have an axe. Player must find more weapons to fight with the enemies. To explore more rooms and find its way, the player must find keys. Enemies can attack on the player which will decrease the health of the player. There will be health kits present in the game, players must find it and use it to restore their health.

Player will get awarded with points after solving a mission and defeating the enemy. Player can use these points to redeem weapons or shields.

1.1.2 Levels

As the level increases:

- the number of hints and clues will decrease, and the player has to solve more missions in order to clear the level.
- damage given by monsters will increase.
- Number of monsters will increase.
- More powerful monsters will occur.

1.1.3 Game Objects

In game these objects will be used

- Axe
- Keys (to open different rooms and treasure boxes)
- Treasure Boxes
- Different type of Weapons
- Health Kit
- Armor
- Monsters (as enemies)

1.2 Objectives

The main objective of playing a “Battle of Survival” is to survive in a challenging and difficult environment. Player must navigate through various obstacles and manage limited resources and overcome threats like enemies and environmental difficulties and pass missions.

Players can discover hidden areas, find secrets, and solve the mysteries of the game's environment. The objective is to discover new places (in the castle) and discover the game's story.

The game of “Battle of Survival” includes features such as achievements, awards, and access to content like new weapons when accomplishing some tasks or reaching some goals. The purpose is to have these obtainable goals, earning points and gaining new levels which helps the player feel that they are progressing in the game.

1.3 Problem Statement

The mobile gaming market is saturated with wide range of games, but there is a lack of adventure and the survival games that engage players and provide them with good decent gameplay.

Additionally, many adventure and the survival games on the market failed to strike the right balance between challenging gameplay and accessibility. Some games are too easy, offering little to no challenge for seasoned players, while others are too difficult, resulting in the frustration and for the casual gamers.

Most of the survival and adventure games are available for platforms like PlayStation and Xbox. Casual gamers prefer to play in the devices which are easily accessible in easy environment. The environment which doesn't bound them to sit at a fix place.

1.4 Assumptions & constraints

1.4.1 Assumptions

- The game will be available free of cost for the users.
- The targeted audience for the game "Battle of Survival" will be the players who enjoy adventure and survival games.
- Players are familiar with basic game mechanics of games such as navigation and combat etc.
- The game will be developed for mobile platforms.
- Sufficient resources, time and budget will be allocated for the development.
- The “Battle of Survival” will be completed in the fixed period.

1.4.2 Constraints

- The game will be suitable for players aged 12 to 40.
- Players must have a smart phone to play the game.
- The game is to be completed in limited time and resources.
- The game will be compatible with a variety of mobile devices, considering different screen sizes and resolutions.

- The game's file size should be optimized to ensure smooth performance and quick installation.

1.5 Project scope (what and what not to consider)

The goal is to create an action mobile game called “Battle of Survival” using the Unity platform. This is to ensure that the user of the game can enjoy the game and at the same time be able to engage in an intellectually stimulating pastime. The objective of the game is to navigate the castle, complete levels, fight enemies, and eventually escape from the castle. For the specific game, all the graphic aspects are to be developed paying special attention to the graphical user interface, light effects, and character animation.

The gameplay mechanics will include weapons to fight enemies, collecting keys to unlock the hidden rooms and hidden treasure boxes, user can and utilize health kits to restore the player's health. As the player progresses through the levels, the difficulty will increase also there will be fewer hints and clues to clear the level, stronger monsters/enemies, and more missions to solve on order to clear the level. The user will be able to buy some weapons and shield from the shop through the gems he collected from the treasure box.

One of the critical aspects of the game will be designing the all the levels differently to maintain the player's interest in the game. Each level will introduce new challenges and missions. Smooth animations and glitch free experience will be prioritized to ensure a seamless gameplay experience for the user.

The project has a time limit spanning two semesters. The first semester will be dedicated to documentation, including some learning. The second semester will focus on the implementation and completion of the game. The project team will make sure to meet the established deadlines.

2 Chapter 2: Requirement Elicitation

2.1 Literature review / Existing system study

2.1.1 PUBG

PUBG is product of KRAFTON company, and it is category of battle royal game. And the objective of playing this game is to continue moving and eliminating its adversaries to be able to succeed the game. [1]

2.1.2 Old Granny

Old Granny is horror video game developed by DVloper. In this game the player needs to hide from an old granny who is walking in the house to kill him. The player needs to unlock the front door to set free but he will run through old granny secrets which are locked inside doors. [2]

2.1.3 GrimValor

GrimValor is an investigation game in which players need to investigate where monsters are coming from and need to kill all the monsters. Not only this player also has to save all other investigators caught by the monsters. [3]

2.1.4 The Forest

The Forest is an adventure and survival game. This game is developed by Endnight Games. In this game, the player has to survive in a deserted place after a plane crash by creating shelter and finding weapons to keep itself safe from attack. [4]

2.1.5 Standard Deep

Standard Deep is a survival game developed by Australian studio Beam Team, the game is about surviving after plane crash in Pacific Ocean. Player has to face some hard conditions to survive. [5]

2.2 Stakeholders list (Actors)

2.2.1 Admin

Admin will manage all the data of the game and users.

2.2.2 Developers

Developers will develop the game using Unity 3D using all the resources.

2.2.3 User

User will play the game and enjoy the product.

2.3 Requirements elicitation

2.3.1 Functional requirements

Table 1 - FR01 - Home Screen

Req. No	Functional Requirements
1	The game will allow player to choose the following options. <ul style="list-style-type: none">• Start Game• Resume Game• SHOP• REWARDS• SETTINGS• ABOUT US• HOW TO PLAY• EXIT
2	The system will display a background image of the game in the home page.

Table 2 – FR02 - Levels

Req. No	Functional Requirements
1	The game will allow player to start the game from level 1.
2	The difficult of the game will increase as the number of level will increase.

Table 3 - FR03 - Pause Game

Req. No	Functional Requirements
1	The game will allow player to pause the game.

Table 4 – FR04 - Resume Game

Req. No	Functional Requirements
1	The game will allow player to resume game by clicking resume button.
2	Resume Game button will be present on home screen.

Table 5 – FR05 - Setting

Req. No	Functional Requirements
1	The game will allow player to select the following options. <ul style="list-style-type: none">• Sound Settings• Control Settings• Main Menu
2	The game will allow player to increase and decrease the volume.
3	The game will allow player to mute the game sound.

4	The game will allow player to get back to main screen (Main menu).
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Table 6– FR06 - Shop

Req. No	Functional Requirements
1	The game will allow player to buy following items from the shop <ul style="list-style-type: none"> • New Weapons • New Cloths for character • Shield
2	Shop Option will be available on home screen
3	The game will allow player to go back to main menu.

Table 7– FR07 - Rewards

Req. No	Functional Requirements
1	The game will allow player to rewards on completing certain missions.
2	Shop Option will be available on home screen
3	The game will allow player to go back to main screen.

2.3.2 Non-functional requirements

Table 8 – NFR01 - Performance

Req. No	Non-functional Requirements
1	The game runs smooth on smartphones having more than 2 GB of RAM.
2	Game loading time will not be more than one minute.
3	Response time will not be more than five seconds

Table 9 – NFR02 - Maintenance

Req. No	Non-functional Requirements
1	Bugs/Errors occurring in the game will be solved timely.

Table 10 – NFR03 - Portability Constraints

Req. No	Non-functional Requirements
1	The game will not run on any other platform other than smartphones.

Table 11 – NFR04 - Documentation

Req. No	Non-functional Requirements
1	Documentation regarding each level will be provided.

2.3.3 Requirements traceability matrix

Table 12 – Requirements Traceability Matrix

Name		Battle of Survival					
Description		<p>Battle of Survival is a game developed for the mobile platform. In this game, the main character will be taken through an adventurous journey. In this game, player's aims and goals include moving around the castle and completing missions as well as fighting enemies at the end of the game he will be able to exit the castle.</p> <p>The aim of player should be to collect as many items as possible by completing all levels. When the game begins the player has only one weapon at his disposal, but player must scrounge for more weapons to fight foes. The keys are to be earned as the game unfolds and they unlock doors and treasure chests that are scattered throughout the game and their contents may be beneficial to the players. These rewards can be used to buy various weapons from the shop.</p> <p>It also presents several challenges that can be referred to as levels of the game. Eventually, the level of difficulty increases during the progress of game as there will be more monsters and their power will be enhanced.</p>					
Functional Requirement No.	Requirement Description	Goals	Project Objectives	WBS Deliverables	Product Design	Product Development	Test Case
01	Menu on home screen will provide the interface where all the functionalities of the game will be listed for the player.	It will help the user to understand and enjoy the game play.	Reduces the time of searching.				
02	The game will allow player to start the game from level 1.	Level difficulty will increase as the level will increase.	Help the player to clear the easier level first then move to the				

			difficult one				
03	The game will allow player to do multiple activities during gameplay.	It will allow player to survive in difficult situations.	Player will be able to take decisions in difficult conditions.				
04	Provide settings options to change default settings.	It will enable user to make changes according to his will.	Increase user's satisfaction.				
05	How to play provides instructions about game controls.	It will make sure that user knows the game controls to the best.	Good game experience.				

2.4 Use case descriptions.

Table 13- Use Case Description - Home Screen

Use Case 001	Home Screen	
Priority	High	
Actors	Player	
Use Case Summary	Home Screen will display the main menu with many options that will provide easy interface for the user.	
Pre-Condition	The user should have downloaded and installed the game on their phone.	
Normal Flow of Events	Alternative Path	
Use case will begin when the user opens the main menu by opening the game.		
The game will display the start button to start the game.		
The game will allow the player to choose the following options from the Home Screen. <ul style="list-style-type: none"> • Start New Game • Resume Game • How To Play • About Us • Setting 		
The system displays the settings and help icons at the top left corner of the screen.		
End		
Post Conditions		
Step. No	Description	
1	Player would be able to interact with different modules of game	

Table 14- Use Case Description - Levels

Use Case 002	Levels	
Priority	High	
Actors	Player	
Use Case Summary	First level will be loaded after player will select level 1.	
Pre-Condition	Player should have clicked on play button from main menu	
Normal Flow of Events		Alternative Path
Use case will begin when the user selects the play button.		
The game will the information about the specific level.		
The game will save the information about levels.		
End		
Post Conditions		
Step. No		Description
1		The player will move to next level by completing current level.

Table 15- Use Case Description -How To Play

Use Case 003	How To Play	
Priority	High	
Actors	Player	
Use Case Summary	Give the instructions about game controls.	
Pre-Condition	User must have opened the application.	
Normal Flow of Events		Alternative Path
Use case will begin when the user selects the how to play option from main menu.		
The section will show the controls information.		
End		
Post Conditions		
Step. No		Description
1		Player will be able to play the game by reading description.

Table 16- Use Case Description - Pause

Use Case 004	Pause	
Priority	High	
Actors	Player	
Use Case Summary	This will allow the player to pause the game for a while. User can restart the game later.	
Pre-Condition	User must have clicked the paused button during the gameplay.	
Normal Flow of Events		Alternative Path
Use case will begin when the player would want to pause the game.		
The game will allow the player to resume the game.		
The game will allow the player to quit the game.		
The game will allow the player to restart the game from the level 1.		
End		
Post Conditions		
Step. No		Description
1		The player would be able to pause and resume the gameplay.

Table 17- Use Case Description - Settings

Use Case 005	Setting	
Priority	High	
Actors	Player	
Use Case Summary	The game settings will allow the user to control the game sound and music.	
Pre-Condition	The player should press the settings button present on the home screen to change the settings.	
Normal Flow of Events		Alternative Path
Use case will begin when the player would want to change default settings.		
The game will respond by Displaying the settings screen.		
End		
Post Conditions		
Step. No		Description
1		Default settings would be changed.

Table 18- Use Case Description - Volume

Use Case 006	Volume	
Priority	Low	
Actors	Player	
Use Case Summary	Volume allows the player to alter the volume of gameplay.	
Pre-Condition	The player should be select the settings option first.	
Normal Flow of Events		Alternative Path
Use case will begin when the player clicks on the volume bar to change volume.		
User can also mute the volume		
End		
Post Conditions		
Step. No		Description
1		The player will be able to increase or decrease the volume from the given interface.

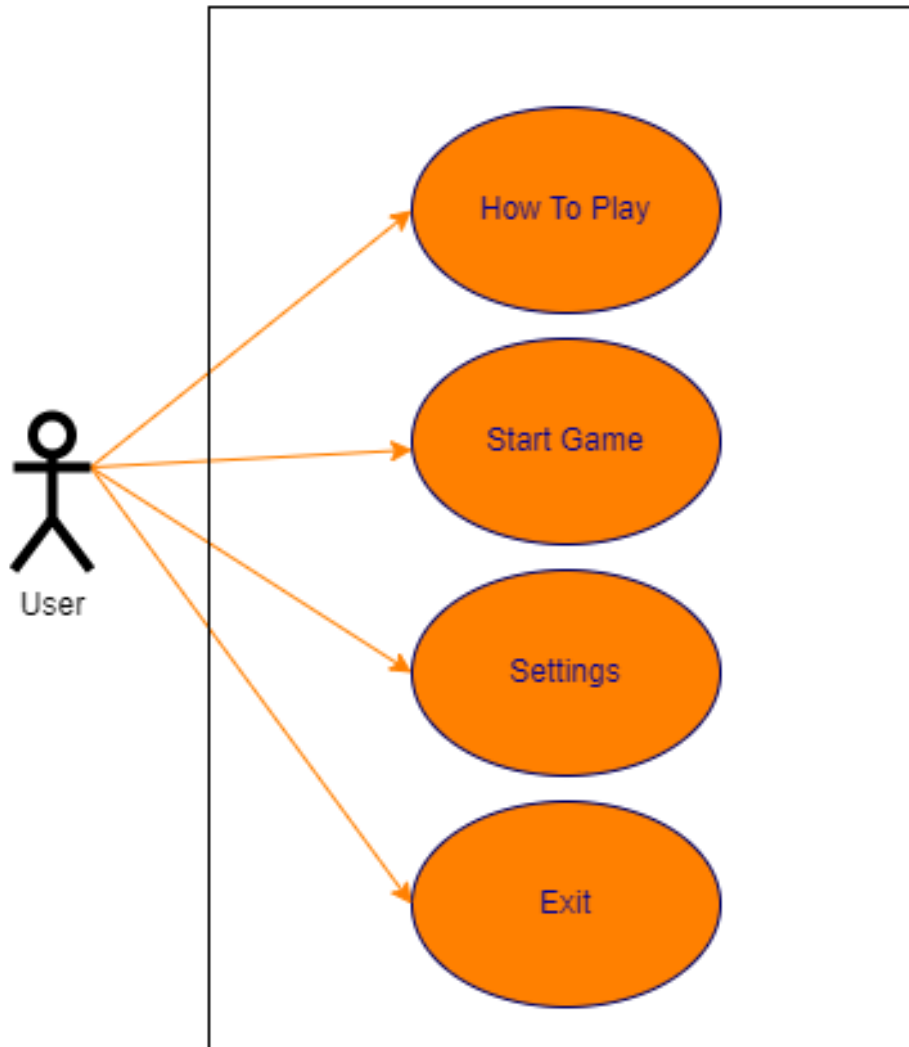
Table 19- Use Case Description - About Us

Use Case 007	About Us	
Priority	Low	
Actors	Player	
Use Case Summary	The option will allow the user to know more about the game.	
Pre-Condition	The player should press about us section.	
Normal Flow of Events		Alternative Path
Use case will begin when the user clicks on the about us section to view the version of the application.		
The game will respond the player by displaying “about us” screen.		
End		
Post Conditions		
Step. No		Description
1		The user can view about the vision and description of the game.

2.5 Use case design.

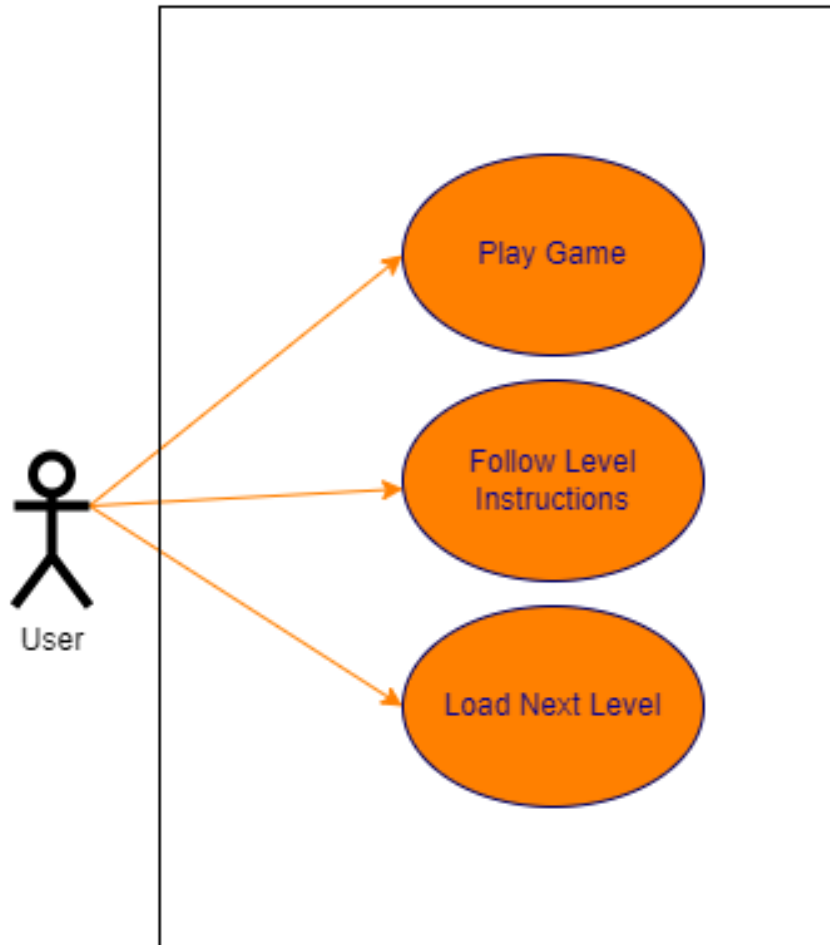
2.5.1 Home Screen

Figure 1 - Home Screen Use Case Diagram



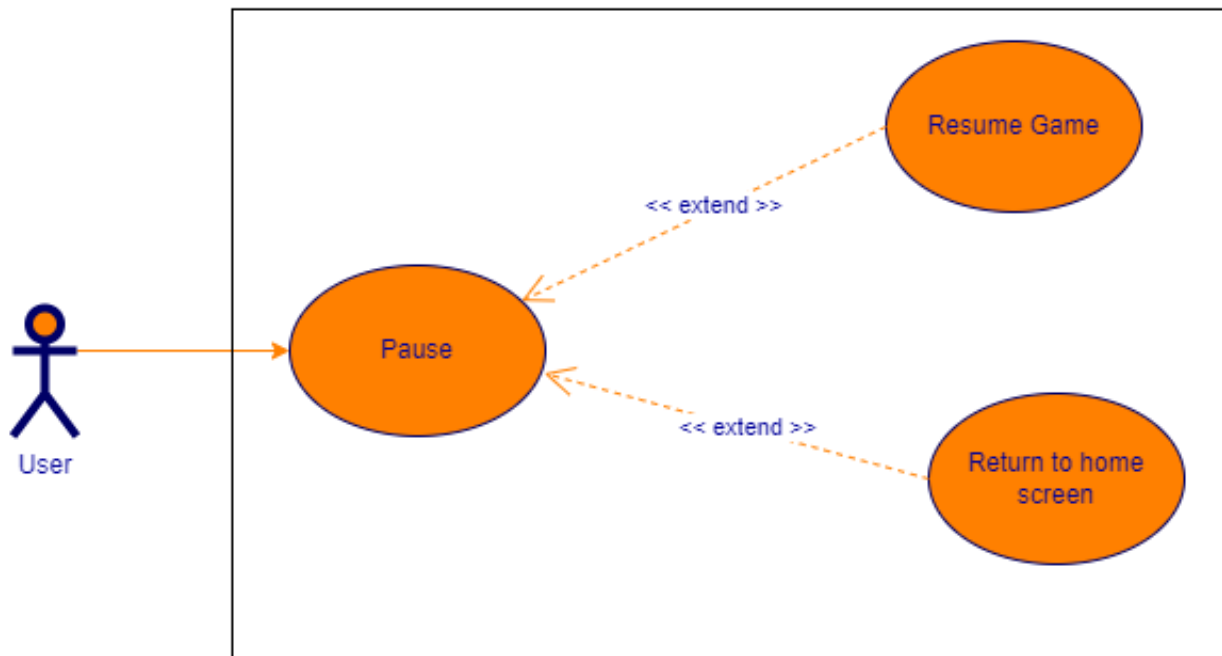
2.5.2 Levels

Figure 2- Levels Use Case Diagram



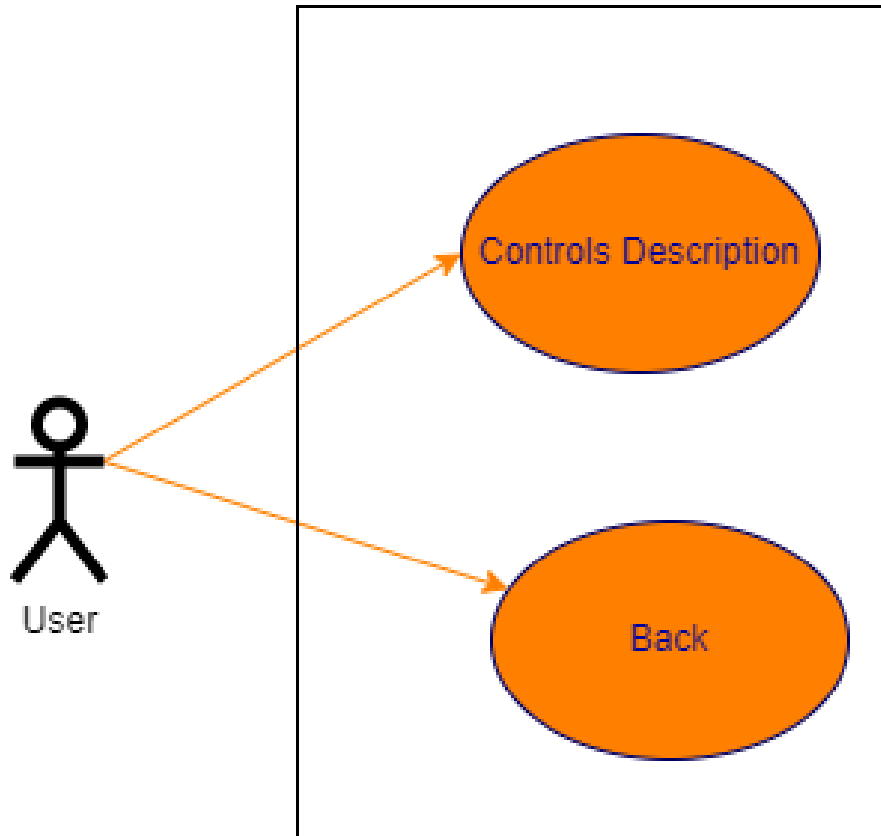
2.5.3 Pause

Figure 3- Pause Use Case Diagram



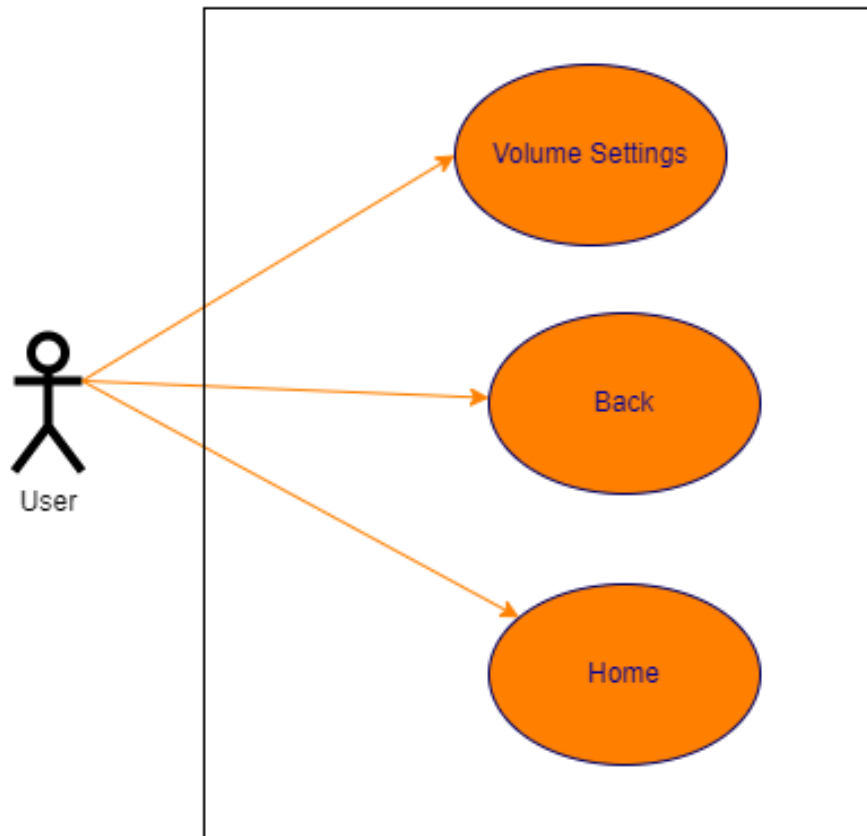
2.5.4 How To Play

Figure 4 - How to Play Use Case Diagram



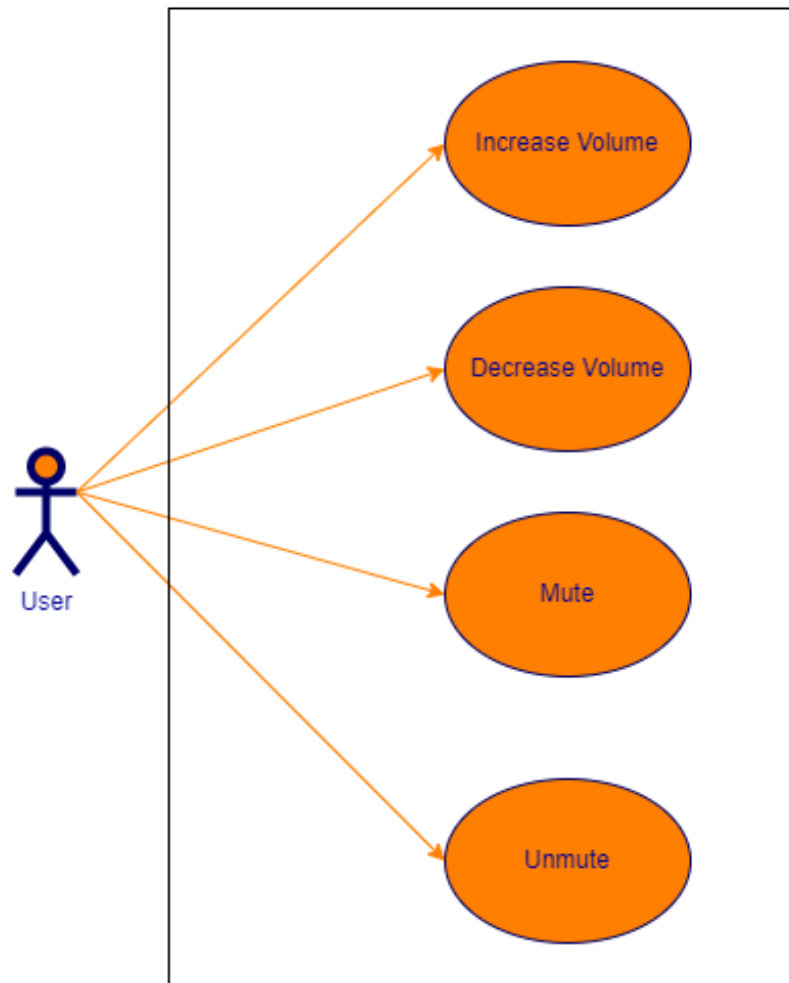
2.5.5 Settings

Figure 5 -Settings Use Case Diagram



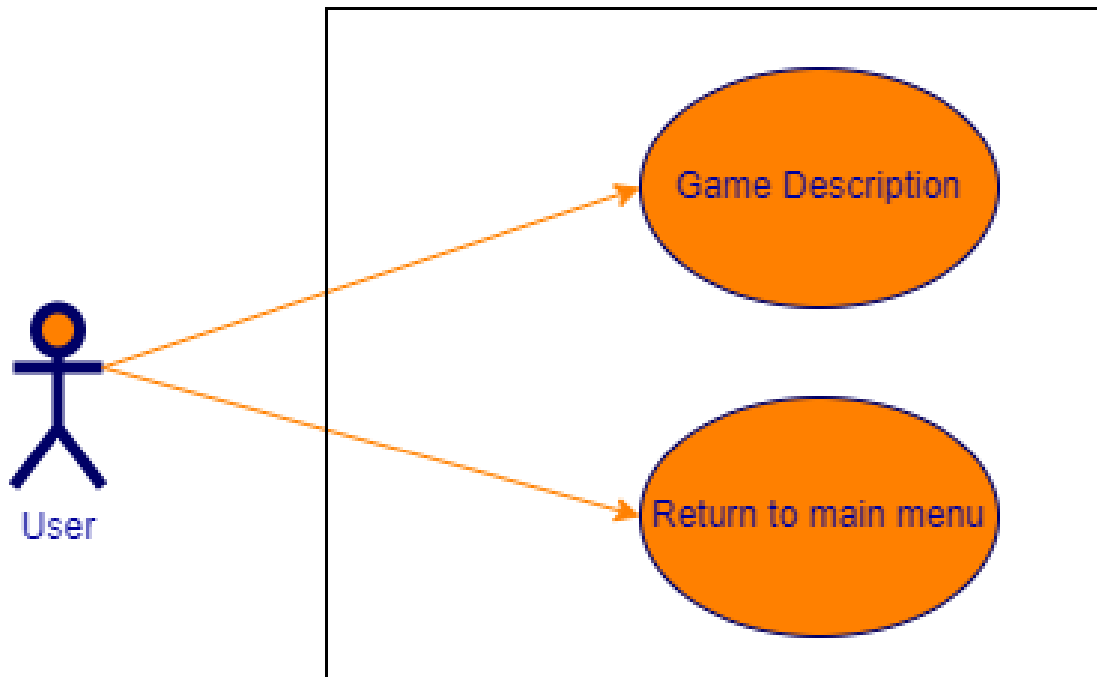
2.5.6 Volume Settings

Figure 6- Volume Settings Use Case Diagram



2.5.7 About Us

Figure 7- About Us Use Case Diagram



2.6 Software development life cycle model

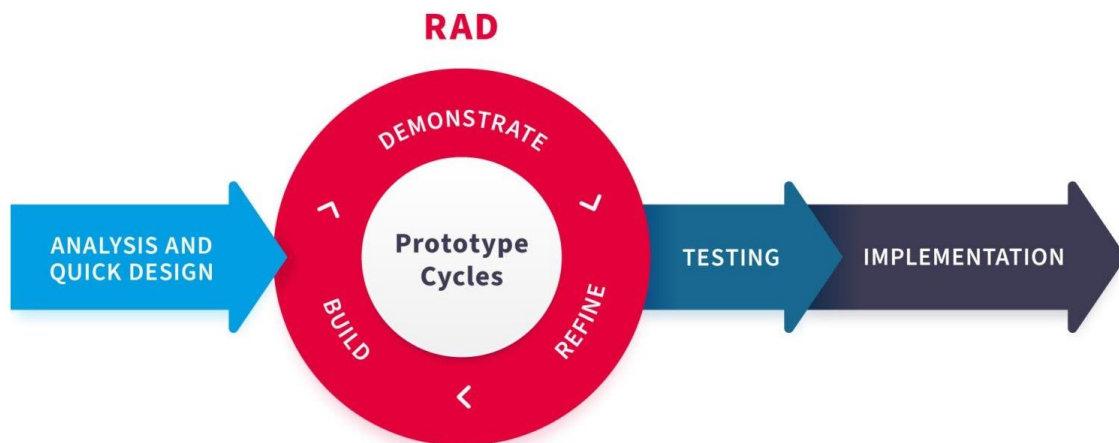
2.6.1 Rapid Prototyping

We choose Rapid Prototyping for our game “Battle of Survival”.

2.6.2 Reasons

- Rapid prototyping allows for quick validation and iteration of design concepts, reduce the risk of mistakes, and improve the quality of final product.
- It enables early user feedback which increase the satisfaction, and higher chances of success in the market.

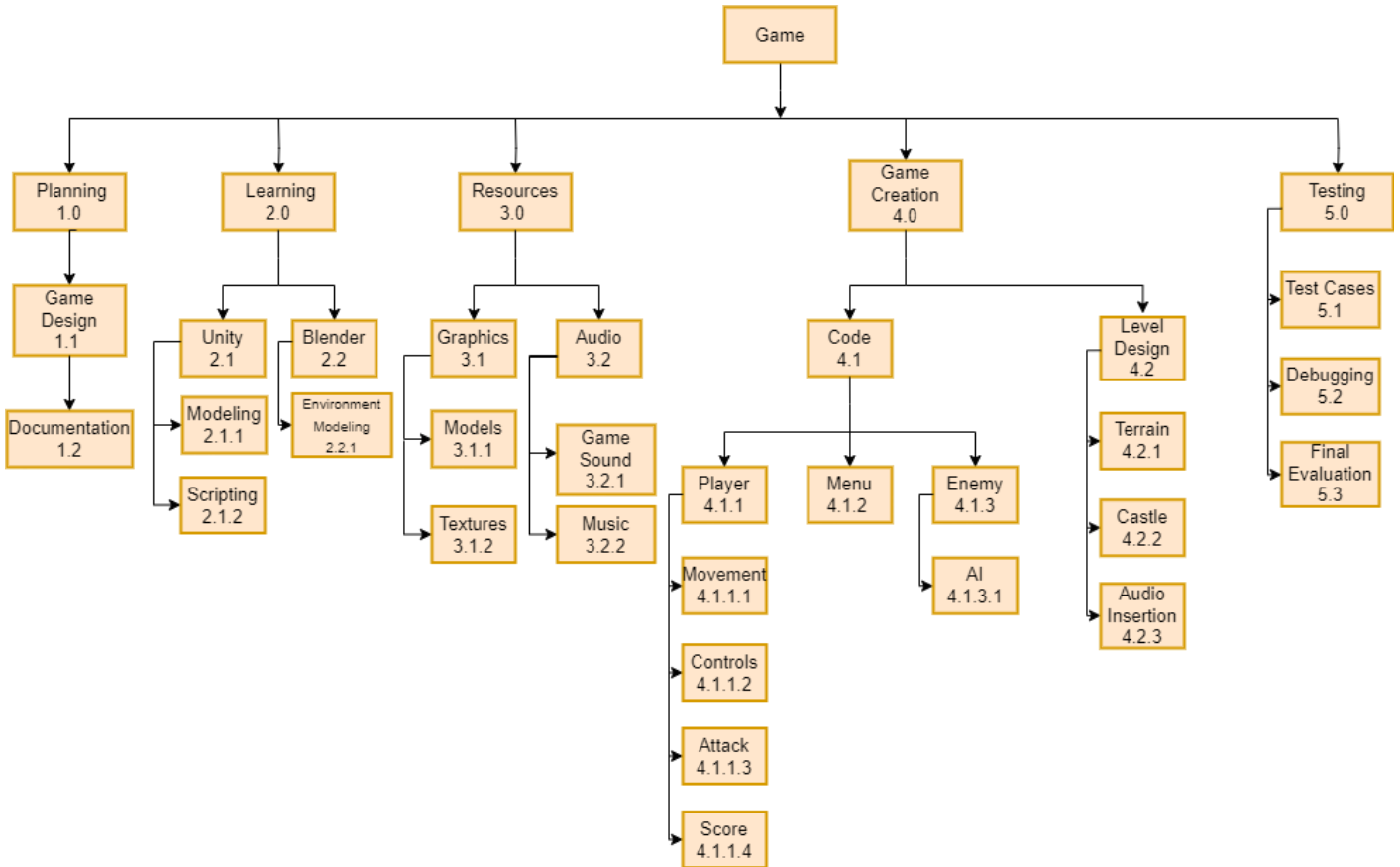
Figure 8 - Rapid Prototyping Diagram



3 System Design

3.1 Work breakdown structure (WBS)

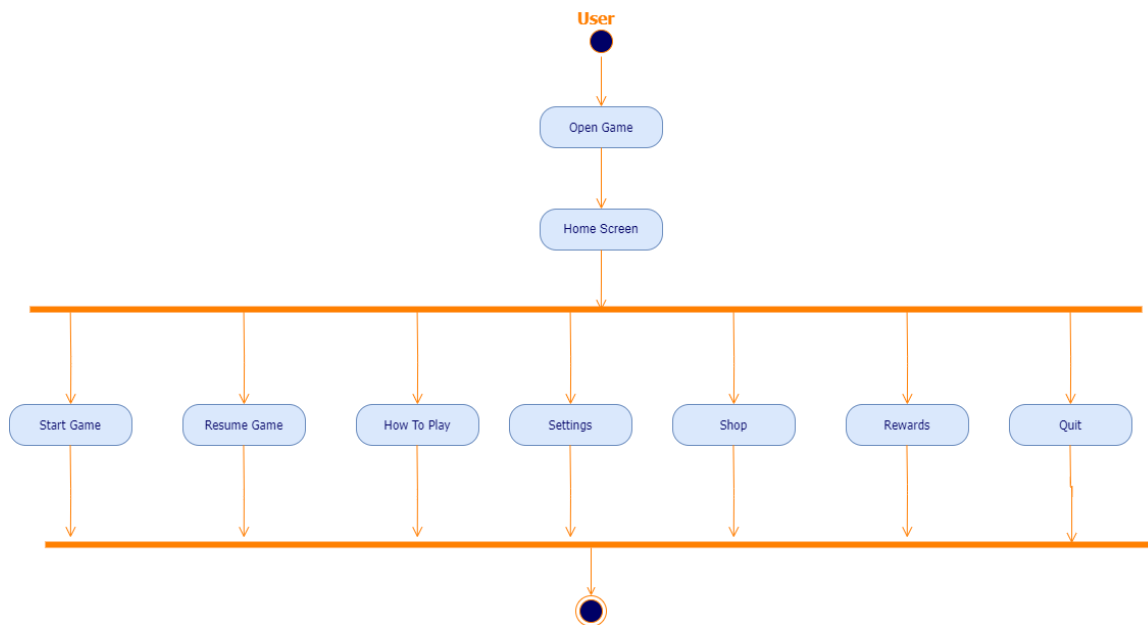
Figure 9 - Work Breakdown Structure Diagram



3.2 Activity diagram

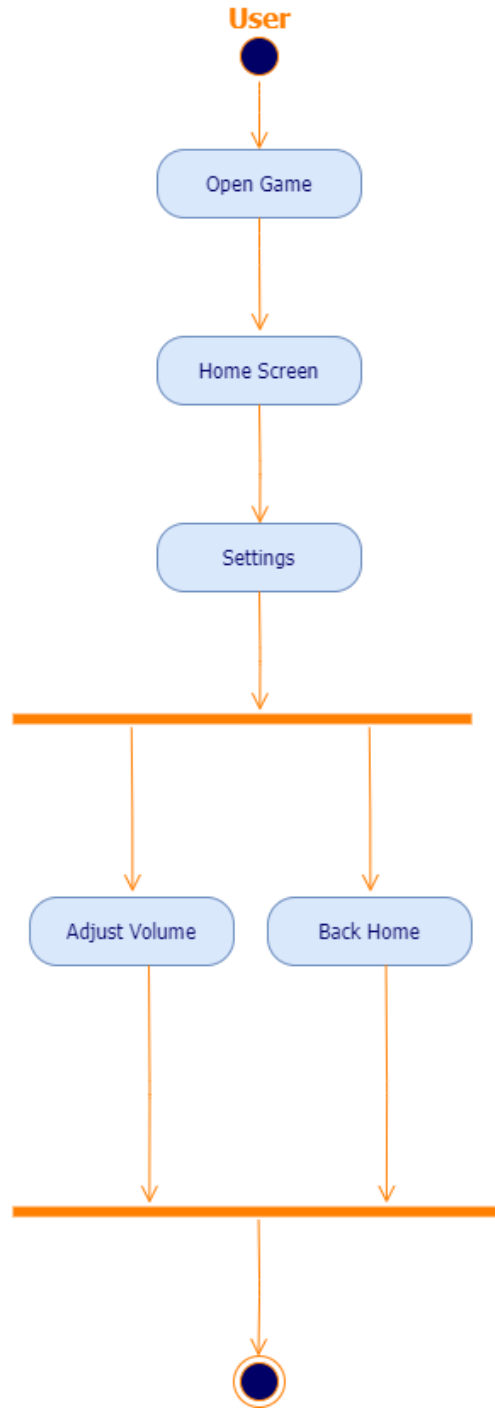
3.2.1 Home Screen

Figure 10 - Home Screen Activity Diagram



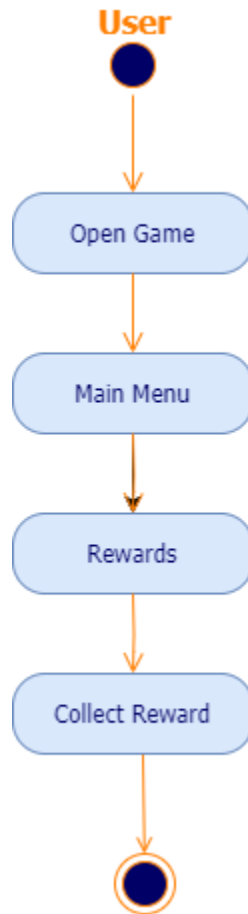
3.2.2 Settings

Figure 11 - Settings Activity Diagram



3.2.3 Rewards

Figure 12 - Rewards Activity Diagram



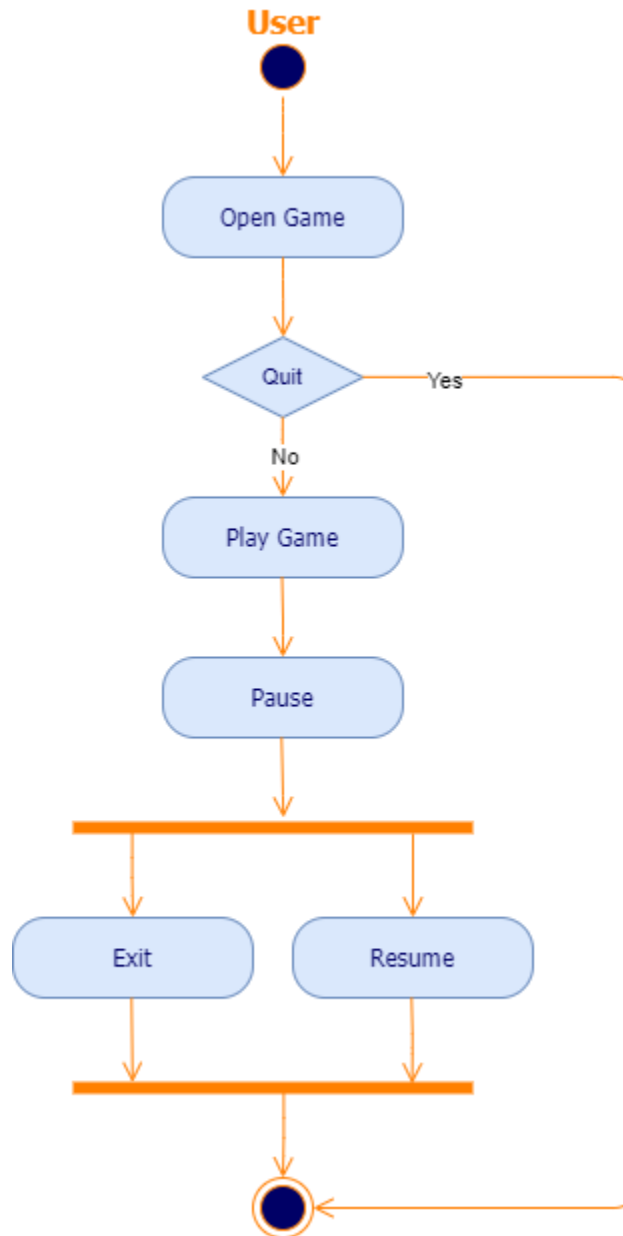
3.2.4 Gameplay

Figure 13 - Gameplay Activity Diagram



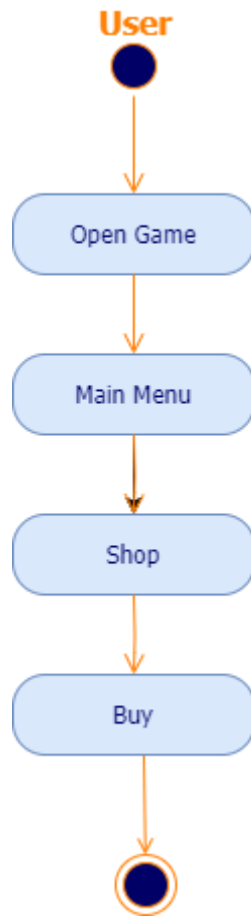
3.2.5 Pause Game

Figure 14 - Pause Game Activity Diagram



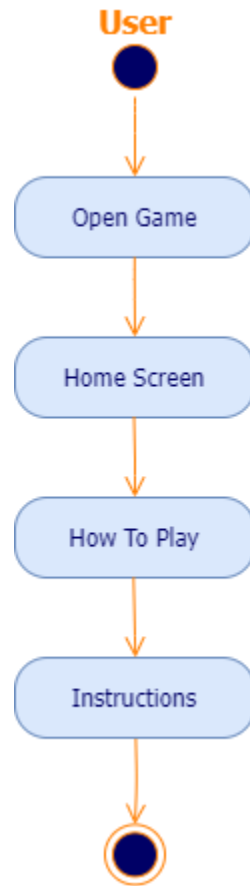
3.2.6 Shop

Figure 15 - Shop Activity Diagram



3.2.7 How to play

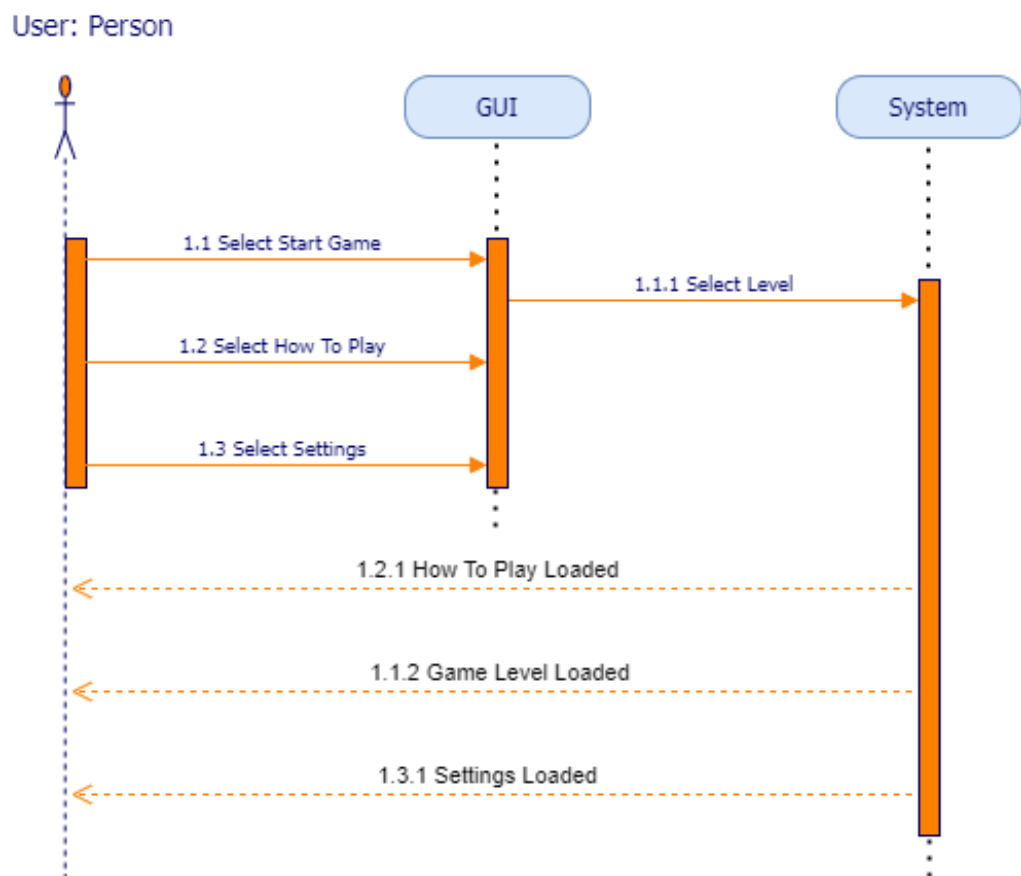
Figure 16 - How to Play Activity Diagram



3.3 Sequence diagram

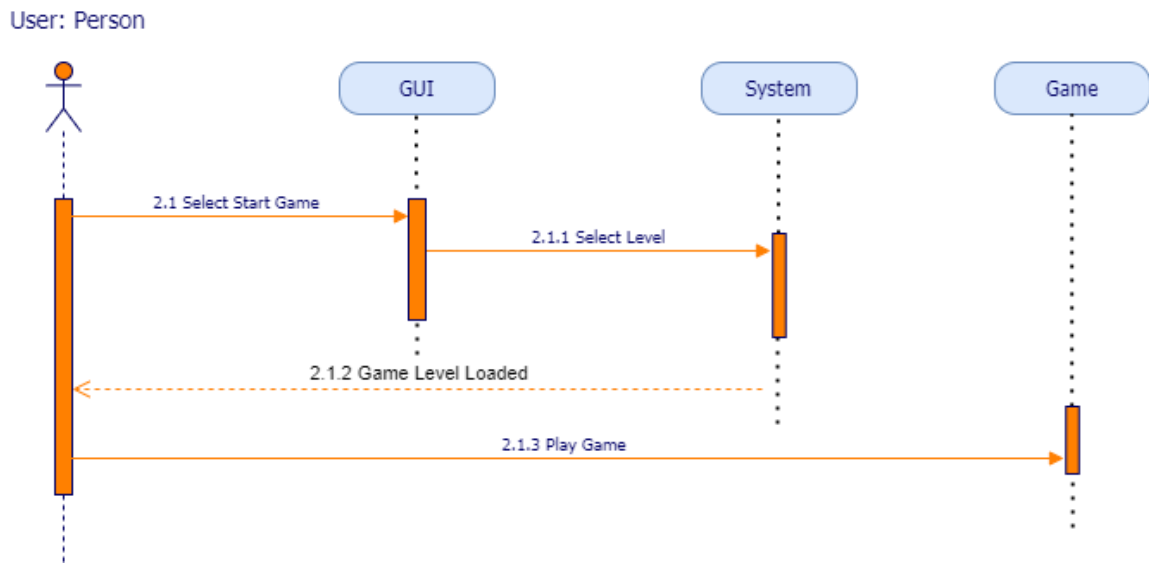
3.3.1 Home Screen

Figure 17 - Home Screen Sequence Diagram



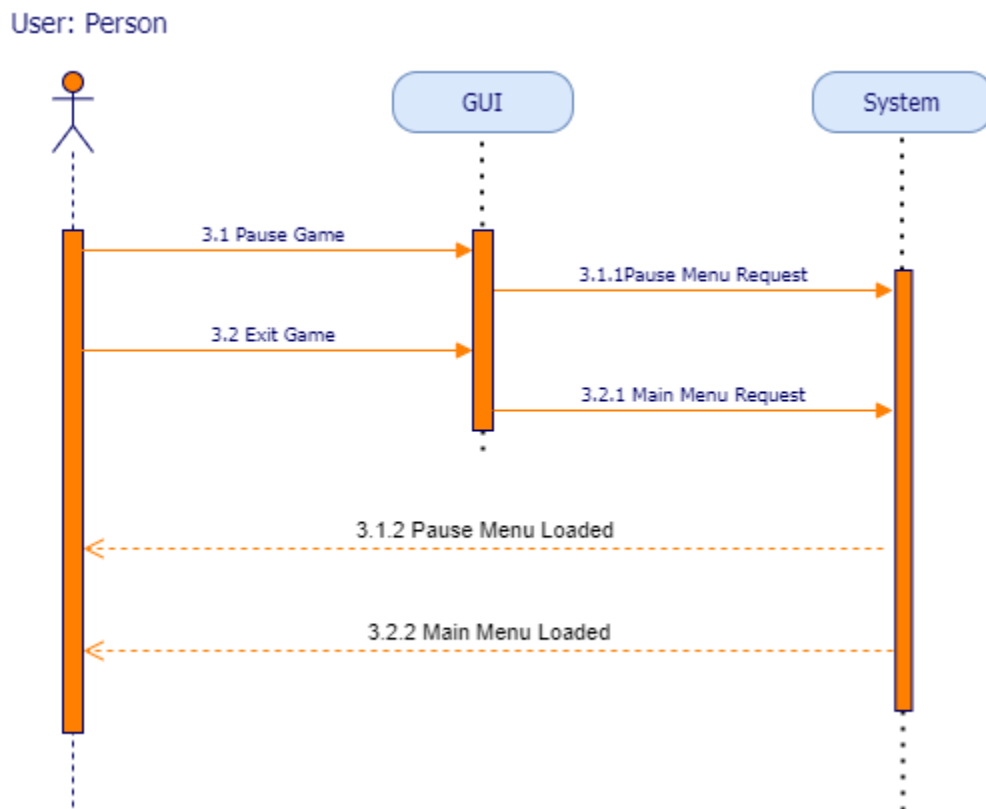
3.3.2 Select Level

Figure 18 - Select Level Sequence Diagram



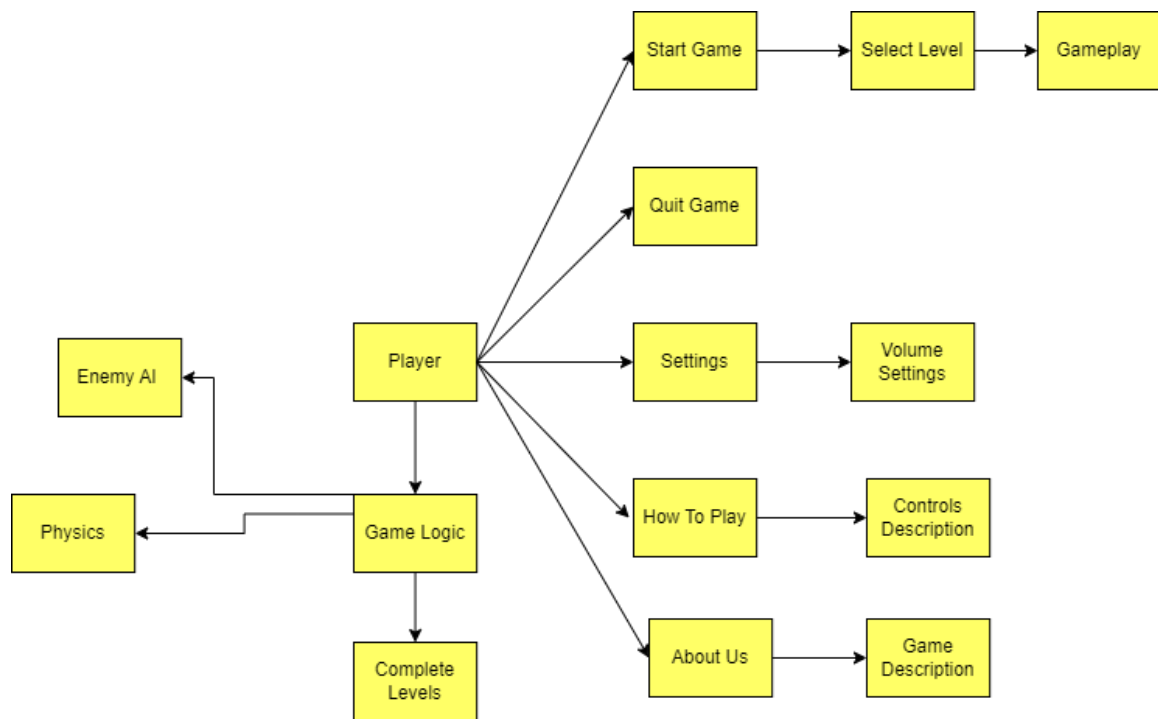
3.3.3 In Game

Figure 19 - In Game Sequence Diagram



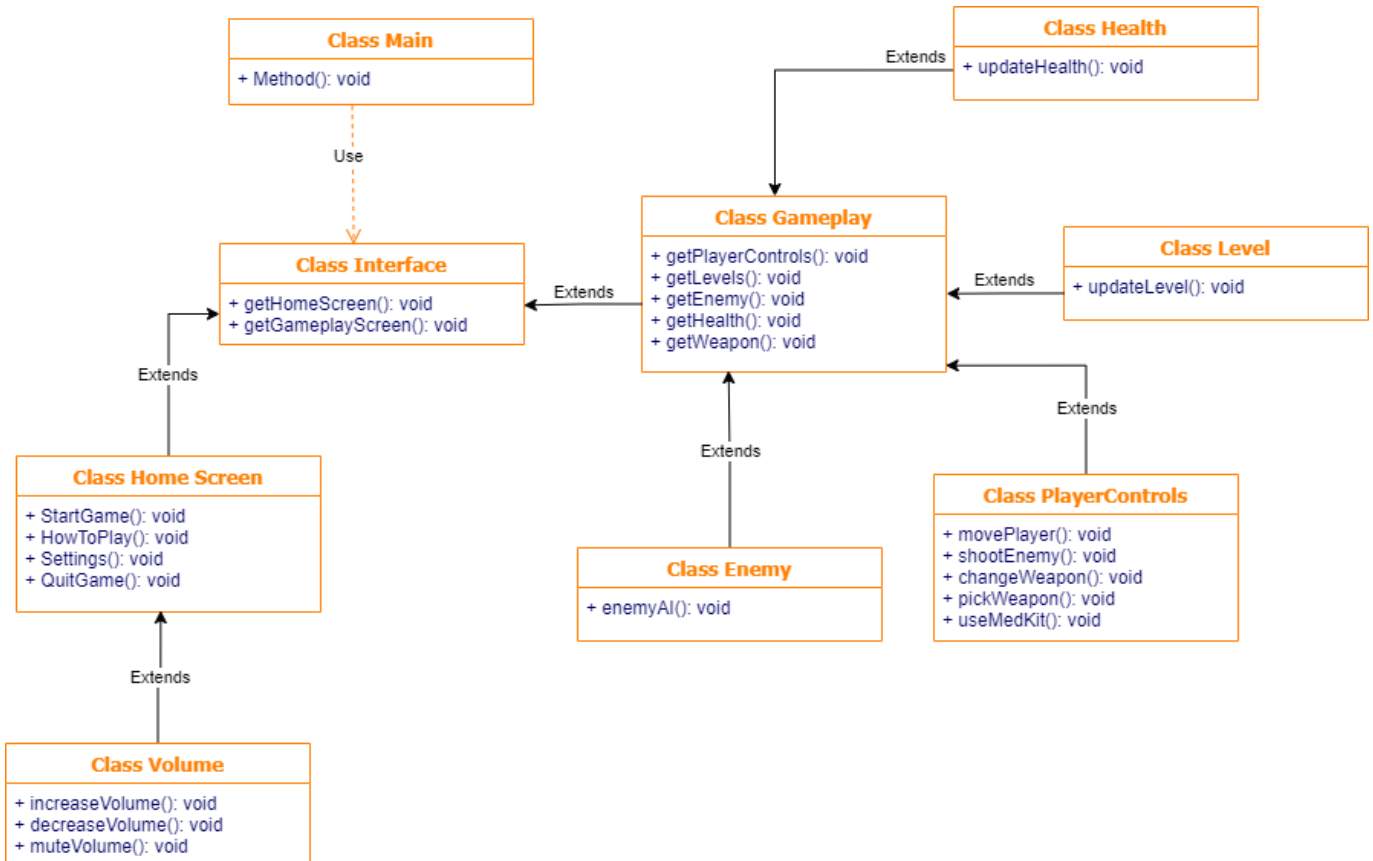
3.4 Software architecture

Figure 20 - Software Architecture Diagram



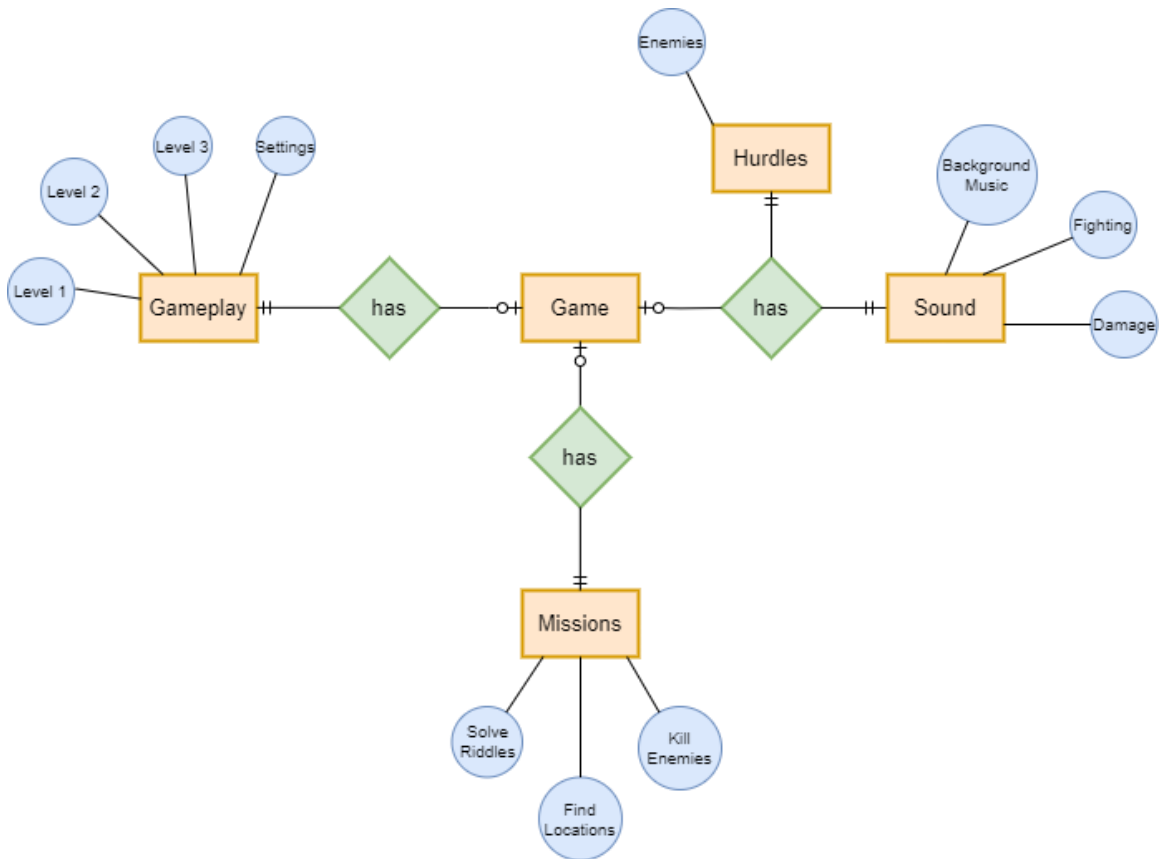
3.5 Class diagram

Figure 21 - Class Diagram



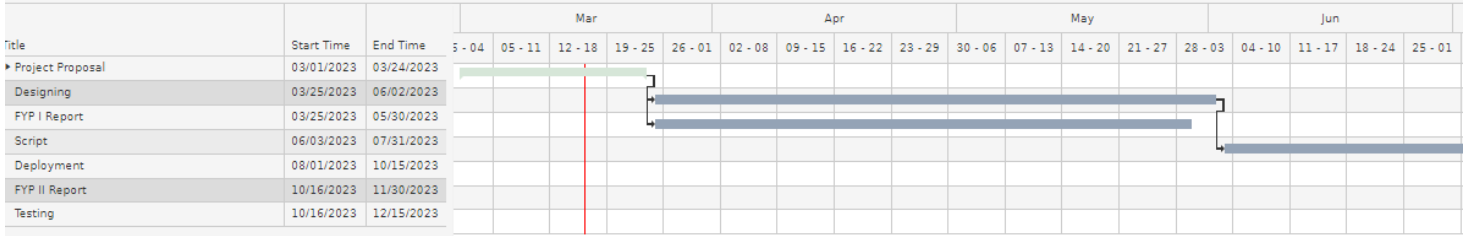
3.6 Database diagram

Figure 22 - Database Diagram



3.7 Network diagram (Gantt chart)

Figure 23 - Gantt Chart I



6

Figure 24 - Gantt Chart II

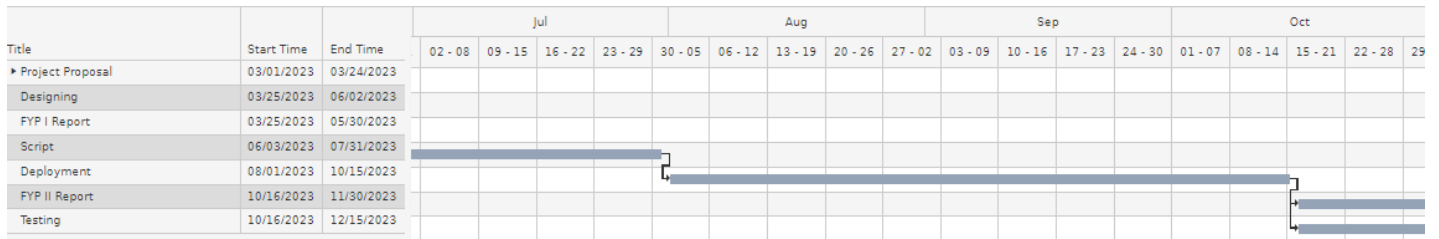
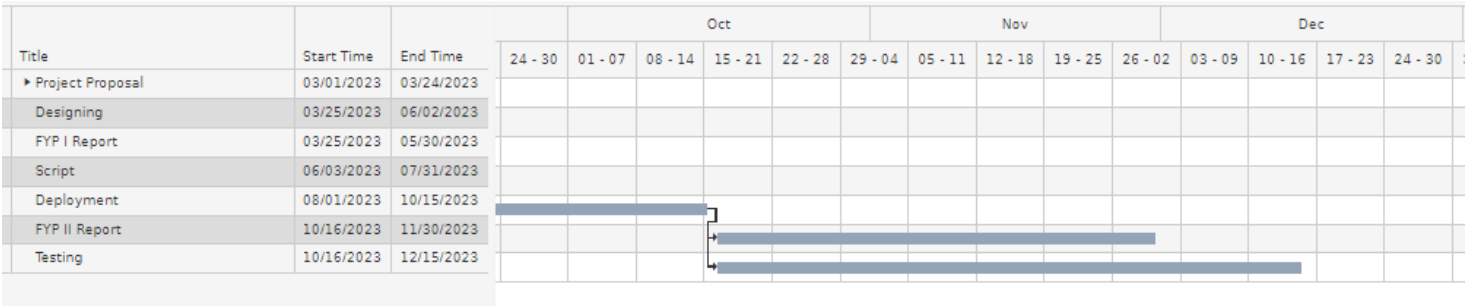


Figure 25 - Gantt Chart III



4 System Testing

4.1 Test Cases

Table 20- Test Cases

Test Case No	Test Case	Steps	Expected Result	Result
01	Open Game		Game does not crash	Success
02	Performance	Launch the game on low end device.	Game should run without any lag.	Success
03	Sound	<ul style="list-style-type: none">• Play the game.• Check if sound is muted or not.	There should be proper sound of music and gameplay.	Success
04	Health	<ul style="list-style-type: none">• Play the game.• Find the enemy.• Take damage from enemy.• Apply med kit.	The health should decrease on taking damage and increase after healing.	Success
05	Shooting enemy	<ul style="list-style-type: none">• Play the game.• Find the enemy.• Kill the enemy with weapon.	Enemy should die and his weapon become available for you to carry.	Success
06	Level Completed	<ul style="list-style-type: none">• Clear the level.	Level will be completed, and player will be asked to <ul style="list-style-type: none">• Move to next level.• Replay the same level.• Move to home screen.	Success
07	Quit Game	<ul style="list-style-type: none">• Press the quit button on home screen.	User will quit the game and will return to mobile home screen interface.	Success

08	Enemy Killed the player	<ul style="list-style-type: none"> User unable to kill enemy. 	<p>Defeat Screen will popup where user will be asked to choose one from:</p> <ul style="list-style-type: none"> Replay the level. Return to home screen. 	Success
09	Time is up	<ul style="list-style-type: none"> User unable to finish the level in time. 	<p>Defeat Screen will popup where user will be asked to choose one from:</p> <ul style="list-style-type: none"> Replay the level. Return to home screen. 	Success
10	Pause the game	<ul style="list-style-type: none"> User paused the game during gameplay. 	<p>Pause screen will appear where user will be asked to choose one from</p> <ul style="list-style-type: none"> Return Home screen. Resume the game. 	Success

5 Conclusion

5.1 Project Summary

Battle of Survival is a game developed for the mobile platform. In this game, the main character will be taken through an adventurous journey. In this game, player's aims and goals include moving around the castle and completing missions as well as fighting enemies at the end of the game he will be able to exit the castle.

The aim of player should be to collect as many items as possible by completing all levels. When the game begins the player has only one weapon at his disposal, but player must scrounge for more weapons to fight foes. The keys are to be earned as the game unfolds and they unlock doors and treasure chests that are scattered throughout the game and their contents may be beneficial to the players. These rewards can be used to buy various weapons from the shop.

It also presents several challenges that can be referred to as levels of the game. Eventually, the level of difficulty increases during the progress of game as there will be more monsters and their power will be enhanced.

5.2 Future Work

If we decide to continue with this project after the degree, here are our ideas about how to do it. The first one is that it should be a multiplayer game. I suppose it certainly should add a lot of fun to the playing of the game. This is always enjoyable rather than to play on your own, it is fun to play with another person. We will maintain records of the player's activity profile. There will be an individual account where the player will be able to track his progress. We will also use the authentication as well.

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Battle of Survival report 2 ver 2

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