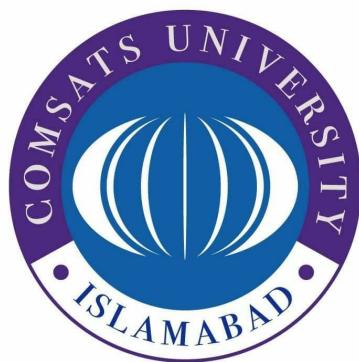


PUNCH BOXING 3D

MUDASIR
FA16-bcs-025



July 2020

Department of Computer Science
COMSATS UNIVERSITY ISLAMABAD
ATTOCK CAMPUS

Submission Form for Final-Year
PROJECT REPORT



PROJECT ID		NUMBER OF MEMBERS	1
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MEMBERS' SIGNATURES	
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Dedication

I dedicate my dissertation work to prophet Muhammad(SAW), Mr.Shahzad Rizwan, my family and many friends. A special feeling of gratitude to my loving parents, whose words of encouragement and push for tenacity ring in my ears. I also dedicate this dissertation to my many friends and church family who have supported me throughout the project.

I will always appreciate all they have done,especially supervisor Mr.Shahzad Rizwan for helping me develop my technology skills.

Acknowledgement

I am thankful to ALLAH ALMIGHTY, Most Gracious, and Most Merciful who enables me to fulfill my project effectively. I have taken efforts in this project. However, it Would not have been even possible without the help of so many individuals. I Would like to Stretch out in our genuine gratitude to every one of them.

I like to thank my Parents, loved ones who kept backing us up in every one occasions, both monetarily and ethically.

I might likewise want to say thanks to Mr. Shehzad Rizwan in his direction and urging me to try sincerely and brilliant. I have discovered him accommodating while at The same time examining the streamlining issues in this paperwork. His basic Remarks on my work have positively made me consider new thoughts and systems In the fields of streamlining and programming recreation

Abstract

The aim of this project is to create a PC based Single player 3rd person game named as Punch Boxing 3D to clarify how the test was dissected, improvement techniques, advancement forms performed for making a working item and gives data on what went good and bad about the venture and the exercises gained from encounters. The PUNCH BOXING 3D is purely a combat fighting Game. The whole Game is developed on Unity engine because unity engine is more simple and understandable for the developer. The game environments(ring and stage) have been created and player design have been taken from the asset store of UNITY 3D and Then used in the game development. The thing which makes our project unique is the voice controls in the game.

All of the development working such as UI Canvas, coding, applying physics etc. have been carried out using unity 3D game development engine. The game is only compatible with PCs having Windows(xp,vista,8,10).

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CHAPTER 1

INTRODUCTION

Chapter 1

Introduction

Irrespective of the economic instability, financial shakiness and fiscal crisis that are affecting the world, one of the inquisitor distributed that the game industry has developed at the pace of 57 percent. While I am typing the documentation of my final year project, millions and billions of people are playing game in front of their computers, play station and Mobiles. The reason of fast increase in the gaming industry is because it appeal and gives relaxation to the user from his daily life busy routine despite his/her age restriction. According to the latest figures, The video gaming industry in 2020 is now larger than both the movies and music industries combined, making it a major industry in entertainment.[1]

1.1 Brief

My project is a Boxing game which based on the theme of martial arts. In the game there are different levels for the user to play and enjoy, Every Level difficulty is different from previous one and every level has its Different AI-enemy. Compared with the previous level AI-enemy, the next level AI-enemy will be difficult. The player must complete the current level before entering the next level. What makes our game different from any other boxing game is that it has voice commands that can help abnormal users. The player has the option to play this game by using simple controls of keyboard as well as voice recognition control which allow more people to show their interest in the game. A player can choose different colour of skins for his character in the game. Our project is a 3rd person 3D fighting game, Both AI enemy and player character will have a life bar which allow player to know about their character health. As our project is a Boxing game so throwing punches and blocking punching are the main objectives for a player. On every punch there will be some damage to the opponent character as well as to the user character. The motivation behind developing a game with voice recognition is to give people some mind refreshment from daily burdening routine and help certain category users.

1.2 Objectives

- Individuals fighting skills and techniques of the martial arts.
- Fighting with different AI-enemy.
- Mental exercise while playing games.

- Improve your thinking techniques and approaches.
- Real world experience and enjoyment at the same time.
- Entertainment and Stress Releasing while playing.

1.3 Game Scope

Our project Game Scope include the following

- Development and Designing for a PC game.
- Game has voice commands to play.
- 5 Different levels.

1.4 Relevance to course Modules

As you know we study and learn many different subjects and languages in our 4 year of bachelor computer sciences (BCS) degree and the primary reason of learning those subjects is to developed a self made system at the end of the degree. That system can be Android platform, Web platform, database or a Is a game system (project). Therefore, every college ensures that students get the standard Training quality. Our boxing project is a game development project, All the coding and scripting is in C-sharp Language, In our 5th semester we studied Virtual programming (VP) in C-sharp language so as a Student and as a developer I am already aware of the language which i had used in my FYP. Same goes For the Software engineering (SE-1) which we already studied in our Earliest semesters, which will help us in the creation of uses case diagrams,activities diagrams ,data flows diagrams etc. As for the documentation perspective, our research institute ensures that every student must learn the writing skills, comprehension skills and communication skills of the report before entering the "Final Year Project", so we now know how to make official documents and how to write them file.

1.5 Project Background

As we know that now a day gaming industry is much more common in the present world. Thats Why there are many kind of games which are built on daily life field, such as vehicle games, Shooting games,sports game ,Surviving game and puzzles/cards games. Our project Punch Boxing 3D is also base on the boxing and martial arts. But the thing which makes our Project different from other ordinary fighting game is that, it uses both ordinary controllers as well As the voice recognition systems in game which will helps user a better experience and also as a developer we are introducing new concept to the gaming industry. So that many people can play and entertained by it. A User who is born with a disability having one hand or may be a User who is Currently having an issue with the hand for example a player have one broken arm is also currently Disable, so our project main targeted user are these people to help them in there difficult time.

1.6 Problem Statement

Now a day, there are many different types of fighting games available for the user to play and All these fighting games follows the same techniques with a little bit of difference in the designing and coding department.Modern fighting game are so complex and their Difficulty level are so hard that the normal user cannot even compete. These Modern game are not possible to play with one hand even for regular players, Thats why for a player with One hand is all most impossible to handle the pressure. So to handle these kinds of conditions where a player might be or may not be a disable one but still as a developer we must fulfilled user basic requirement so that they can experience and enjoy games. Voice recognition allow these user to play and compete with different AI enemies present in the game. I will make sure that our project fulfilled the requirement of the boxing games without violating rules and regulation of the boxing game. This leads to designing and implementation of an efficient system.

1.7 Artificial Intelligence

In our project there will be different stages in the game and in every stage the difficulty level of the AI enemy will also be change. When the game start the AI-enemy will be look towards the player and come closer towards the player to overcome the distance. Also the AI-enemy will randomly decide when to defence and when to attack.The selection of punches from the AI-enemy will be randomly so the player cannot predict the next move of the AI-enemy which makes its more fun to play and enjoy. As the player progress increases in the game the difficulty level also increased with the same pace . As in the Level-1 stage AI opponent speed and punches well be Slow and Thats why they can easily avoided, As the player clear one level and move to the next level, Now AI opponent level also increases which means his punches and blocking speed will also be increased.Different AI opponent in the game means more fun and more entertainment, which allow user to play with more skilled opponent which helps user to trained and show their individual skills and technique.

CHAPTER 2

LITERATURE REVIEW

Chapter 2

LITERATURE REVIEW

A literature review paper is a type of academic paper, in which it includes the followings like information of fundamental findings, also include working, mechanism and theoretical contribution to a relevant topic. Fighting games are the most played game industry in the world due to individual players skills and techniques to the martial arts. These Martial arts based games are taking more and more appreciations and popularity from the gamers. Fighting games like street fighters and tekvens series are some of those fighting games due to which fighting gaming industry are know for it. Fighting games provides an interaction of player with real life like gaming experience as well as other skills like defending his/her self in different kind of emergency situations without panicking and depending on others. Training humans for the real world emergency situation is dangerous through but its up to the user how to interpret it. Boxing is a kind of exercise which is very helpful to human health because its strengthen and train human reflexes.[2]

By determining all the needs and researching needs we came through Unity 3D a free and easiest way to develop real life martial arts based games. Fighting is something which a user cannot do it without any solid reason and even if we have the reasons still it is not consider as a good behavior, So these games allow user to do those things and experience those things which a user is unable to do it in real life.

2.1 Existing System

There are several types of 3rd Person Boxing games that are extremely played all over the world like Real Boxing PC, Victorious Boxer, creedrise of glory etc. Like these fighting games we will try to make games which should compete with them in every aspect.

2.2 Proposed System

In this project, I will develop a 3rd person fighting Boxing game for PC, this Boxing game will purely based on the concept of martial arts in which boxing is the part of it, which allow user to learn and experience such emergency situations and how to handle them in the game As well as in the real life. AI opponent in game which act as a real world person and gives a user a very promoting combat experience for learning and practicing purpose. Voice controls in our game make our project more unique from any other fighting game projects. Due to this voice recognition in the game, it will make it more interesting to the general users.

2.3 Competitors

The rapid changes in modern world technology have also changed the tools and platforms that can create these games. The company organizes itself according to modern requirements and how to develop these games for users of modern society. Proceeding and building up a similar sort of game isn't successful and it won't serve us later on. So to compete with them we also have to make our project more refine and more interesting to the public in every field of the game And We need to do something unique and effective which helps us to bring innovation in the field of gaming.

2.3.1 Real Boxing PC

It is also a 3rd person boxing type of game in which player has to compete with other AI opponents. It is an interesting game completely base on boxing rules. A player has to defeat the opponent AI player in the limited time period. This game also improve individual skills and techniques to defend his/her self in emergency time And also completely based on martial arts.

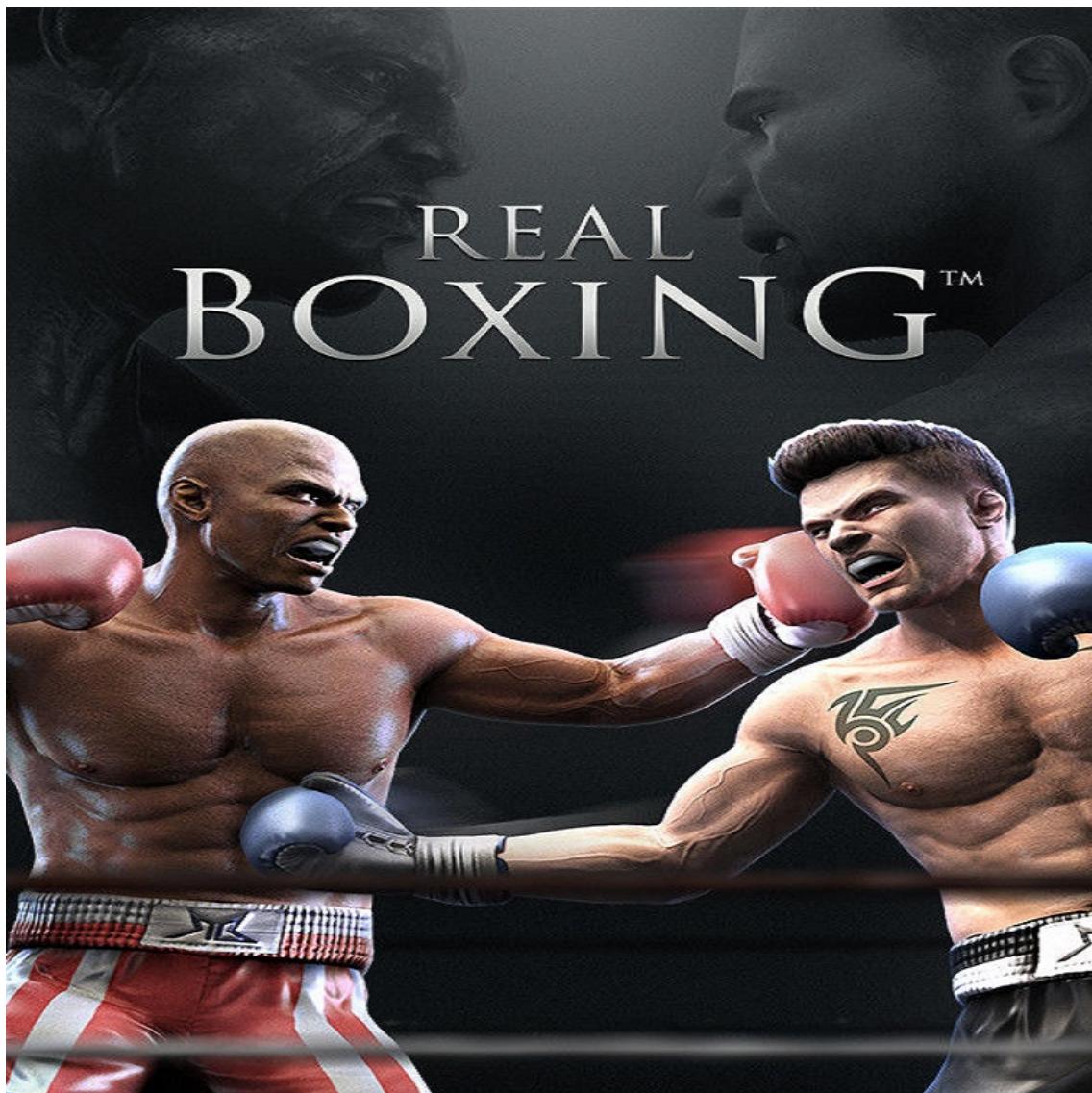


Figure 2.1: Real Boxer PC

2.3.2 Victorious Boxer

It is also a 3rd person boxing game in which player has to fight with other AI player . The player has to defeat the opponent AI player. AI-enemy will attack and through punches to the player randomly and if possible to block them at the time the player has to makes its move. Main object is to decrease it health before you.[3]

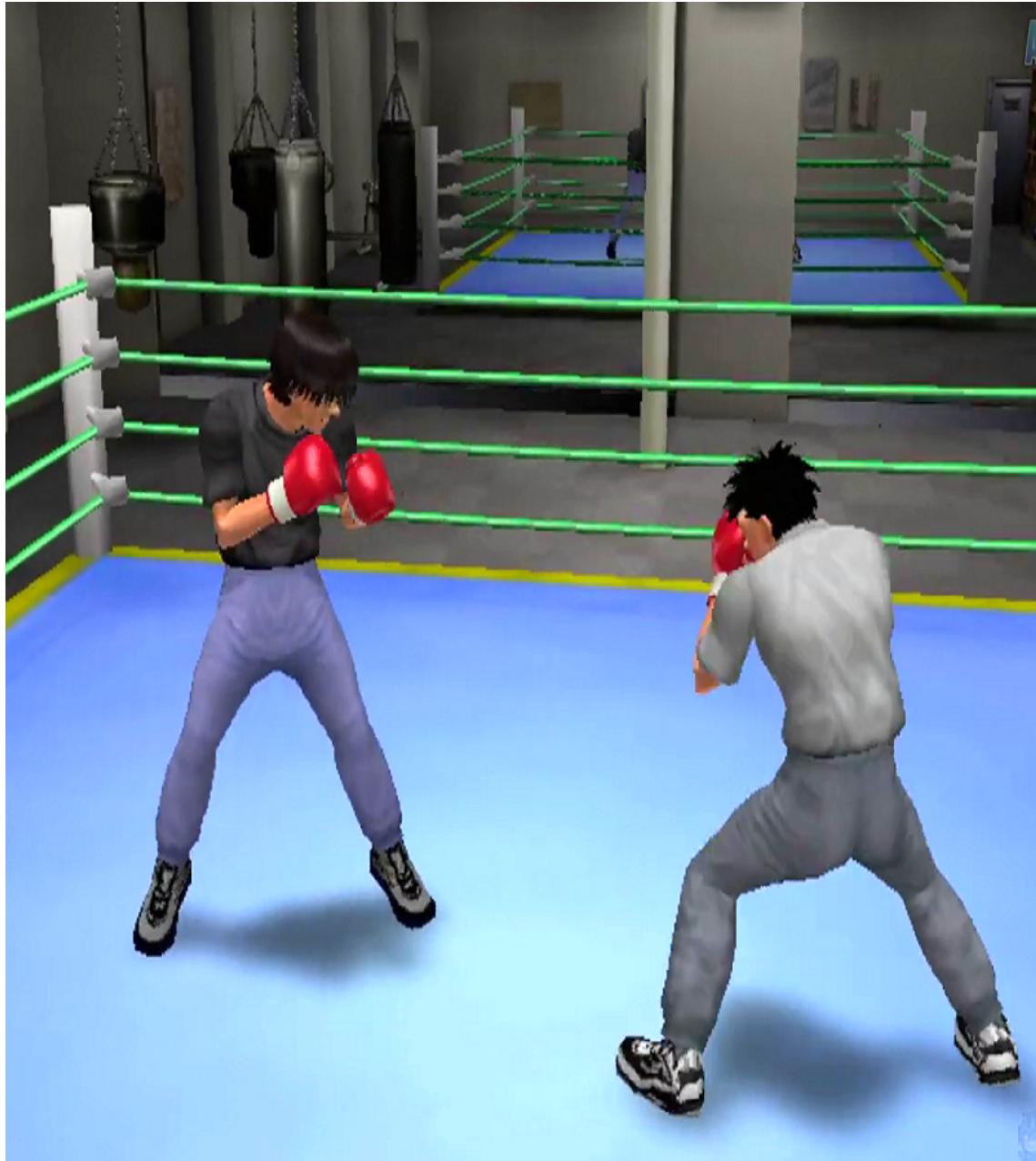


Figure 2.2: Victorious Boxer

2.4 Comparison with Existing Games

Description

On the basis of features, Punch Boxing 3D will give you two ways to play and enjoy this game anywhere any time. There is no such Boxing game available at the moment, which will give you two ways of key control sources to play this game. In this game all

the key features are present which are mandatory for any Boxing game. Due to the addition of Voice controls in the project, the game feels more challenging and which will give more entertainment to the users.

Table 2.1: Comparison with Existing games

Features	Real Boxing	Victorious boxer	Punch Boxing 3D
Skills and Techniques	Yes	Yes	Yes
Age Limit	8 years	No	No
Voice Commands	No	No	Yes
Character Skins	Yes	Yes	Yes
Time	Limited	Limited	Unlimited
Visualization	3D	3D	3D
Score	No	No	Yes

2.5 Comparison

- 5 Different AI enemies are enabled in our game.
- Voice recognition is enable in our game.
- Different colour of skins are available for the player.
- Both attacking and defending strategy are included .
- Individual level Score will be calculated in our game.

CHAPTER 3

REQUIREMENT SPECIFICATION

Chapter 3

REQUIREMENT SPECIFICATION

The game module will provide player with fighting experience with they play this game, As a Human being its our nature that we learn by seeing and meeting others, so it is a good way to introduced martial arts to the user. AI opponent in the game act as a real person or may be consider as a real life character which gives full real world experience to the player how to approach towards the certain situations or to handle such situations.

3.1 Functional Requirements

The functional requirements of the system can be related to the hardware and software related to certain functions, which can define the functions of a specific system. Basically, there is a functional requirement in the form of a professional document that explains the desired output when the system is deployed in a particular environment.

3.1.1 FR01 Proper Menu

Table 3.1: Proper Menu

FR NO	FR01
FR Name	PROPER MENU
Summary	1)-There is a proper dynamic menu to select levels by simply clicking on them, then the game will automatically starts. 2)-The player can also controlled the graphics of the game. 3)-Player can also select either he/she wants to play only with keyboard controllers or he may want to play with Voice recognition, Player only have to do is click on Voice on/off button. 4)-User have to select the Skin by clicking on Option then select skin 1 or 2.

3.1.2 FR02 Default Keys

Table 3.2: Default Keys

FR NO	FR02
FR Name	Default keys
Summary	<p>1)-The game characters must be controlled with default keys defined by the developer of the game.</p> <p>2)-Player will use keyboard buttons like W,S,A,D to move the character , Also for direction player have to use mouse.</p> <p>3)-There is also option to play the game with the help of Voice recognition system.</p> <p>4)-Default keys for Voice Controls one cross, Two jab, Three uppercutleft, Four uppercutright, Five Defense.</p>

3.1.3 FR03 Game Device

Table 3.3: Game Device

FR NO	FR03
FR Name	Game Device
Summary	1)-The Device must be able to handle and play 3D objects without any lag and delay.

3.1.4 FR04 Score

Table 3.4: Score

FR NO	FR04
FR Name	Score
Summary	<p>1)-AI-enemy must be hit by the punches to gain scores.</p> <p>2)-Player will get points when they hit the opponent.</p>

3.1.5 FR04 Health Limitations

Table 3.5: Health Limitations

FR NO	FR05
FR Name	Health Limitations
Summary	1)- Player health must be limited and AI-enemy must hit the player character to reduced the health. 2)-Same for the Player. 3)-On every hit, The health of the enemy will decrease from 100 percent to 10 percent. 4)-When the health reach 0 percent the character will be knockout.

3.2 Non-Functional Requirements

Non-functional requirements essentially describe the properties of the system, which describe how the system works and performs, behave on basis of limited functional restrictions. Restrictions for various functions are also defined. For example Response time of the system and system validations.

3.2.1 NFR01 User Interface

Table 3.6: Health Limitations

NFR NO	NFR 01
NFR Name	User Interface
Summary	1)-User Interface must be clean and compatible with device. 2)-UI must be controlled by the Input device (mouse). 3)-UI must be simple and user friendly.

3.2.2 NFR02 Performance

Table 3.7: Performance

NFR NO	NFR02
NFR Name	Performance
Summary	<p>1)-The primary performance requirement of the game is the accuracy of the game play and speed.</p> <p>2)-The game must play smoothly with both keyboard and voice commands without any type of interception.</p> <p>3)- The microphone should of a high quality in-terms of catching the voice.</p>

3.2.3 NFR03 Safety of Users health

Table 3.8: Safety of Users health

NFR NO	NFR03
NFR Name	Safety of Users health
Summary	1)-Its must not cause any kind of harm to the player health(mental and eyes)

3.2.4 NFR04 Launching and Response Time

Table 3.9: Launching and Response Time

NFR NO	NFR04
NFR Name	Launching and Response Time
Summary	<p>1)- Launching and response time of the game must be too much.</p> <p>2)-The game should launch as soon as possible after player click on the start button.</p>

3.2.5 NFR05 Quality Graphics

Table 3.10: Quality Graphics

NFR NO	NFR05
NFR Name	Quality Graphics
Summary	<p>1)- The game must have 3D graphics.</p> <p>2)-The game must have Option for low and high graphics quality.</p>

3.2.6 NFR06 Audio

Table 3.11: Audio

NFR NO	NFR06
NFR Name	Audio
Summary	1)-The game must have the background music and sound effect according to the situation.

3.3 Use Case Diagrams

A use case diagram is a graphic depiction of the interactions among the elements of a system. A use case is a methodology used in system analysis to identify, clarify and organize system requirements.

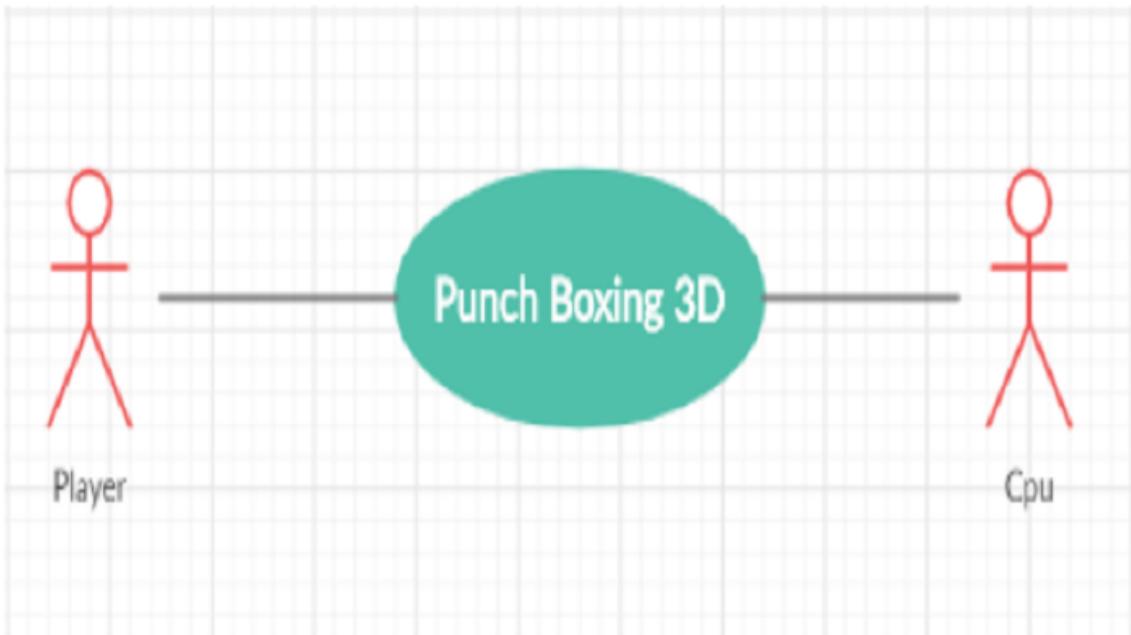


Figure 3.1: Use case Level 0

Description

Sequence of interaction between Player and the system as well as notable interactions b/w user and player.

(AI) are mentioned in the below diagram for our game Punch Boxing 3D Voice Recognition system.

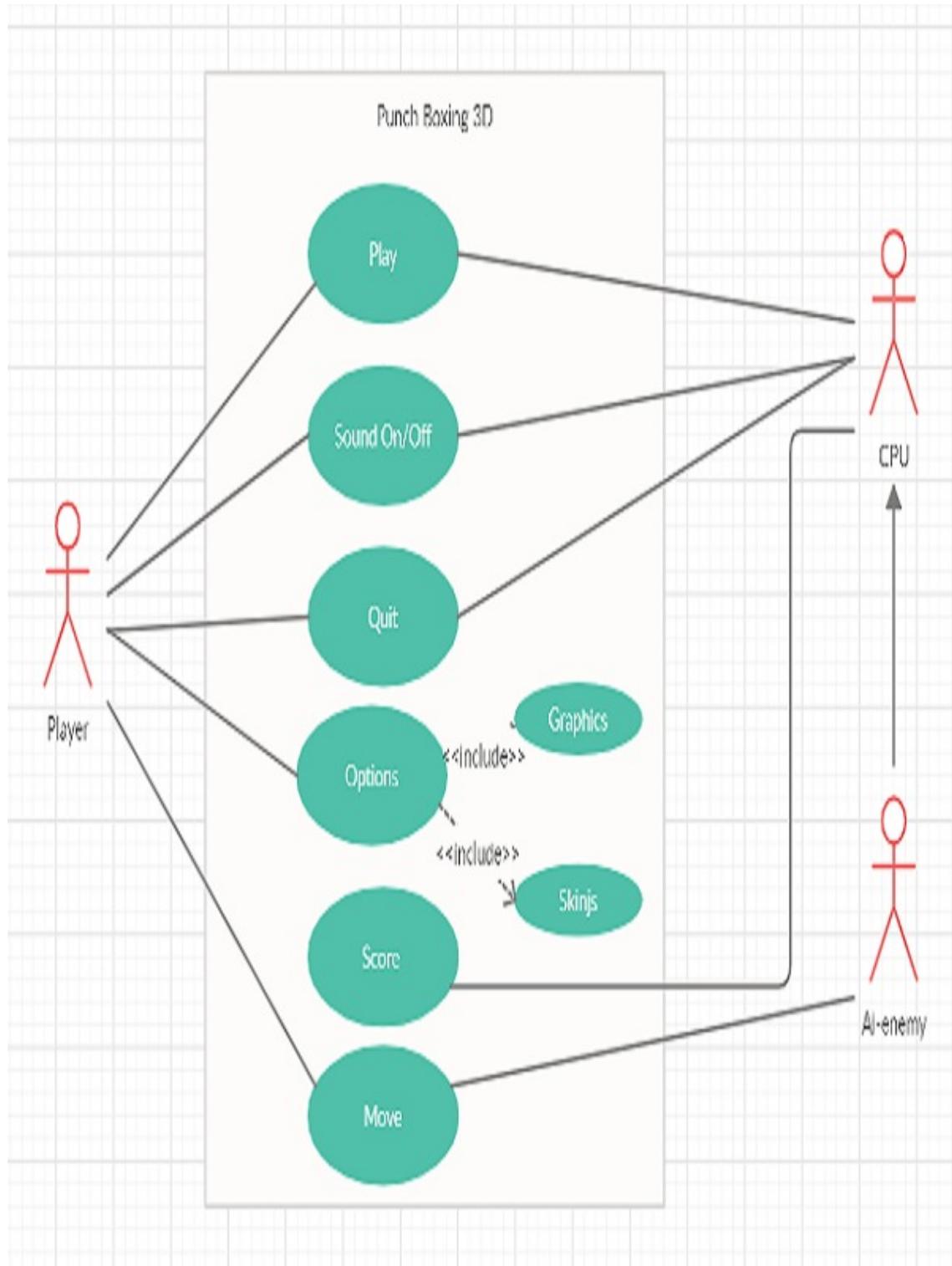


Figure 3.2: Use case Level 1

Table 3.12: Use Case Level 1

Actors	Player,CPU,AI-enemy
Purpose	<p>1)-For player to play and select different Options.</p> <p>2)-For player to move randomly in the ring to hit or avoid the AI-enemy attacks.</p>

3.3.1 Use Case Play

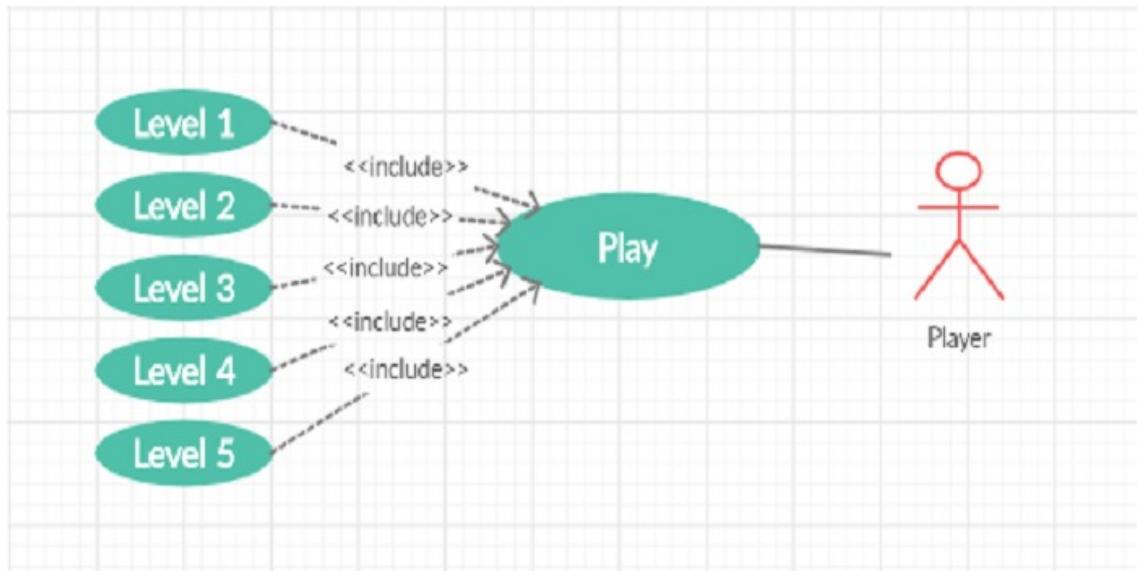


Figure 3.3: Use Case Play Level 2

Table 3.13: Use Case Level 2

Actors	Player
Purpose	1)-For player to click on play then select Different levels.

3.3.2 Use Case Movement

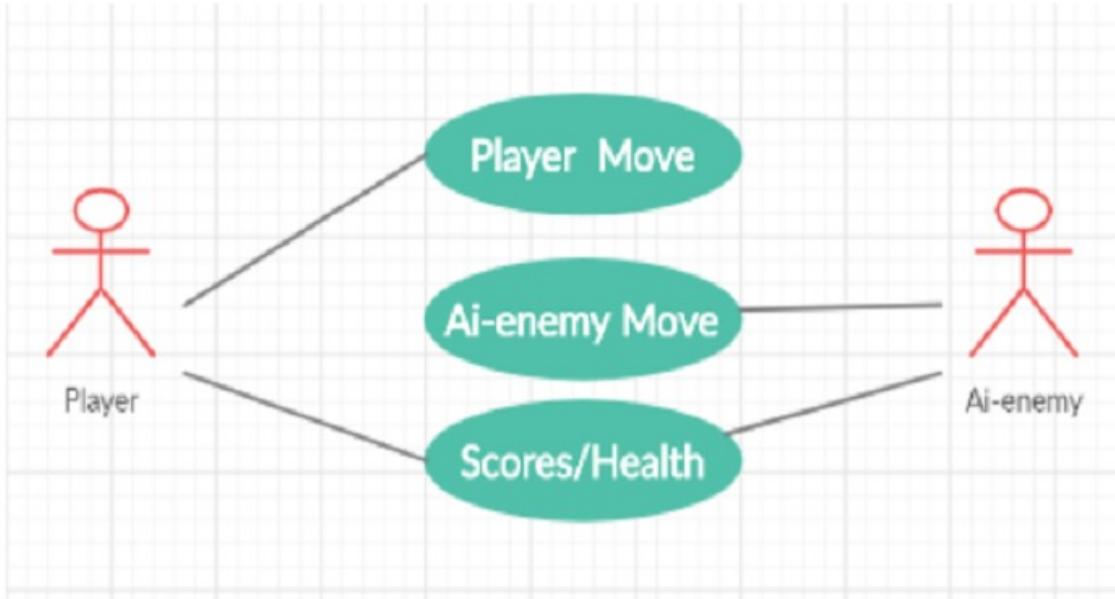


Figure 3.4: Use Case Movement

Table 3.14: Use Case Movement

Actors	Player, AI-enemy
Purpose	1)-Player freely move in the ring and AI-enemy directly follow the location of the player. 2)-When the AI-enemy come close to certain distance then it will start hitting punches.

CHAPTER 4

PROJECT DESIGN

Chapter 4

PROJECT DESIGN

Project design chapter consists of Methodology used to develop a game, Tools, Programming language, Game Architecture.

4.1 Methodology

Different types of software development methods (such as SCRUM, Agile, XP, etc.) should be used to create the best software products. Everyone has its own advantages and disadvantages. The software approach is only a means of reducing project risk. However, I used iterative development software that was most suitable for my project.

4.1.1 Software Development Model

The spiral model is the system development life cycle (SDLC). It is used for risk management and combines elements of the iterative development process model with the waterfall model. The spiral model is used by software developers and is the first choice for large, expensive and complex projects.[4]

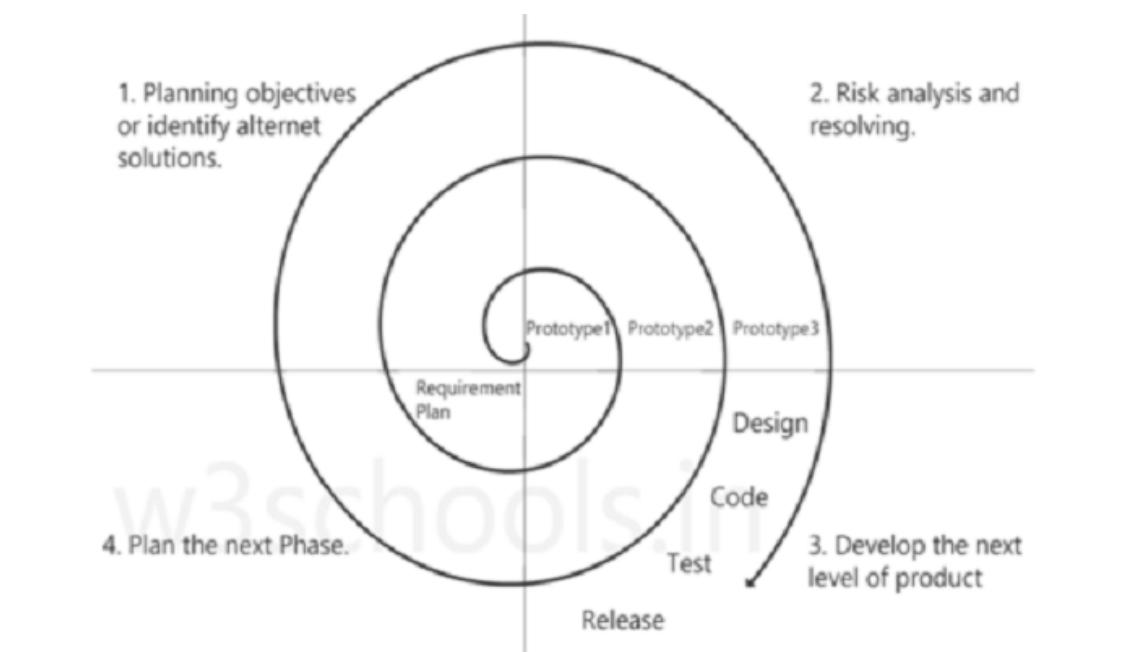


Figure 4.1: Software Development Model

4.2 Development Tools

- Unity 3D.
- Visual Studio.

4.3 Programming Languages

- C-sharp Scripting.

4.4 Architecture Overview

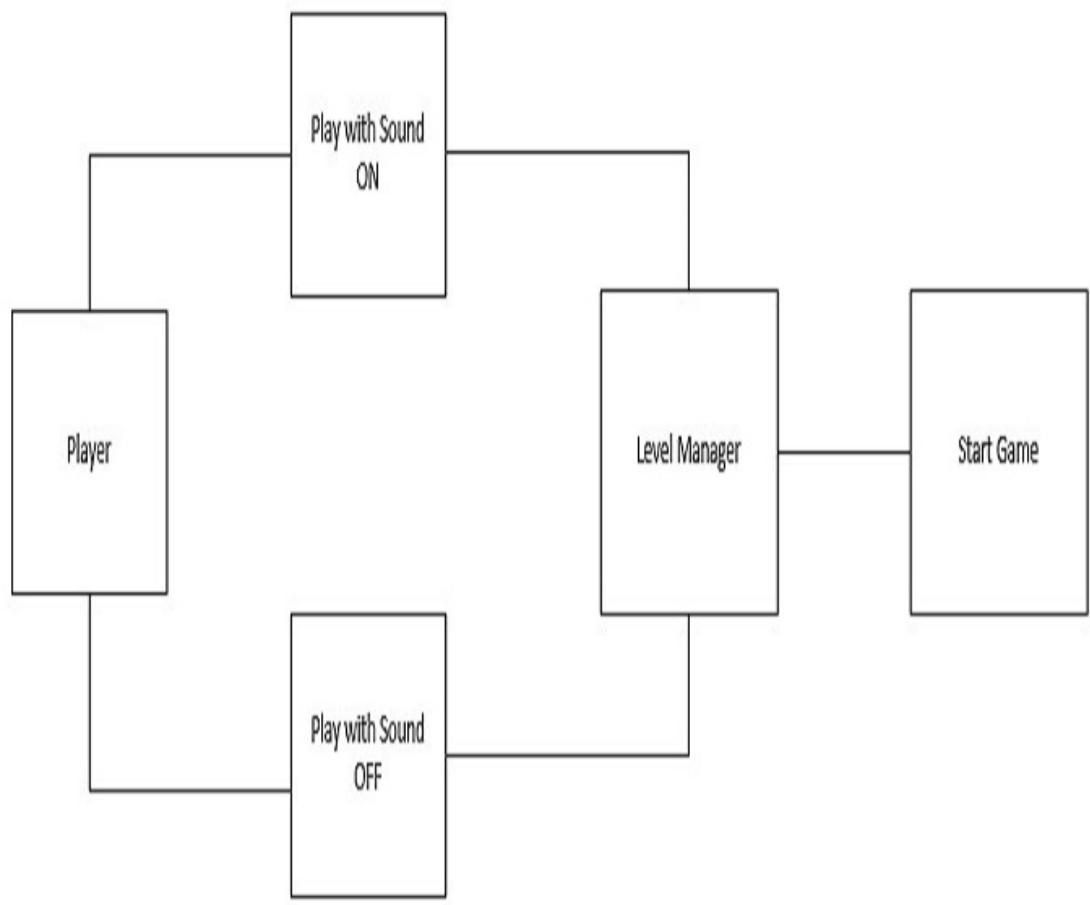


Figure 4.2: Architecture Overview

4.5 System Environment

Gamer can interact with the system by giving inputs to the system. Then system gives those inputs to script. If any changes occur this object send to renders to display the thing(character).

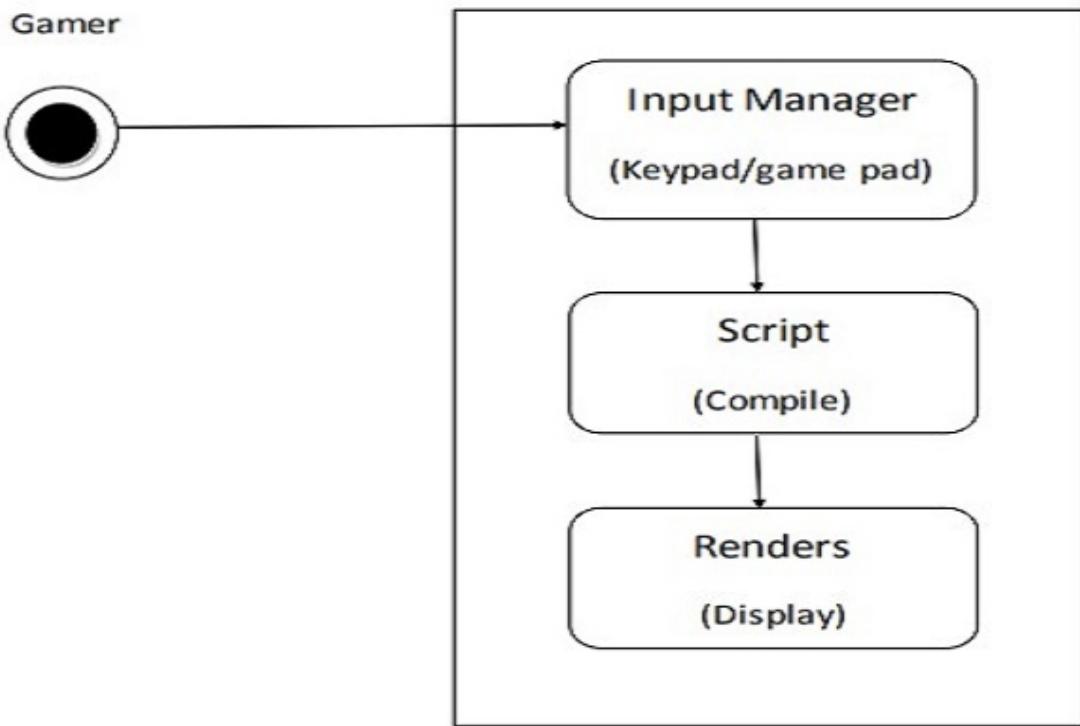


Figure 4.3: System Environment

4.6 Design Description

For the improvement in development of the project, we need to model every functionality of system in Various ways it is necessary to understand how the system is working. We are documenting/reporting the necessary modules that are mandatory to understand.

4.6.1 Data Flow Diagram

Level : 0 Description

The Player has to click on the starting icon of the game and after that game engine will start loading the main menu of the game. Player go the options and change the graphics setting to Low, Game engine changes those setting selected by the player. After clicking on Play button Level panel will be open and after selecting level 1 the game will start by the gaming engine, The player has to hit the AI-enemy to get points and game engine will calculate and add those point and will be displaying during the game at middle top.

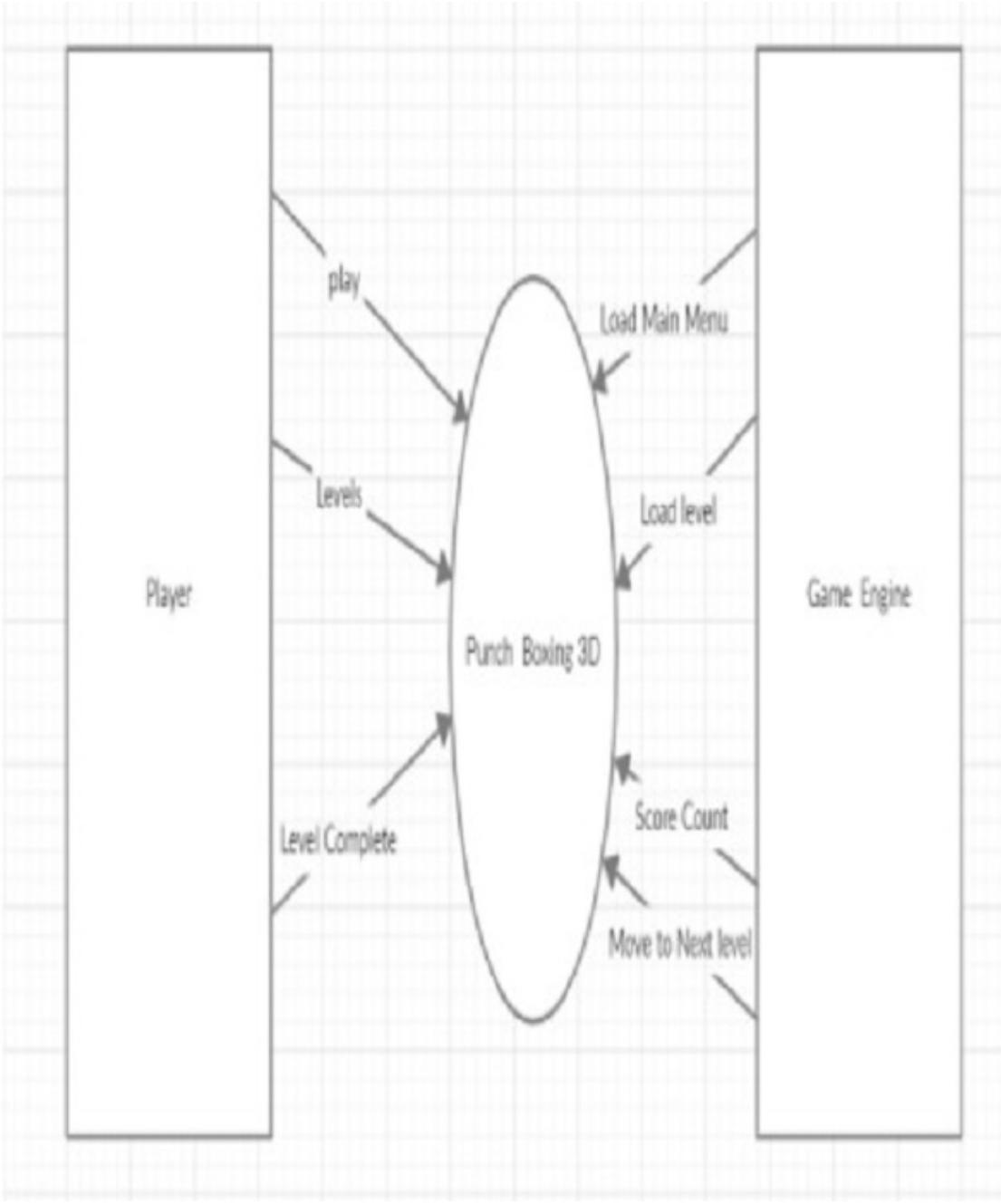


Figure 4.4: DFD Level 0

Level : 1 Description

In the Demonstration of the DFD Level 1 diagram explains the flow of data in-between the system and the user performing different task. Player start the game and goes to the main panel form there he click on play and select level and the player character will be spawn in the ring, At the same time AI-enemy spawn as well and both the character start hitting each other to gets points. If any of the player want to play with voice he and she has to click on sound on/off before starting the game.

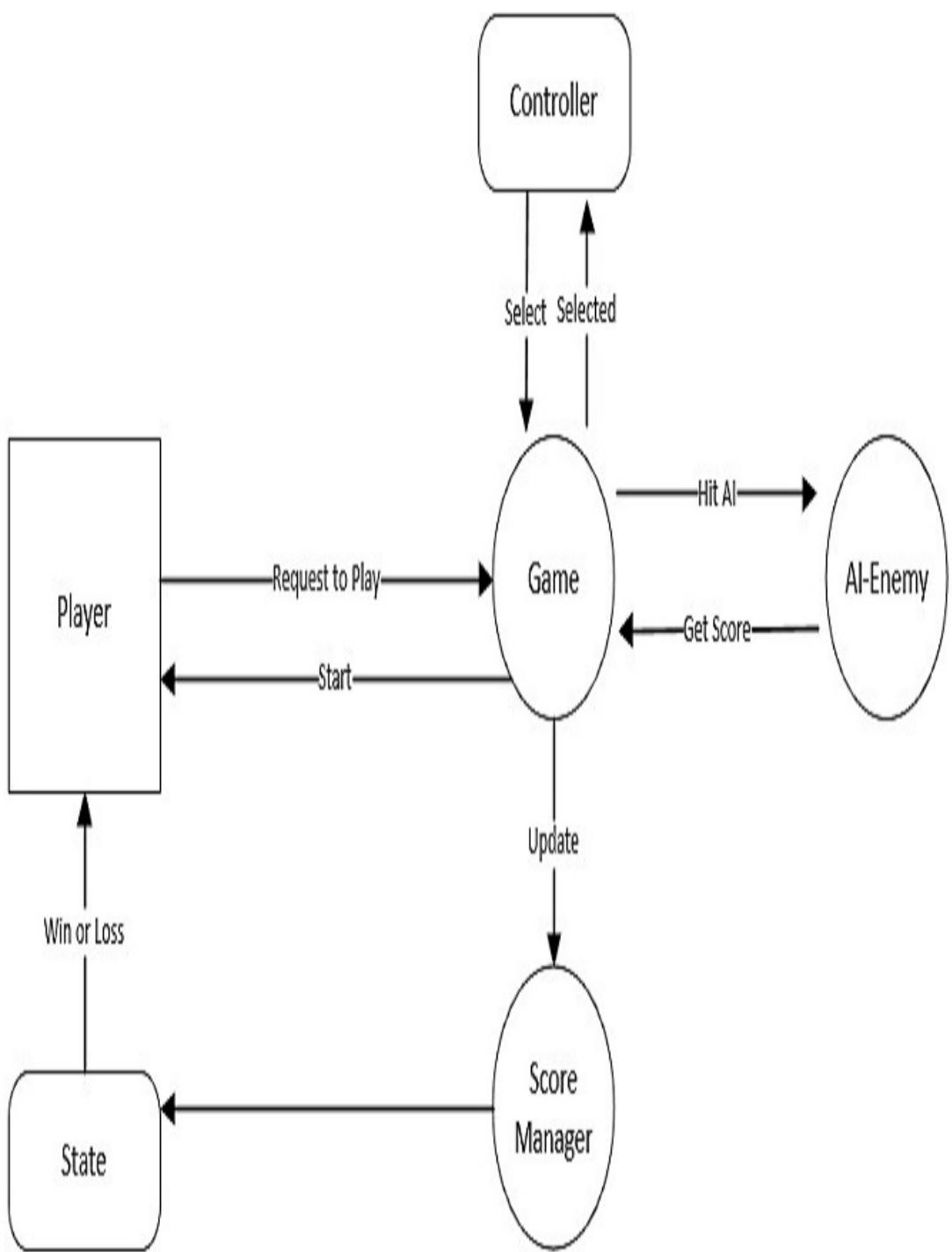


Figure 4.5: DFD Level 1

4.7 Activity Diagram

Activity diagram is depicting the dynamic component of the framework. Activity diagram is essentially a flowchart to speak to the spill out of one action to another action. The movement can be relating as an operation of framework. Activity Diagram is a UML diagram use to explain dynamic aspects of the system. It is more like a flow chart because it shows the flow of data from one activity to other.

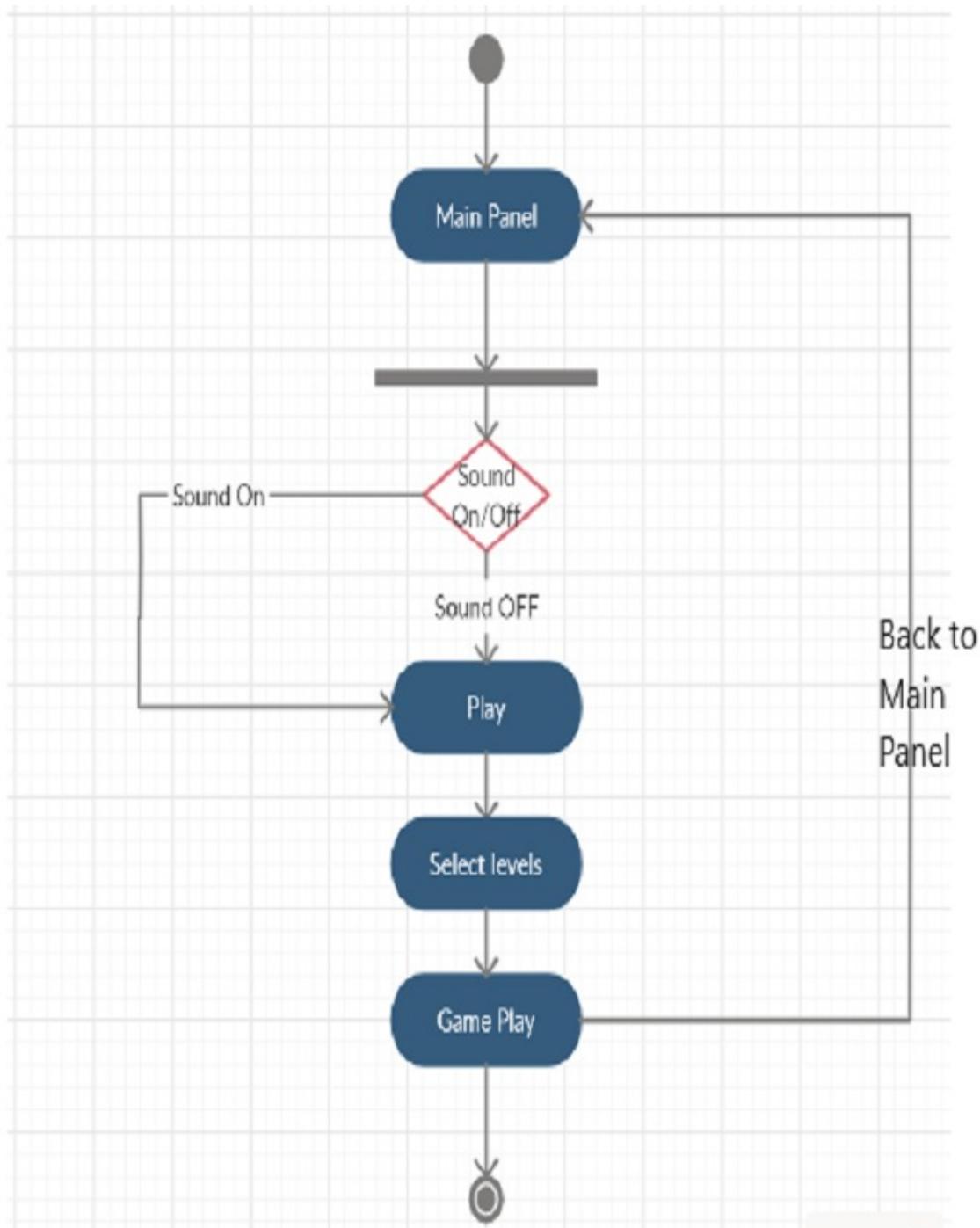


Figure 4.6: Activity Diagram

4.8 Sequence Diagram

A sequence diagram is an interaction diagram that shows how objects operate with one another and in what order. It is a construct of message sequence chart. A sequence diagram shows object interactions arranged in time sequence.

Player start playing the game by simply loading It by the gaming engine,after loading the main menu pop up Where the user can select different AI-Levels.Afterward user interact with the game AI-player.

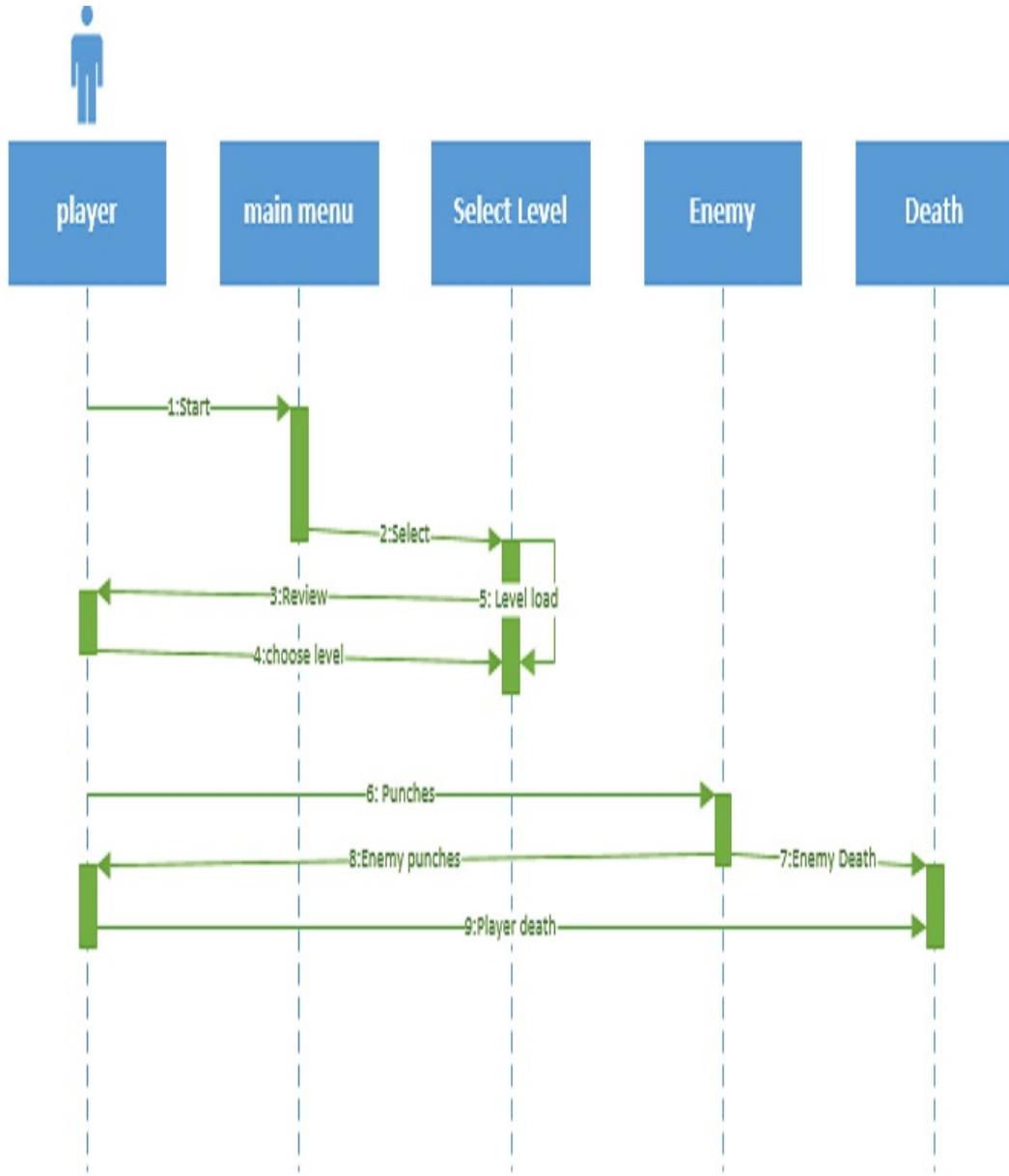


Figure 4.7: Sequence Diagram

CHAPTER 5

IMPLEMENTATION

Chapter 5

IMPLEMENTATION

5.1 Development Stages

The Following are the incremental phases of developing a full game.

5.1.1 Game Theme

Each game is based on some kind of story or tragedy that happened in the past, or you can say that certain types of games are based on an adventurous environments. My project is based on self-defense and an understanding of martial arts. Which means making users aware of how to protect themselves in such emergency situations. Basically the purpose of this game is to promote martial arts through the game as well as to target those avoidance which are un-able to play games.

5.1.2 Designing Stage

- In our game, the first thing is the ring. There are different types of rings, some of which can be downloaded for free from the asset store, while others cannot. The ring we use in the game is a paid set.
- Player animation was available for free and we downloaded them from the unity asset store.
- Texture for Boxing player gloves were designed using illustrator and photoshop.
- We used unity 3D Engine to make some changes in the Ring as well as in the arena.

5.2 Game Engine

The game engine which we used for our project is unity.

5.2.1 Unity

The best and free game development engine is Unity3d. Unity is a user-friendly platform because everything is integrated compared to other game engines. Developers can easily design 2D and 3D games for mobile phones, tablets and PCs.[5]

Why we used unity?

Here are the reasons, why we did used unity for our game.

- Best plate-form to build single and multiplayer games.
- Totally Free of cost.
- Easy to use, Unity provides hundreds of tutorials to learn Unity.
- It has been 10 years for unity, so we get a lot of help from the Internet.
- The best graphics optimization platform.
- Platform with low-level rendering access.

5.3 IDEs

5.3.1 Visual Studio

It is an open source integrated development environment for many operating system. Visual Studio develop, supports C-sharp and .Net frameworks. On the basis of features, Visual Studio consists both Debug and NetBeans features. It supports many programming languages like c-sharp, Java, python, etc.[6]

5.4 Programming Language

Unity3D is only compatible with C-sharp and JAVA script. We used C-sharp scripts to achieve all the functionality of the game.

Both C-sharp and Java-script can be written in mono developer tool or Visual studios .

5.5 User Interface

The user can interact with the system or machine through the user interface, or it can be said that this is a dialogue or human-computer interaction. User interface consists of images and buttons with different functions and properties.

5.5.1 Main Menu

Description

Main menu is shown in the figure in which our player can be seen in the right side of screen whereas the buttons on the left side of the screen. Task can be perform when the user click on them and OnClick event will be called.



Figure 5.1: Main Menu

5.5.2 Level Panel

Description

There are 5 levels in the game with 5 different AI-enemies. Each level has its own AI-enemy player. When the player goes to the main menu and click on the play Button, Levels Panel will be open and player has to clear previous level before going to the next or otherwise the next level button option will not be enable.

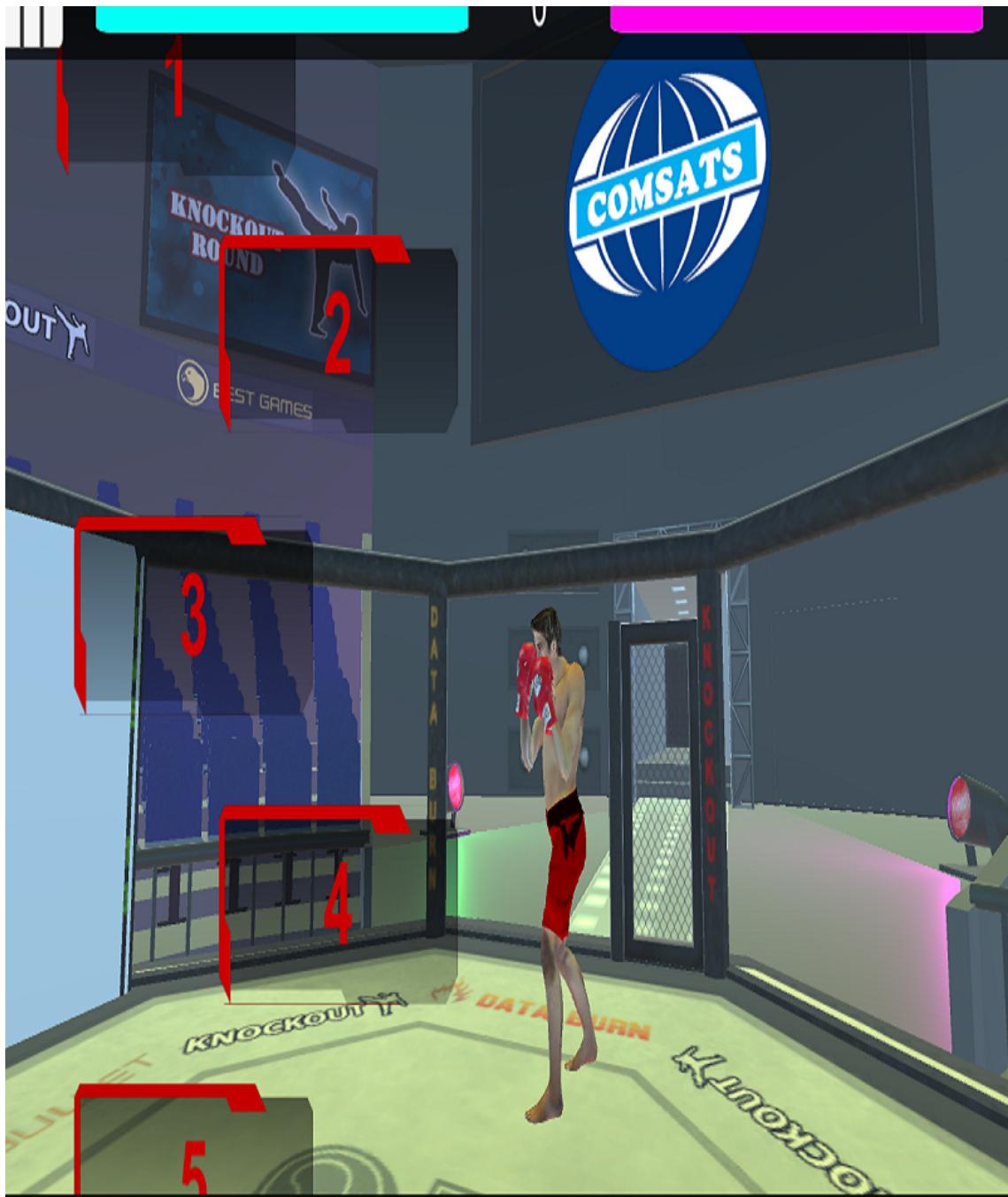


Figure 5.2: Level Panel

5.5.3 Game Play Level 1

Description

When the player goes to the Levels panel and click on 1, The game will be started as shown in the figure.



Figure 5.3: Game Play Level 1

5.5.4 Game Pause

Description

When the player press ESC button or click on the Top right button then Pause panel or menu will be open. Pause Menu is basically a lobby panel that appears while playing the game. Pause menu perform the following tasks shown in the figure.

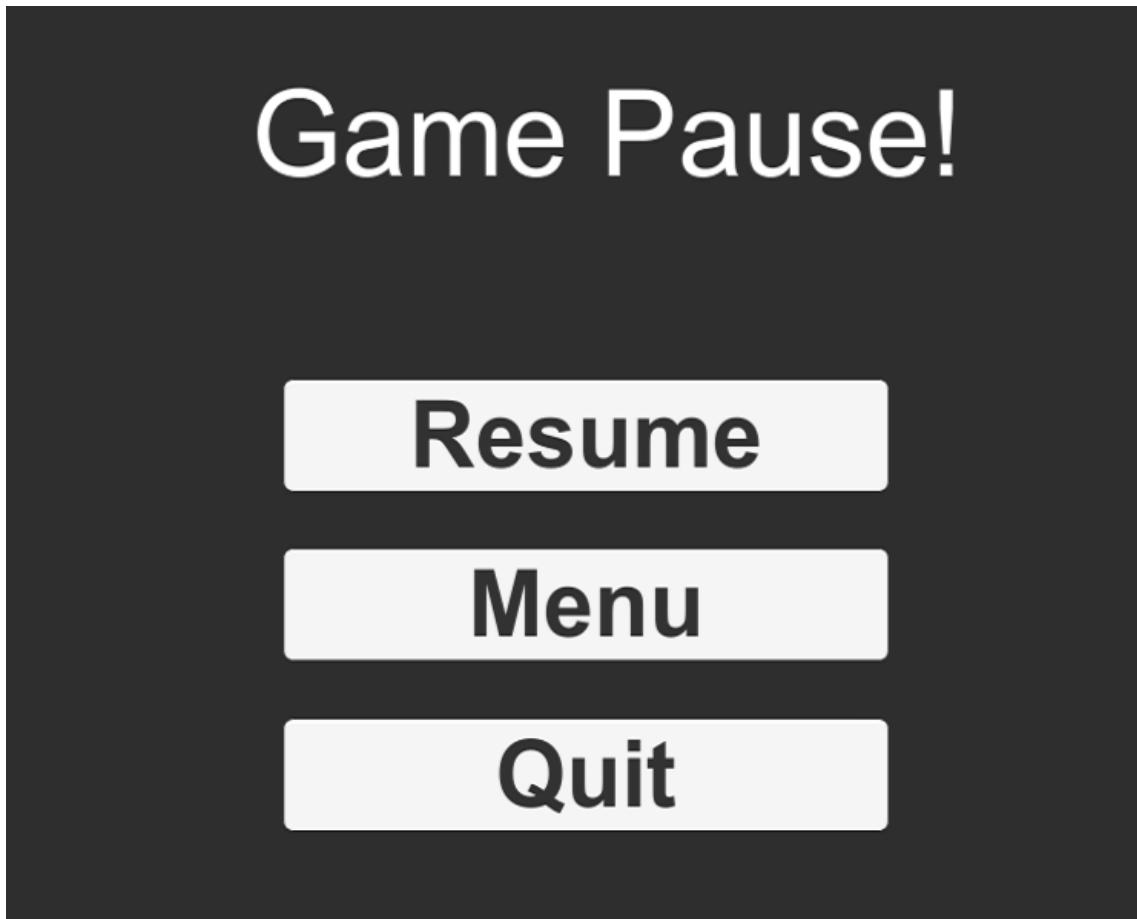


Figure 5.4: Game Pause

5.5.5 Game Over

Description

When the player health decrease to 0, then the game will be consider over. After that a game Over panel will be pop up. Player has to restart the level again.



Figure 5.5: Game Pause

5.5.6 Player Score

Description

When the player press the punch buttons and On hit detection the player will gets points, which are shown in the figures.



Figure 5.6: Player Score

5.5.7 Player Health

Description

When the player hits by enemy, Health bar of the player will reduced. Same for the AI-enemy Health

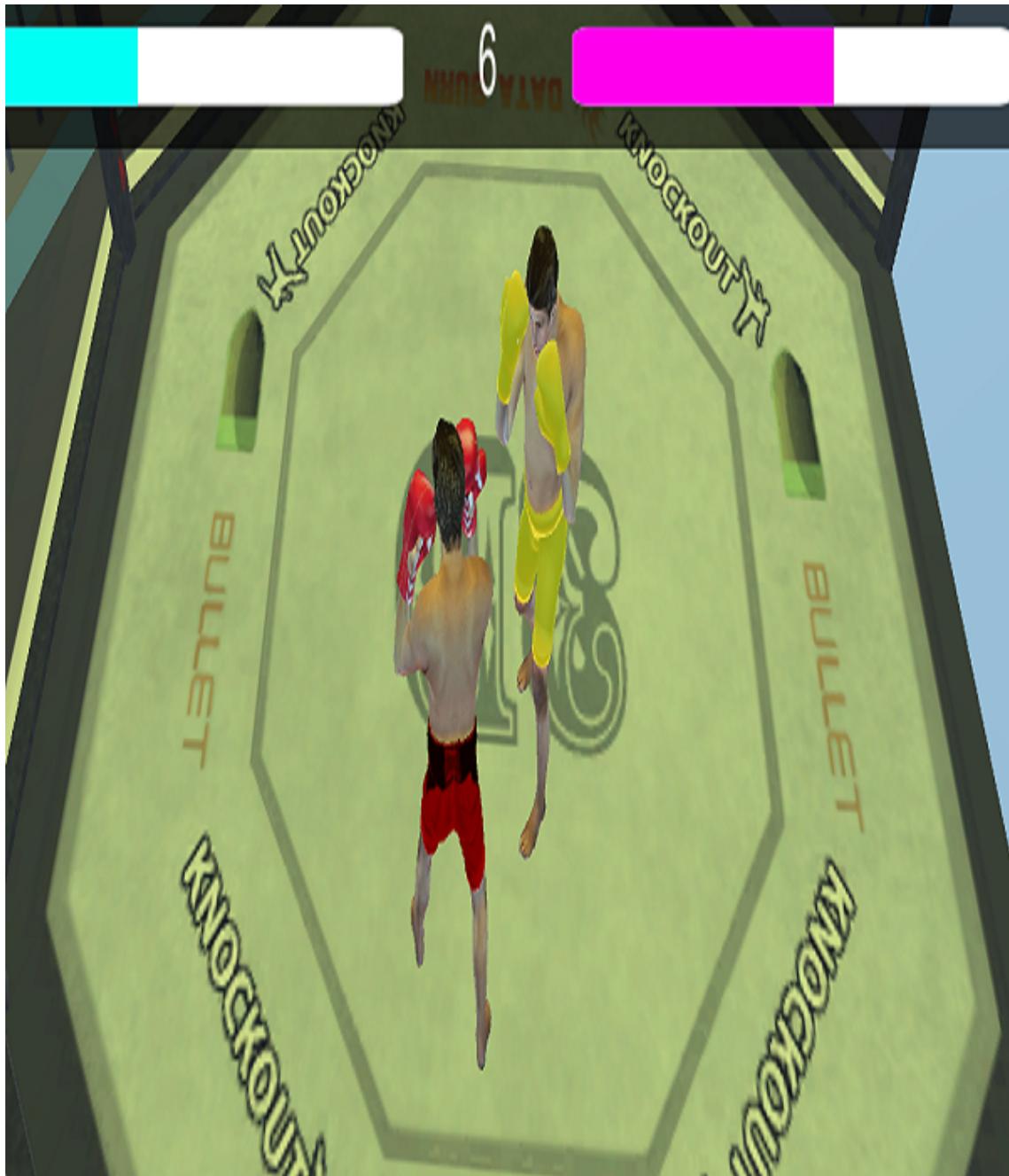


Figure 5.7: Player Health

CHAPTER 6

EVALUATION

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EVALUATION

Evaluation is an important part of development, During this project a lot of problems and errors occurred like in some cases we forgot to apply collider to the edges of the rings due to which player and the enemy were crossing them and which should not be crossed by any of the players, Some other errors were occurring during run-time like game will take too much time to load. These are the errors which occurred during this project consciously and it takes too much time to bug them and remove them but with help of ALLAH I overcome it before the submission of my project deadline.

6.1 Unite Testing

Every module in the application has been checked. The test module includes the entire user interface of the game, the choice of levels, the settings of the player's skin and the AI-enemy. These are things that should be tested in every game.

Description

The main module of our project is the movement and punching of the character through default keyboard keys as well as through microphone input voice commands. We need a character in our game which can easily throw punches to the opponent character and also can easily move anywhere in the ring. Same goes for the Enemy character it should do the same and come closer to the player character and start punching. Player character should fully controlled by the voice commands.

Table 6.1: Unit Testing

Phase to Test	Test Description	Expected Result	Actual Result
Game playing	Player has to move In all the available directions and should hit the AI-enemy by default keyboard keys as well as though Voice Commands.	Player character will move and hits punches with Both Voice and keyboard commands.	PASS
Responsive enemy	Enemy will move and try to come closer to the player, so that it can hit.	Enemy will directly come close to the player character and start punching when the level starts.	PASS

6.2 Functional Testing

After unit testing, we tested various functions of the game. This one Features include AI-enemy and player game scoring, updates health control and voice commands.

6.2.1 Score

Scores are showing on top mid of the screen but we need to check either the scores are added properly or not.

Table 6.2: Score

Functionality to Test	Test Description	Expected Result	Actual Result
Scores	Player character will hits multiple punches to the AI-enemy to check score.	On Each hits player will get a Single point.	PASS

6.2.2 Health

Health of player is 100 percent and we need to check if health decreases or not. Health is shown on the screen.

Table 6.3: Health

Functionality to Test	Test Description	Expected Result	Actual Result
Health	Health will decrease with hits.	Health decreases from 100 to 0.	PASS

6.2.3 UI Buttons

All the buttons should be checked either they were working properly or not. Each of the buttons should individually check to find any kind of non-functionality buttons. There are number of buttons on the main menu and Levels Panel, we need to check each and every button functionality properly

Table 6.4: UI Buttons

Functionality to Test	Test Description	Expected Result	Actual Result
Play Button	Click on play button.	Level panel will be open after clicking on play.	PASS
Sound ON	Click on ON/OFF button.	Default controls will change from keyboard to Voice.	PASS
Option	Click on Option button.	Option panel will be open.	PASS
Quit	Click on Quit.	Game will be closed.	PASS

6.2.4 Pause Menu

When the player click on the Pause menu or when a player Press the ESC button on top left of the keyboard then game will be stop and Pause menu will be open.

Table 6.5: Pause Menu

Functionality to Test	Test Description	Expected Result	Actual Result
Resume	Click on resume to continuo the game.	Level will be start.	PASS
Menu	Click on menu to go back to the main menu.	Level will be stop.	PASS
Quit	Click on quit to closed the game.	Game will be closed.	PASS

6.2.5 Results

After going through many different tests described earlier, we have completed our project. The project has been thoroughly tested and there have been no errors so far.

CHAPTER 7

Conclusions and Future Work

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Conclusions and Future Work

7.1 Conclusion and Future plans

In the game industry, there are few games where sound control works. The main purpose of my project is to target a specific audience who cannot fully enjoy the game. I had tried my best to explain every possible thing in the above chapters steps by steps so nothing is confusing. Each of the chapter briefly explain what I have in my project and how I did that. There are a lot of suggestions that can be used in the future works to improve the user experience.

Improve AI-enemy and Addition of more Animations

In this version of the game, we do not have much animation for players and enemies. In the future, we will add more animations to players, and we will also improve the speed and accuracy of AI enemies.

More Improve UI And Record storage

In my project there is no login system or mechanism to store different player old records. So in the future I will add login and record storage system to improve the game experience.

Converting this game into Cross platform

This game is currently our for PCs user, So I will do my best to make it on cross platform so that many user can play and enjoyed it.

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