SHOOT AT SIGHT

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COMSATS UNIVERSIT ISLAMABAD,
ATTOCK CAMPUS - PAKISTAN

SESSION 2017-2021

SHOOT AT SIGHT

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A DISSERTATION SUBMITTED AS A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE

DEPARTMENT OF COMPUTER SCIENCES
COMSATS UNIVERSITY ISLAMABAD,
ATTOCK CAMPUS – PAKISTAN

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UNDERTAKEN

We certify that this is our own work. The work has not, in whole or in part, been presented elsewhere for assessment. Where material has been used from other sources it has been properly acknowledged. If this statement is untrue, we acknowledge that we will have committed an assessment offence and shall be liable to punishable action under the plagiarism rules of HEC.

_____
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Dated: _____

_____
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Dated: _____

FINAL APPROVAL

Certified that we have read this project report submitted by Mr. Muhammad Sohaib Tahir and Mr. Danial Ahmed Khan and it is, in our judgment, of sufficient standard to warrant its acceptance by Department of Computer Science, Comsats University Islamabad, Attock Campus, for the BS in Computer Science.

Committee:

1. External Examiner _____
   (Examiner Name)
   Designation
   University Name

2. Supervisor _____
   (Rehan Tariq)

3. Chairperson _____
   (Chairperson Name)

4. Dean/Director _____
   (Dean/Director Name)

DEDICATION

To my Loving Parents and Teachers

ACKNOWLEDGEMENT

We might want to offer our true thanks to a few people and association for supporting us all through our study. To begin with, We wish to offer our earnest thanks to our supervisor, Sir Rehan Tariq, for his enthusiasm, patience, insightful comments, helpful information, practical advice and unceasing ideas that have helped us colossally consistently in our work and composing of this proposal. His huge information, significant experience and expert aptitude in field of Computer Networking has empowered us to finish this work effectively. Without his help and direction, this venture would not have been conceivable. We could not have imagined having a better supervisor in our study. We likewise wish our true gratitude to the Comsats University Islamabad, Attock Campus for accepting us into the graduate program.

PROJECT BRIEF

PROJECT NAME	SHOOT AT SIGHT
ORGANIZATION NAME	COMSATS ATTOCK
OBJECTIVE	TO LEARN GAME DEVELOPMENT
UNDERTAKEN BY	M. SOHAIB TAHIR (FA17-BCS-067) DANIAL AHMED (FA17-BCS-062)
SUPERVISED BY	SIR REHAN TARIQ LECTURER COMPUTER SCIENCE COMSATS ATTOCK
STARTED ON	07 NOVEMBER 2020
COMPLETED ON	09 JULY 2021
COMPUTER USED	CPU: CORE I7 | GPU: RX 580 8GB
SOURCE LANGUAGE	C#
OPERATING SYSTEM	ANDROID
TOOLS USED	UNITY | MAYA | BLENDER | MYSQL

ABSTRACT

"**Shoot At Sight**" is basically a server-based 3D Multiplayer Shooting Game. Unlike traditional style of shooting games like PUBG and COD this game involves a totally different kind of scenario that makes the game more interesting. This game involves two teams that fight with each other to gain maximum number of points but killing other players is not easy at all due to their special abilities.

Traditionally both teams have human characters that fight with each other to win a game but in this game one team say Team A will consist of human characters and the other team say Team B will have the ability to turn their characters into any other object like table, chair, bullet, cart or anything that is available on the scene and they think it may be beneficial for hiding for a longer time.

Team A purpose is to find the hidden players of Team B by using their special abilities on the other hand Team B purpose is to hide themselves if possible, to gain the maximum number of points. At the end, the team that have maximum number of points will be declared winner.

If we have no online player and we want to play the game, the enemies will fight on the bases of **Artificial Intelligence**, and the enemy will be capable to beat us. The concept of the game is totally different, the users will like the game.

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LIST OF ABBREVIATIONS

FPP	FIRST PERSON PLAY
TPP	THIRD PERSON PLAY
UI	USER INTERFACE
PUBG	PLAYER UNKNOWN BATTLE GROUND
COD	CALL OF DUTY

Chapter 1

Introduction

1.1 Introduction

Notwithstanding the monetary unsteadiness and money related emergency influencing the world now a days, the development pace of the game business is expanding hugely. While we were chipping away at our last year's venture, a great many individuals were messing around before their PCs. It very well may be said that the purpose behind the advancement of the game business is on the grounds that it can draw in clients with various tastes, for example, loosening up players. Making your own games is an extraordinary method to develop your aptitudes. It encourages you increase comprehension of writing game code. In the wake of building up a game, it very well may be adapted and showcased. The general income of selling computer games overall was $120.1 billion of every 2019. In this way, the game Development is a gigantic occasion to bring in cash. This task depends on a totally new idea of Multiplayer Gaming.

The idea of this project is essentially the 3D Multiplayer Game in which huge number of solo players or various small squad (3-4) player play together and accomplish the objective of being the last standing player. The reason for our undertaking to get freed the old idea of Video Games that being created in industry.

Unity 3D will be utilized for the development purpose. Unity 3D is multi-platform game engine. It is freely available for personal use. For Animation and Modeling, Blender will be used. Blender is an open source Visual Effects Designing Tool, and freely available for everyone. The language used for scripts and programming will be C#. With the help of Photon Networking Server/Room will be created for every match. Methodology for this project will be according to Iterative Model.

1.2 RELEVANCE TO COURSE MODULES

This project is relevant to the courses that we study during BCS. Project involves programming & logics that we learn during our degree. We are using C# language for programming and scripting. In 5th Semester, Visual Programming course is offered in which we learn C# language. Interaction between players, shooting, movement, driving will be done by programming.

1.3 PROJECT BACKGROUND

Initially there will be a timer whenever we start the game. Then Team B will have some time for hiding themselves in a map. Both teams have 6 players with the following abilities.

Team (A) Abilities:

1) First character has the ability to revive other players.
2) Second character has 2 lives.
3) Third character has unlimited ammo.
4) Fourth character has the ability to run fast.
5) Fifth character has the better weapon than others.
6) Sixth character has bigger life bar.

Team (B) Abilities:

1) Each character has a pistol.
2) Each character has a flash bang.
3) Can turn into any other object present in the scene.

After Team B hides, the game will start. Team B will try its best to hide themselves from Team A by turning themselves into the objects that can be least doubtful. Each hidden player of Team B will make 4 whistles during the gameplay in order to balance the gameplay between the two teams. Then Team A will start to search for the hidden Team B players. It is up to Team A that how they will use their special abilities strategically to eliminate Team B players. For example, if they doubt that there might some enemy players then the character with bigger life bar should lead the team for safety. Similarly, in the other half those abilities will get interchanged and total points will be calculated.

Points Calculation:

Team B characters will get more points if they convert themselves into bigger objects for hiding or by killing Team A players. Team B players will get more points if they hide themselves for a longer period of time. Team A characters will get points whenever they hit the hidden players of Team B or by killing Team B players.

1.4 LITERATURE REVIEW

All the games made on the concept that we are using in our game SHOOT AT SIGHT, broke previous records in the history of gaming. It was loved by so many people because the maps are very big, and at the same time, a large number of players, can play together. PUBG, Fortnite, Rules of survival, Firestorm, etc. are the Games that are developed on this concept. All these games have same concept but some different features and gameplay.

1.5 ANALYSIS FROM LITERATURE REVIEW

The concept of our project is already been developed in Industry, but not yet created at FYP Level. Also, we are adding some new features like,

- Realistic Graphics
- AI Bots
- TPP/FPP Gameplay
- Character Abilities
- Team Communication

Some of the games that are already developed having similar theme are: Prop Hunt Portable, H.I.D.E, Prop Hunt Mobile and Hide Online. These games lack the capability of having realistic graphics. Also, there is not anything special as characters individual abilities and team communication that we are introducing through our project.

1.6 METHODOLOGY & SOFTWARE LIFECYCLE

Developing a game is not an easy task. We need to test the models and checking for error is done again and again. Software Development Lifecycle for this project is **Iterative Model.** We will start from creating player animations, movement, actions etc. After completing the basic movement and actions of player, we will work on Terrain design.

Terrain Design is important because we can figure out how character interact with environment. Then we will switch back to character Design. We will finish any remain actions and movements. After that, weapons will be designed, and scripting will be done for weapons. After making all the environment and interactive system, will start working on AI Bots. Then at the end, we will work Photon Unity Networking. We will be testing and debugging during developing.

Chapter 2

Problem Definition

2.1 PROBLEM STATEMENT

Computer games are been created since 1990's. Right around 33% of the total population plays computer games. A large portion of them are fan of multiplayer games. From most recent 15 years same sort of multiplayer games are being created by various studios. Even though they are engaging, however rehashing a similar idea at some point causes the client to feel exhausted. A few Studios attempted to present some sort of multiplayer games. Yet, they were not all that much effective. Games like Call of Duty, Battlefield controlled the gaming business for very nearly 10 years. In any case, individuals are presently exhausted of those old ideas.

3D multiplayer games brought new revolution to gaming industry. This concept of gaming is totally new and different studios have developed games on it. Games like PUBG, Fortnite, and Rules of survival are games developed on this concept.

2.2 DELIVERABLE AND DEVELOPMENT REQUIREMENTS

Requirements are important part of software development. Before starting a project, requirements are gathered, to formulate and manage the designing phase.

2.2.1 AI Bots

When there will be insufficient players to join the server, AI Bots will be instantiate to full up the space.

2.2.2 Server Making

Making a server is essential part of project. For that purpose, photon unity networking will be used for server/room creation.

2.2.3 Timer

Timer is an important feature of multiplayer games, which limits the player, to come close to each other to gain maximum result in least possible time.

2.3 CURRENT SYSTEM

Games like Prop Hunt Portable, H.I.D.E, Prop Hunt Mobile and Hide Online are developed on similar concept and are the most alike games to this project. These games lack the capability of having realistic graphics. Also, there is not anything special as characters individual abilities and team communication that we are introducing through our project.

Prop Hunt Portable:

It is a zany, first-person action game where two teams face off in a closed off arena. One striking element of game design in this title is that you will be pitted up against a team of shapeshifters that easily camouflage as random items scattered around each scene.

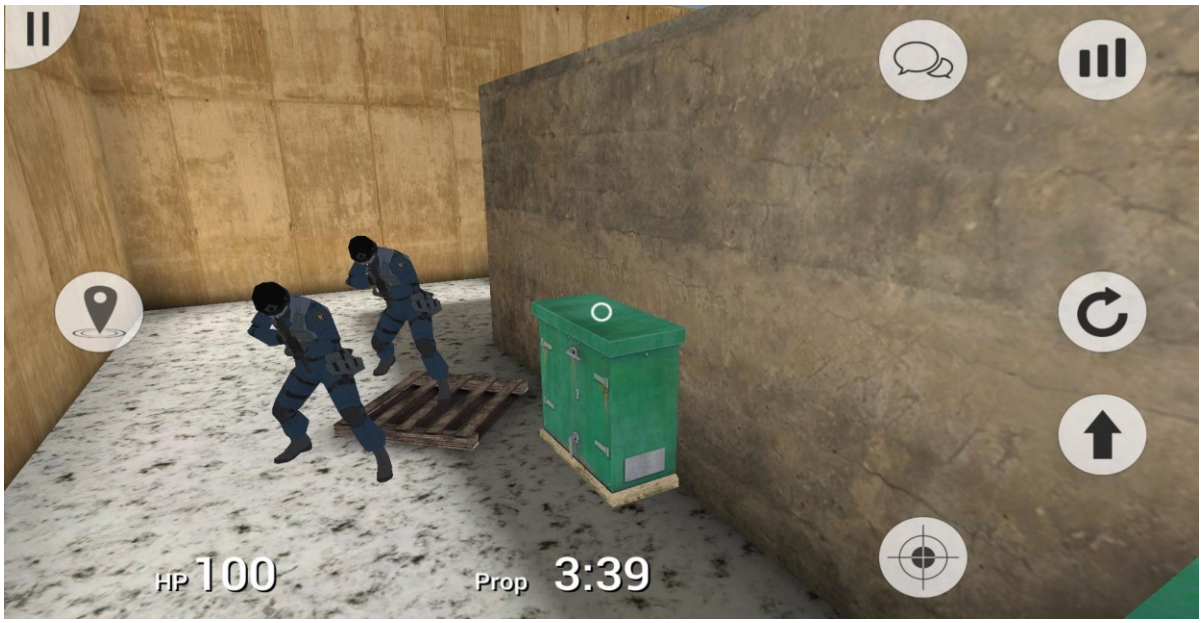

Figure 2.1: Prop Hunt Portable

Prop Hunt Mobile:

Prop Hunter Mobile is a phone game that takes the basic gameplay of a third person action game and transforms it into a bizarre game of hide and seek. The inspiration here was clearly taken from an experimental game made with Garry's mod.

There are a number of games in this style on the market today, and while Prop Hunter Mobile doesn't add many new wrinkles to the formula, it's a serviceable attempt to replicate the game of hide and seek in a way that could never be done in the real world.

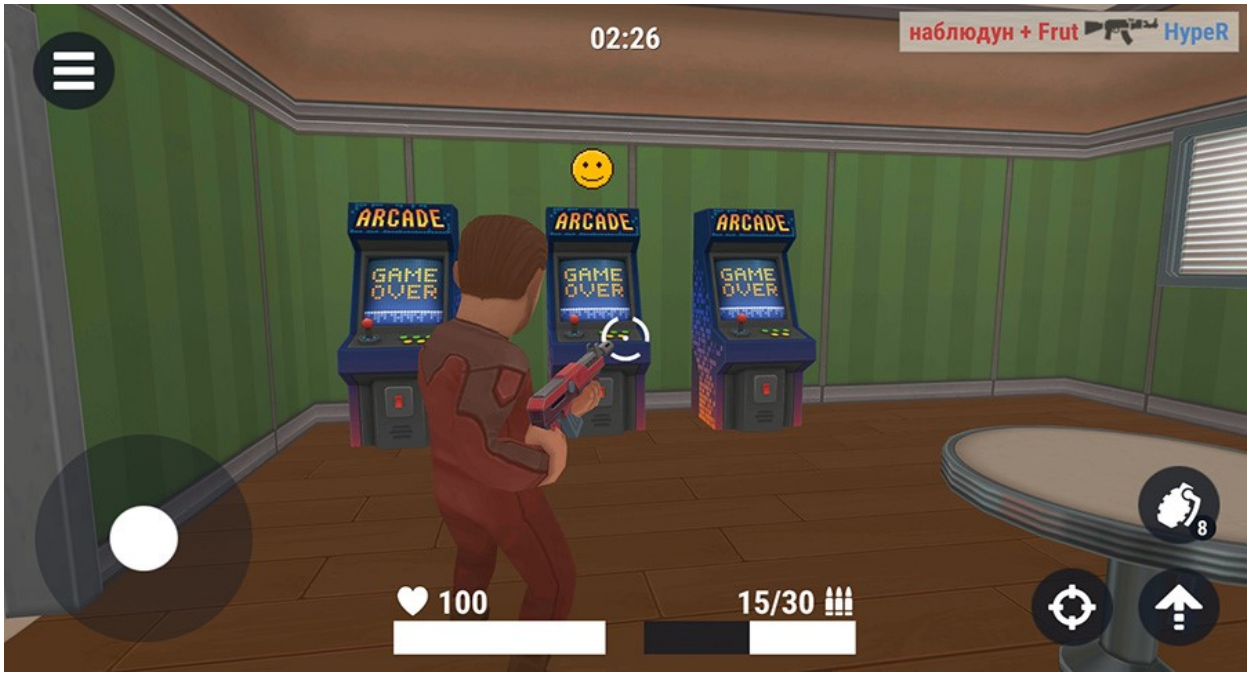

Figure 2.2: Prop Hunt Mobile

Games/Features	Multiplayer	3D	Team Communication	Character Abilities	TPP/FPP Gameplay	AI Bots	Realistic Graphics
Prop Hunt Portable	Yes	Yes	No	No	No	No	No
H.I.D.E	Yes	Yes	No	No	No	No	No
Prop Hunt Mobile	Yes	No	No	No	No	No	No
Hide Online	Yes	Yes	No	No	No	No	No
Shoot At Sight	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 2.1: Comparison with other existing systems

Chapter 3

Requirement Analysis

3.1 USE CASE DIAGRAM

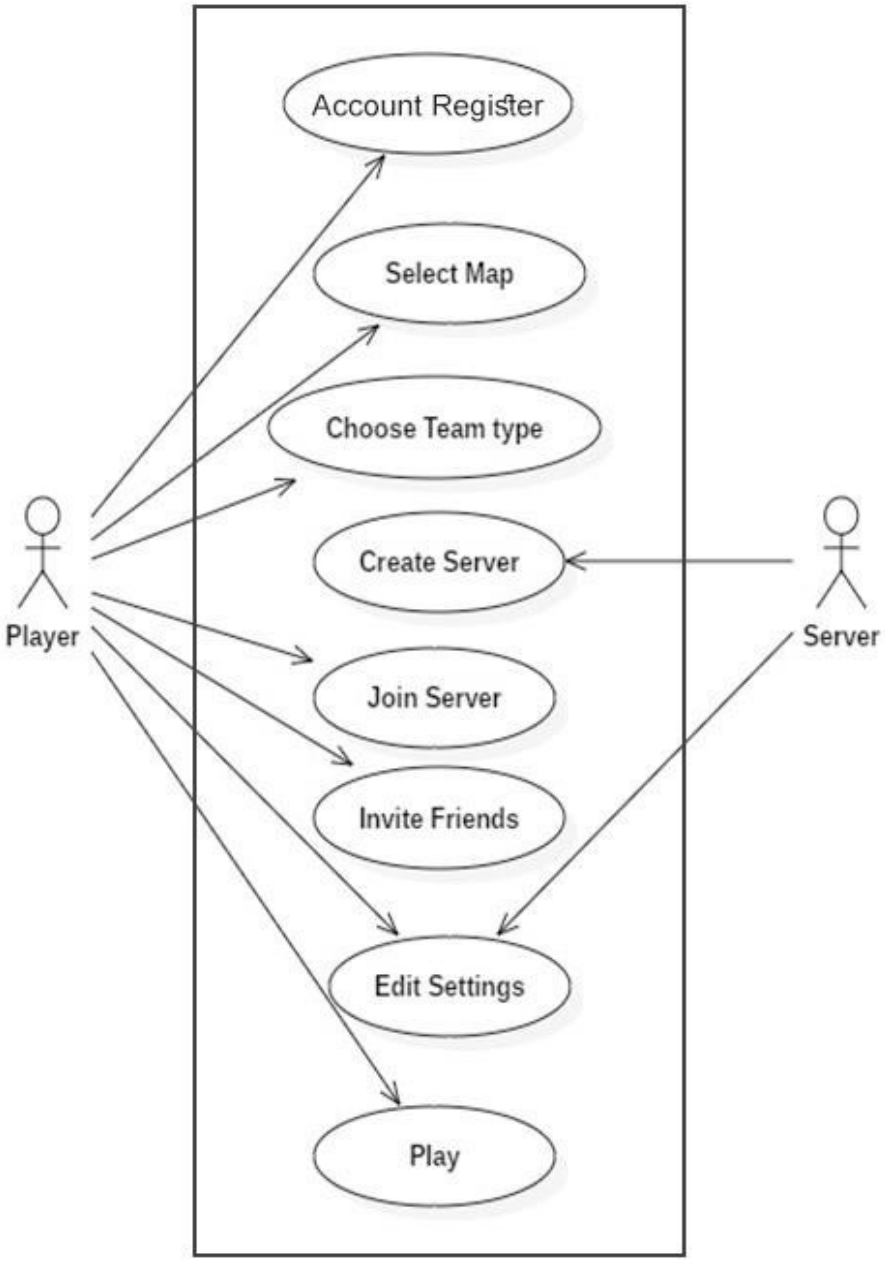

Figure 3.1.1. Complete System Use Case

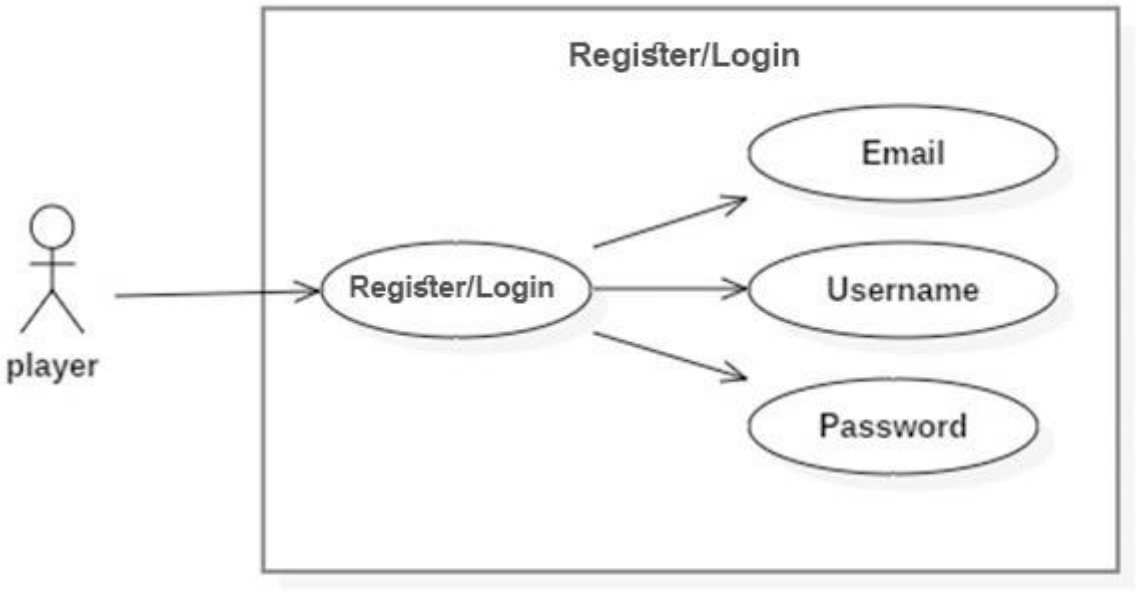

Figure 3.1.2. Account Register

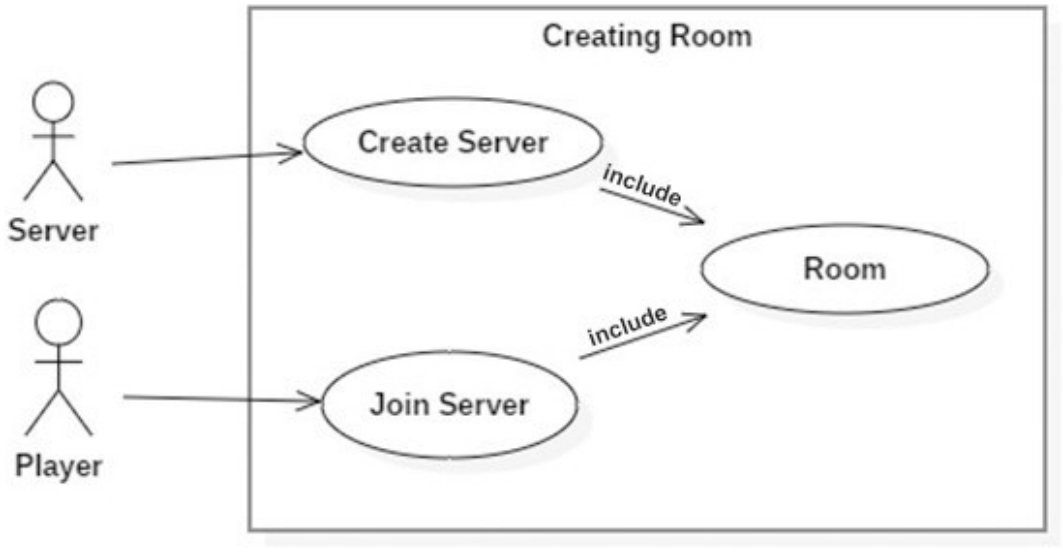

Figure 3.1.3. Join/Create Server

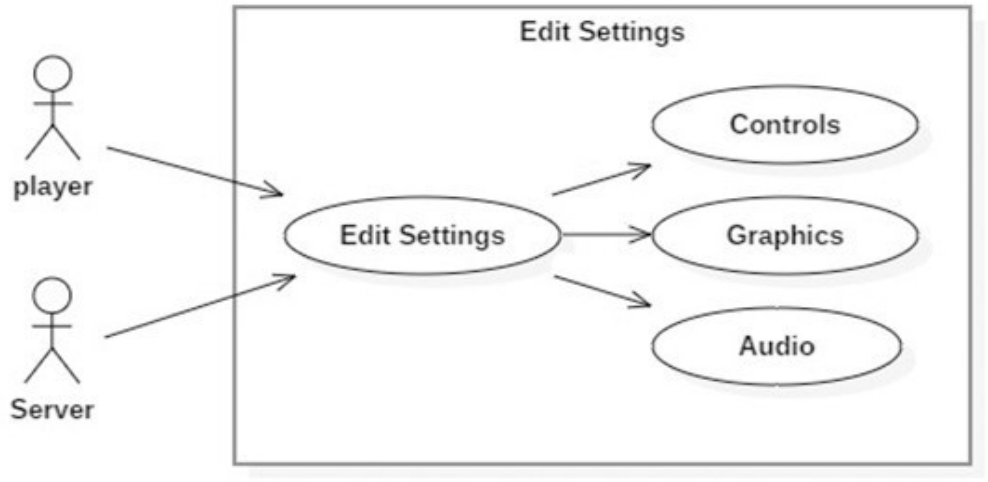

Figure 3.1.4. Edit Settings

3.2 DETAILED USE CASE

Use Case Name	**Register**
Description	User Signup/Login system to access the functionality of system
Actor	Player
Pre-Condition	System must be connected to Internet
Post-Condition	Signup/Login successful notification will be displayed

Table 3.2.1 Account Register

Use Case Name	**Create/Join Server**
Description	User will send request to create room for match, and in response to that request server will create room for match
Actor	Player, Server
Pre-Condition	Attributes must be selected
Post-Condition	Interface will be displayed which shows that match has been started

Table 3.2.2 Create/Join Server

Use Case Name	Invite Friend
Description	Players can invite their friends as teammates before starting the match
Actor	Player
Pre-Condition	User must be logged in
Post-Condition	Friends name will be displayed next to player name which shows that friends are now connected

Table 3.2.3 Invite Friend

Use Case Name	Edit Settings
Description	Players and Server can make changes in controls and graphics settings
Actor	Player
Pre-Condition	User must be logged in
Post-Condition	Settings changed notification will be displayed

Table 3.2.4 Edit Settings

3.3 FUNCTIONAL REQUIREMENTS

Functional requirement is defined as sets of input, behavior, and outputs. The functional requirement of any system is the specific behavior and functions of that system.

Table 3.3.1

FR-1

Name	3.3.1. FR-1: Register User
Requirements	User must be registered to access the functionality of system
Dependencies	N/A
Priorities	High

Table 3.3.2

FR-2

Name	3.3.1. FR-1: Server Making
Requirements	Making a server is essential part of project so, photon unity Networking will be used for server/room creation
Dependencies	FR-1
Priorities	High

Table 3.3.3

FR-3

Name	3.3.3. FR-1: Graphics Card
Requirements	User should have at least 1 GB Video Card to play this game
Dependencies	N/A
Priorities	High

Table 3.3.4

FR-4

Name	3.3.3. FR-1: AI Bots
Requirements	When there will be insufficient players to join the server, AI Bots will be instantiated to fill up the space
Dependencies	FR-2
Priorities	Low

3.4. NON-FUNCTIONAL REQUIREMENTS

Non-Functional requirement defines a function and its components.

3.4.1. Performance

We are trying to achieve best performance for our game, but this project involves too much graphics, so it would definitely affect efficiency.

3.4.2. Availability

Users can access the system anytime, anywhere.

3.4.3. Capacity

The system will be able to operate function for the maximum time of the day. The system does not need to process too much data, so it is easy to process.

3.4.4. User friendly

Interface of our game will be easy to use so that a beginner can also play it.

Chapter 4

Design and Architecture

4.1. SYSTEM ARCHITECTURE

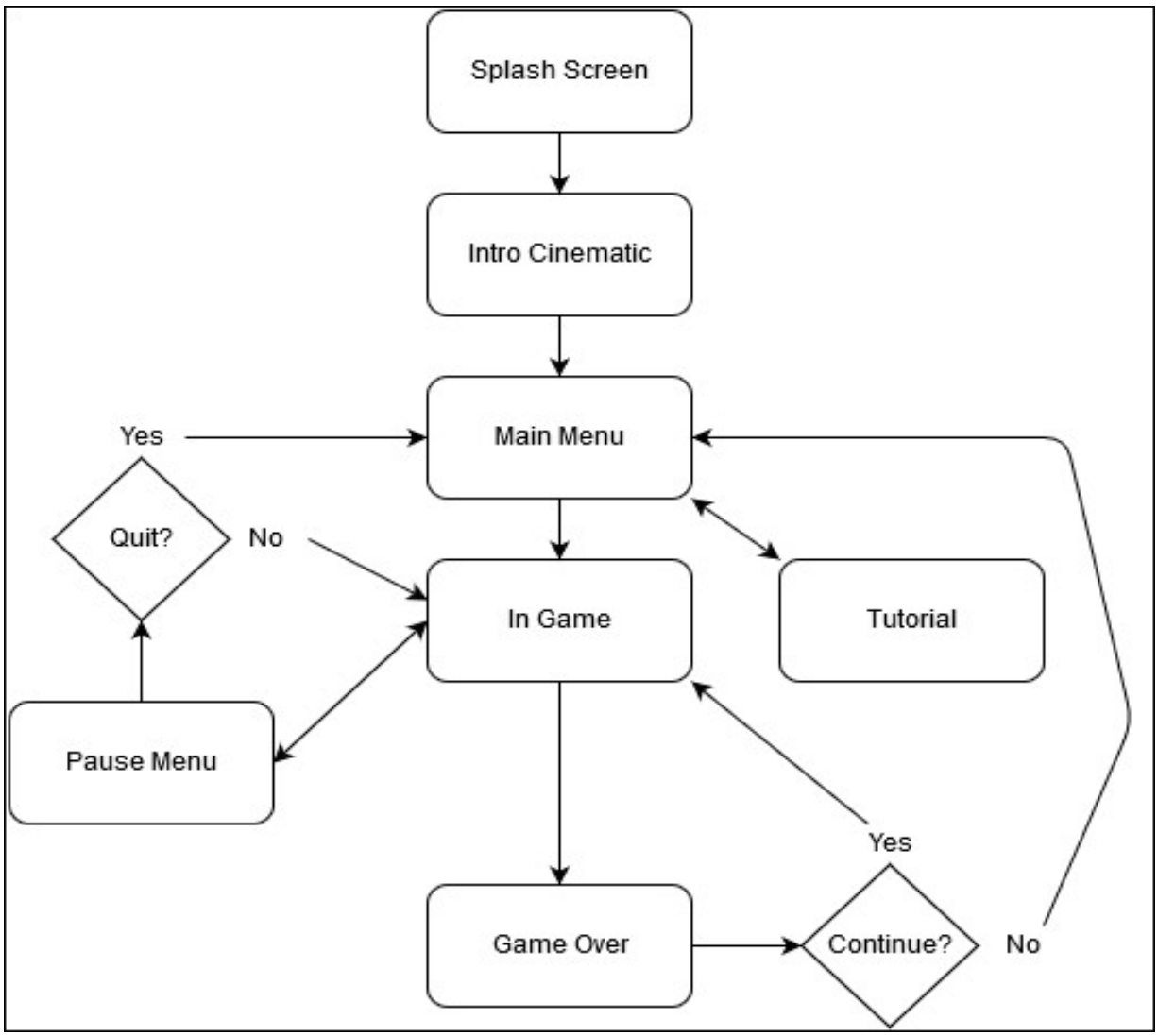

Figure 4.1.1 System Architecture

4.2. PROCESS FLOW

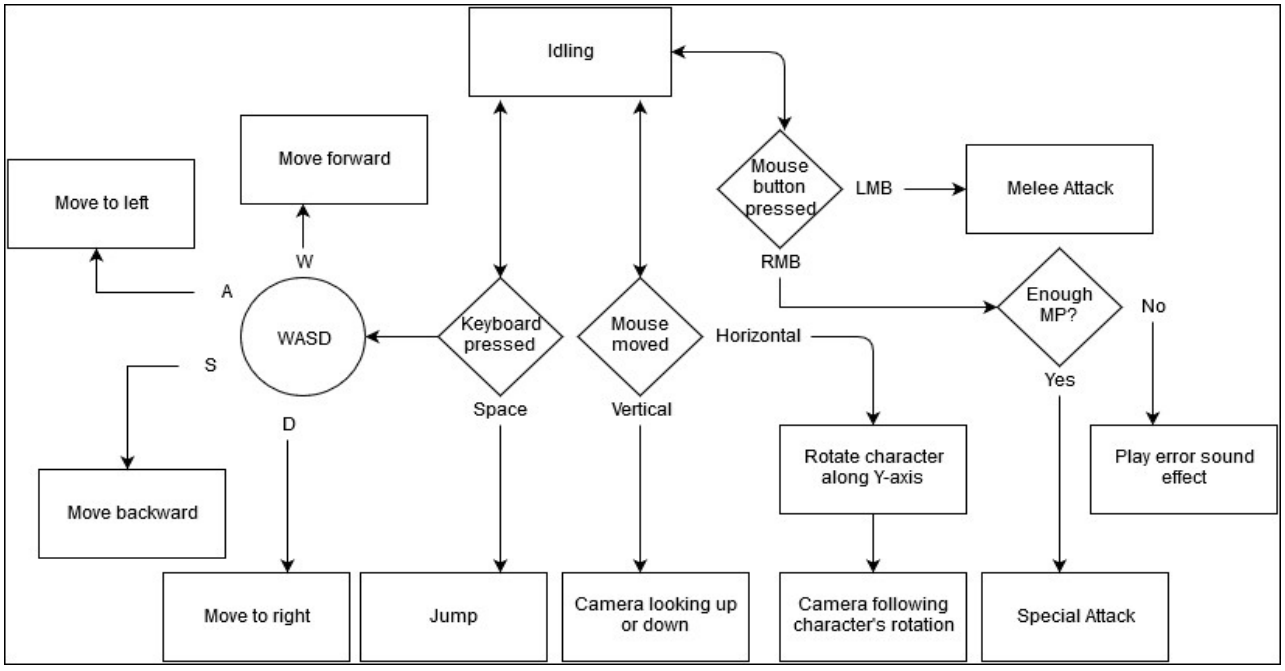

Figure 4.2.1 Process Flow

4.3. DATA REPRESENTATION

Figure 4.3.1 Level 0 Diagram

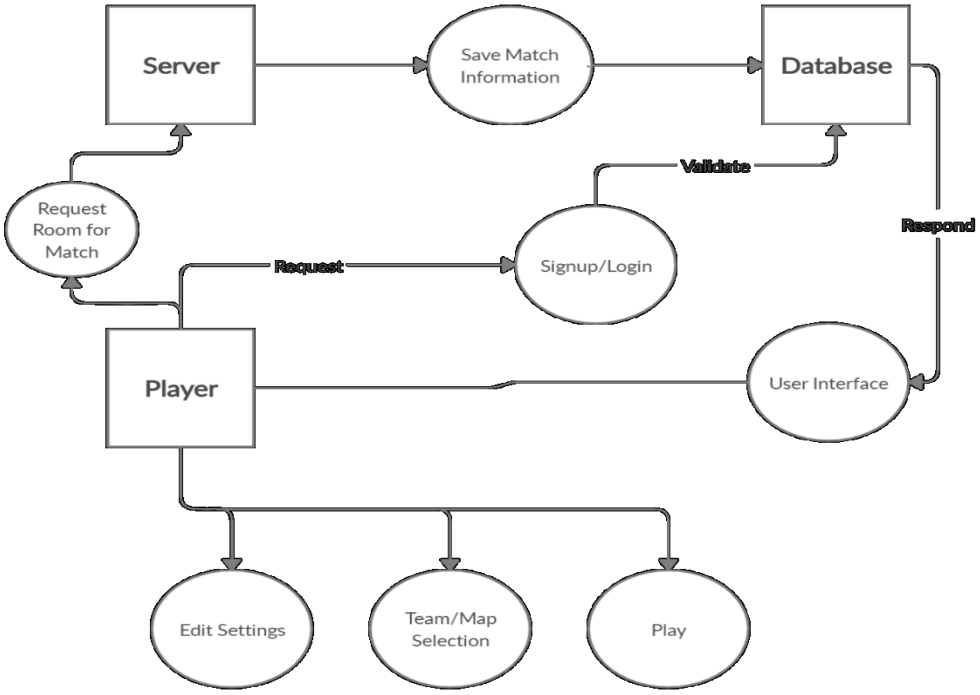

Figure 4.4.2 Level 1 Diagram

4.5. DESIGN MODELS

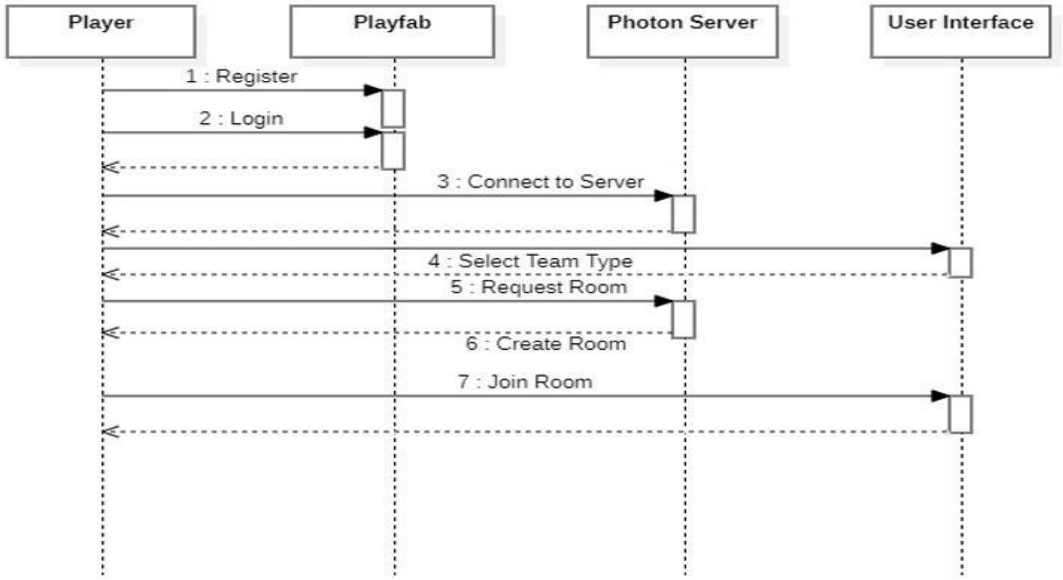

Figure 4.5.1 Sequence Diagram

PROJECT

ORIGINALITY REPORT

4%	3%	0%	1%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.ukessays.com Internet Source	2%
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