Project Report
On

“3D SHOOTER GAME”

Submitted By
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Under the guidance
Of
Mr Shreyash Ghag

Submitted in partial fulfillment of the requirement
for qualifying T.Y.B.Sc. Computer Science
Semester-VI Examination 2020

DEPARTMENT OF COMPUTER SCIENCE
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CERTIFICATE

This is to certifythat **Mr. Kunal More** Seat no. _____ of **T.Y.B.SC. Computer Science** has completed his Game project entitled '**3D ShooterGame'**in partial fulfillment of the degree of **B.SC. in Computer Science** for **Semester VI** under the University of Mumbai for the academic year 2019-20.

It is further certified that this project had not been submitted for any other examination and does not form part of any other course undergone by the candidate.

Project Guide Coordinator

Date _____ Examined By _____

3D Shooter Game

Date: 13/07/2019

TO WHOMSOEVER IT MAY CONCERN

This is to inform you that I, Mr.**Kunal more** student of T.Y.B.Sc.(Computer Science) of K.C.College hasdevelop aPC game in unity named '**3D Shooter Game'**.
Ihereby hopethat thissoftware will help our community and will make current system more efficient.

Thanking You,
Yours Faithfully

Kunal More

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PRELIMINARY INVESTIGATION

ORGANIZATIONAL OVERVIEW

I am building an android game named as 3D Simple ShooterGame with the Unity 3D game building software. In this 3D game as the name suggests the player has to aim and take a shot at the enemy and in the process has to dodge himself against various obstacles coming in his path in order to save his life. The score will be calculated upon on the basis of your shots against the enemy.

DESCRIPTION AND LIMITATIONS OF THE PRESENT SYSTEM

Currently there is no such game with this type of environment which I came across. It is little bit similar to other PC games like its movements and actions. I chose this project to explore myself in Unity 3D and to develop PC games.

DESCRIPTION OF THE PROPOSED SYSTEM

- It is a 3D PC game in which movements of character is based on the clicks of movement buttons on the keyboard.
- There will be obstacles which will be coming against the way of player and gives damage to the player's character.
- Player's character will be set with a specific health bar.
  Hence, as soon as the health bar comes to null the game will be over.
- To survive for longer time in the game the player has to maintain his health bar , try to dodge the obstacles and collecting healthpacks.
- The game contains different sound effects on collisions between player and objects.
- Players can pick up items when they kill there enemy.
- At the bottom of the screen the scoreboard will be continuously updatingscore based on the performance of player.
- There is a target set for 1000 pointsat the beginning of the game for every individual player.

LIMITATIONS OF THE PROPOSED SYSTEM

- Currently there is just a single Character for playing the game.
- Characters cannot be upgraded.
- There is no global leaderboard currently for viewing the Top 10 highscores of different players of the game
- Facilties are limited.

REQUIREMENT SPECIFICATION

1)UNITY 3D

Unity is a cross-platform game engine developed by Unity Technologies, first announced and released in June 2005 at Apple Inc.'s Worldwide Developers Conference as a Mac OS X-exclusive game engine. As of 2018, the engine had been extended to support more than 25 platforms. The engine can be used to create three-dimensional, two-dimensional, virtual reality, and augmented reality games, as well as simulations and other experiences. The engine has been adopted by industries outside video gaming, such as film, automotive, architecture, engineering and construction.

2)VISUAL STUDIO

Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft.
It can produce both native code and managed code. Visual Studio includes a code editor supporting IntelliSense (the code completion component) as well as code refactoring.

HARDWARE SPECIFICATIONS

1) There will be not specific hardware required for playing the game. But there should be a specific RAM required upto 500mb.
2) There should also be a minimum amount of storage required.
3) Computer system with Windows Operating System only.

SYSTEM DESIGN AND ANALYSIS

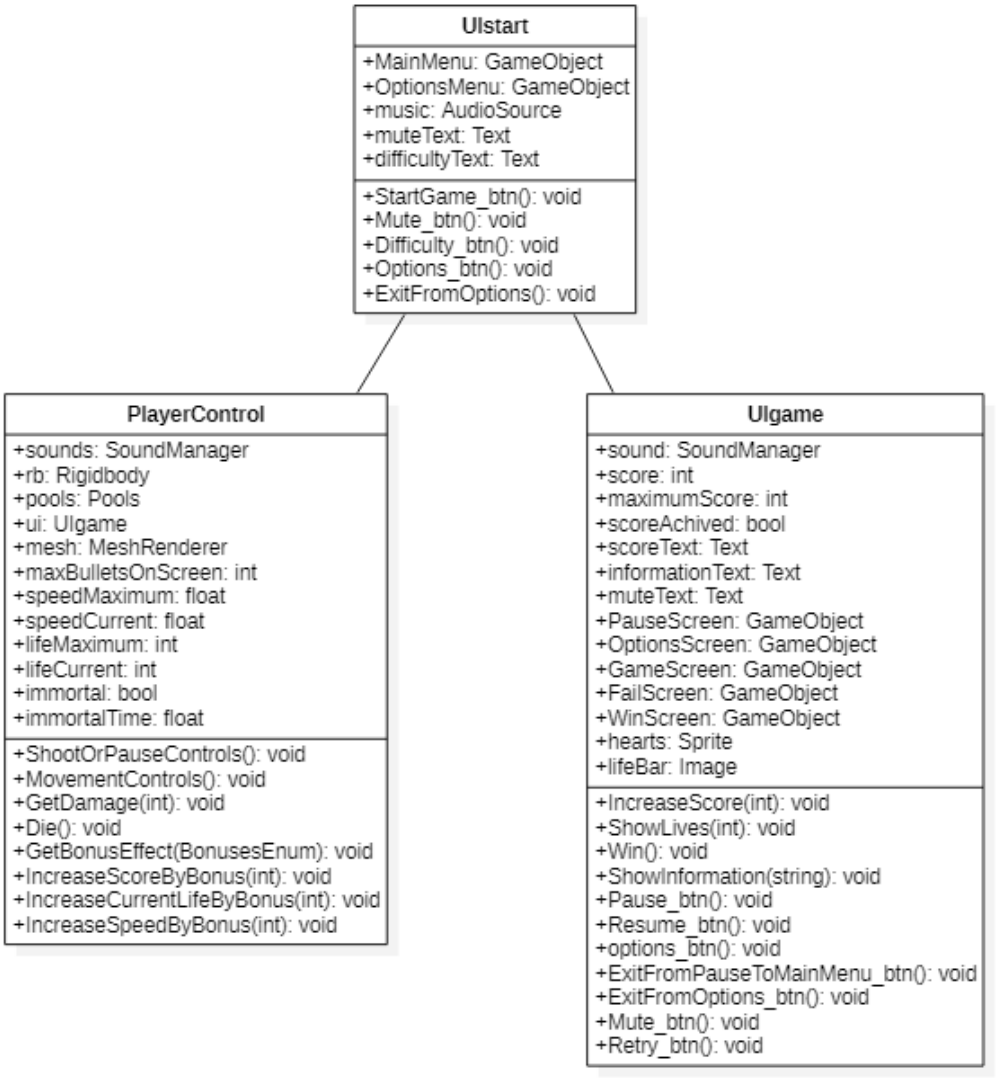
EVENT LIST

- Player clicks start button to start the game.
- Player clicks on space button to shoot the obstacle(Enemy).
- Player clicks on [D] keyto move right for dodging and shooting.
- Player clicks on [A]keyto move left for dodging and shooting.
- Player clicks on [S] key to move backwards.
- Player clicks on [W] key to move forward.
- Player picks healthpacks in the gameplay to increase health.
- Player gets damage on collision with the obstacles(Enemy).
- As soon as the players health comes down to zero the game will be over for the player.
- Player pauses the game by clicking Escape(ESC) button.
- Player clicks on option menu for changing the sound in the game.
- Player click on Exit menu to exit the game and goes to the home page of the game.

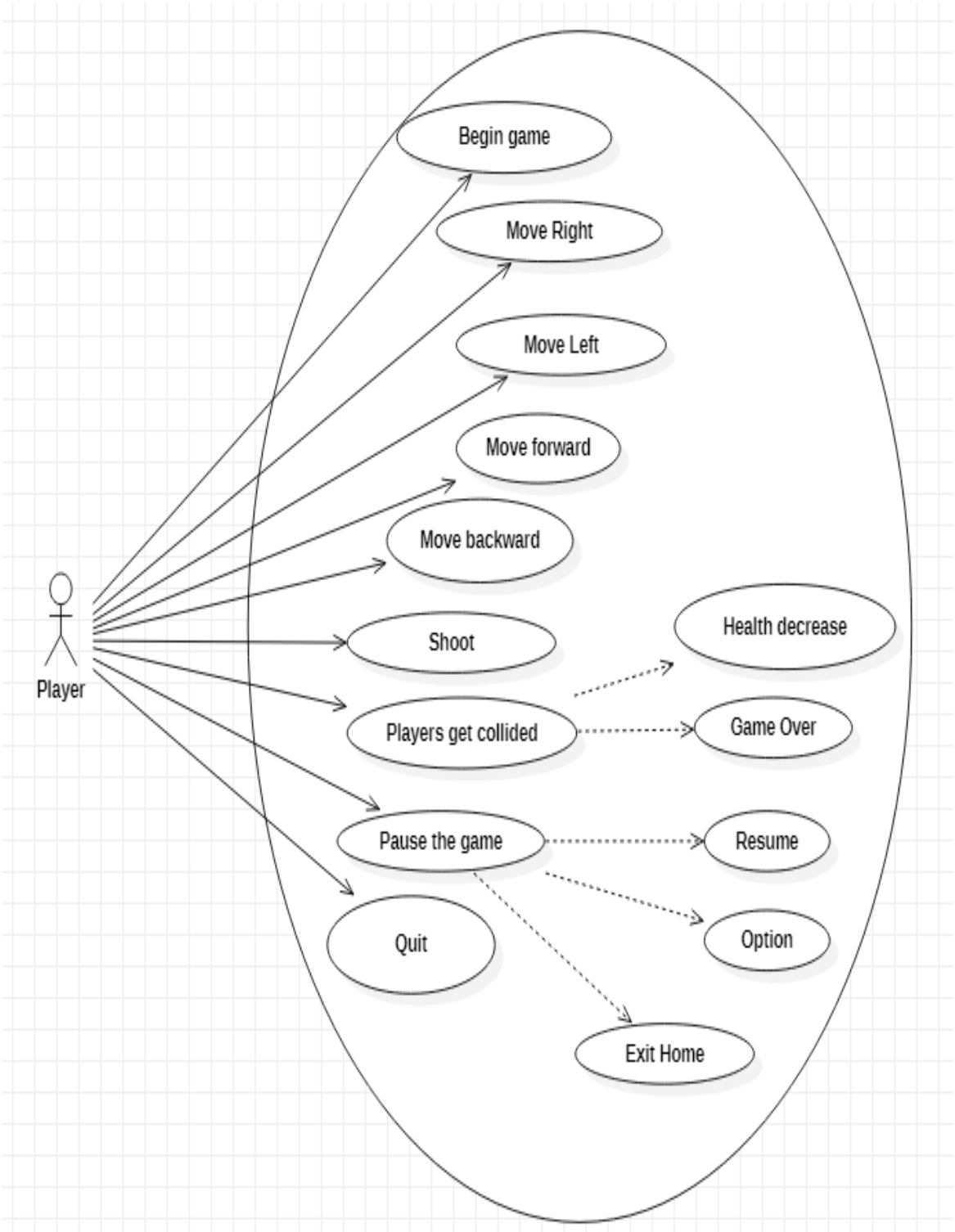
EVENT TABLE

Event	Trigger	Source	Activity/UseCase	Response	Destination
Player starts game	Start game	Player	Begin Game	Game has started	Player
Player clicks [D] key	Move right	Player	Performs right move	Played has moved right	Player
Player clicks [A] key	Move Left	Player	Performs left move	Played has moved left	Player
Player clicks [S] key	Move Baclwards	Player	Perform back move	Player has moved backwards	Player
Player clicks [W] key	Move forwards	Player	Perform forward move	Player has moved forwards	player
Player clicks space button	Shooting	Player	Performs Shooting	Played has shooted.	Enemy
Player collides with enemy	Collision occurs	Player	Player gets collided	Player's health decreases	Player
Player's health gets down to 0	Ends game	Player	Player loses the game	Game has ended	Player
Player clicks on escape key	Pause game	Player	Pauses the game	Game has paused	Player
Player clicks on option menu	sound setting	Player	Mute the game	Game sound has muted	Player
Player clicks on Exit menu	Exit the game	Player	Goes to the home page of the game	Home page has been displayed	Player
Player presses windows button	Quit the game	Player	Asks player to quit.	Application has ended	Player

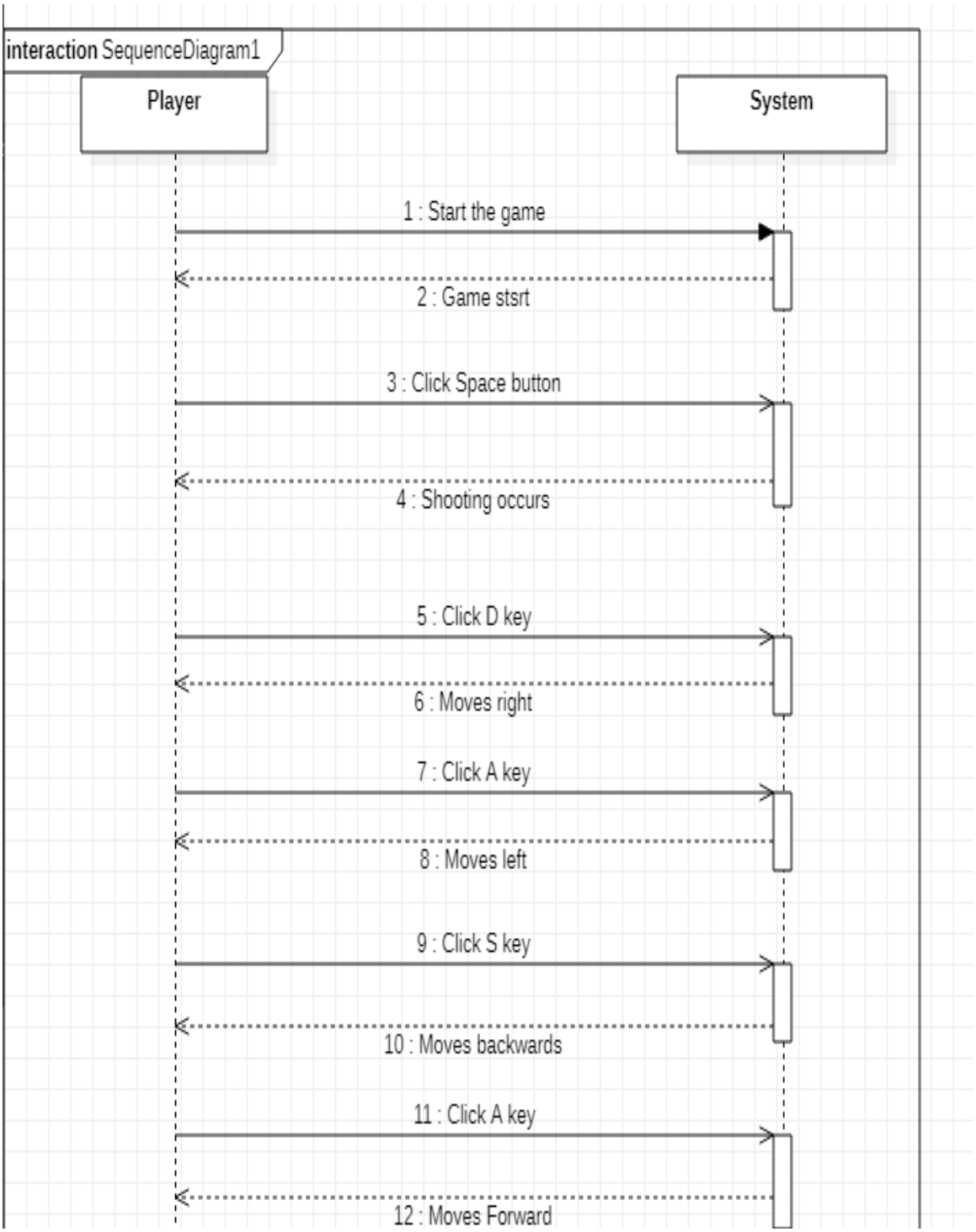
CLASS DIAGRAM

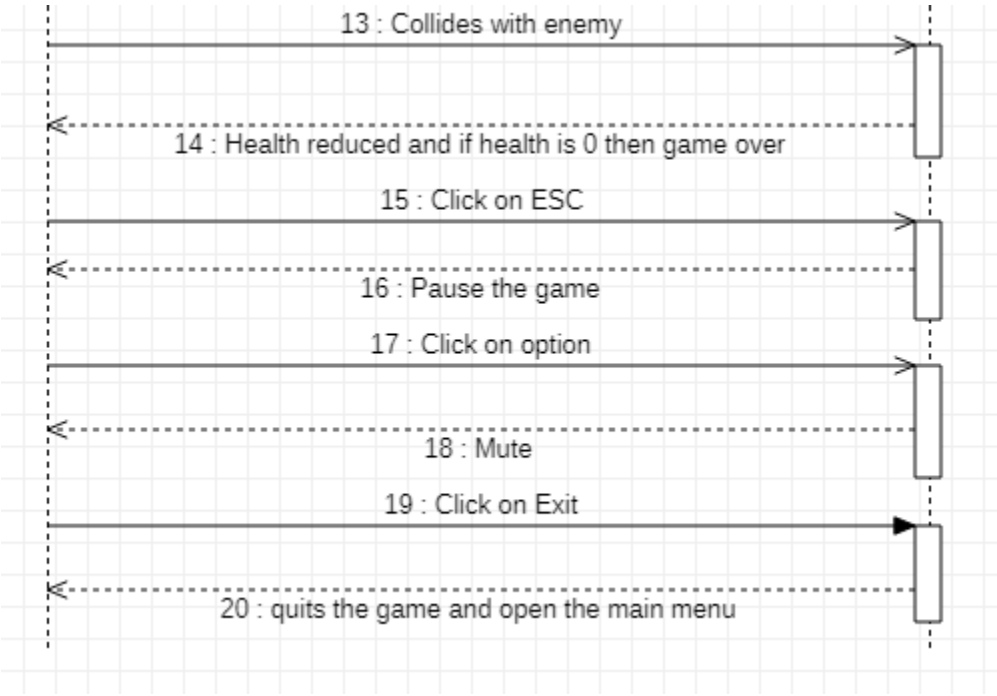


USE CASE DIAGRAMS

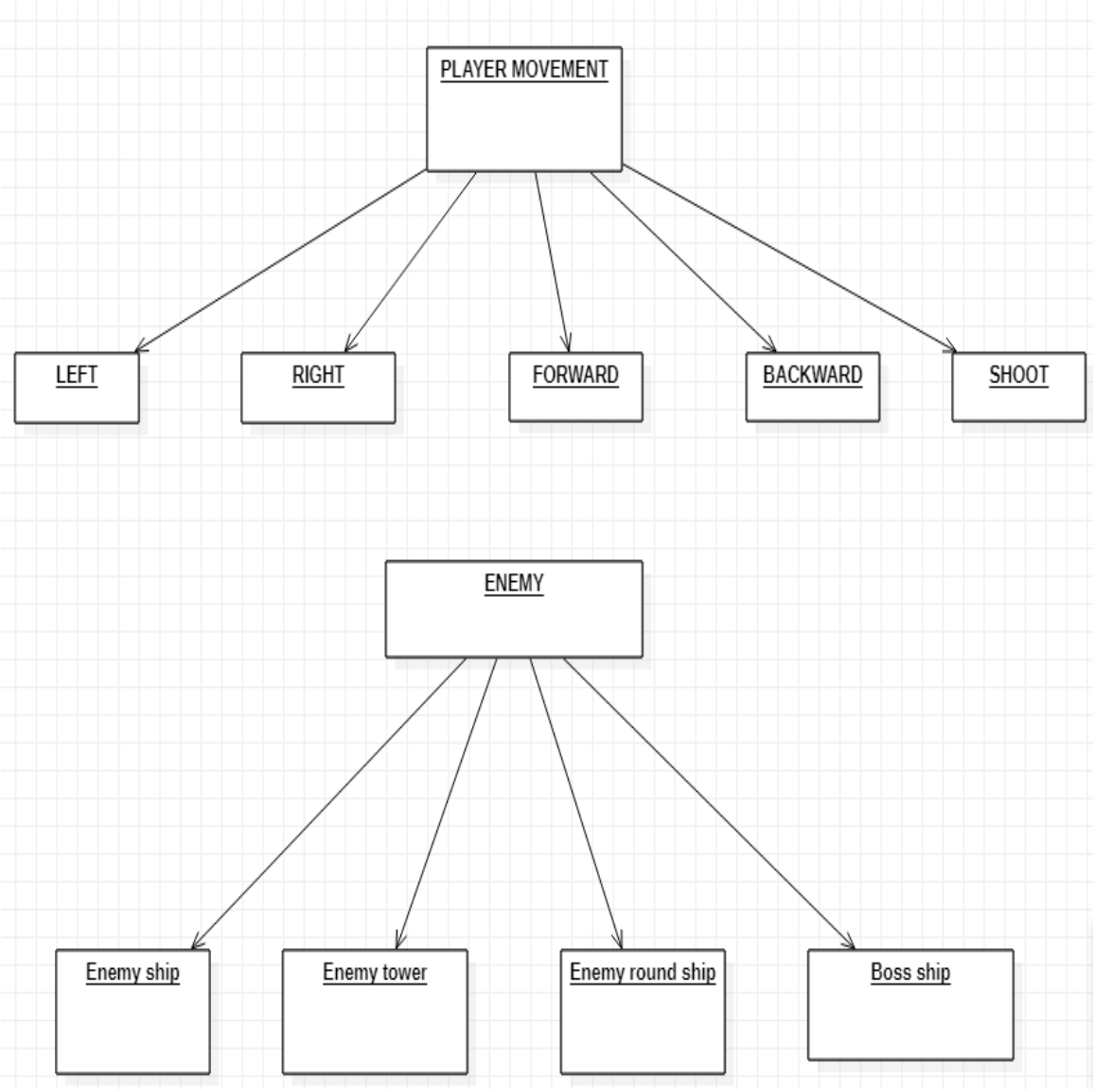


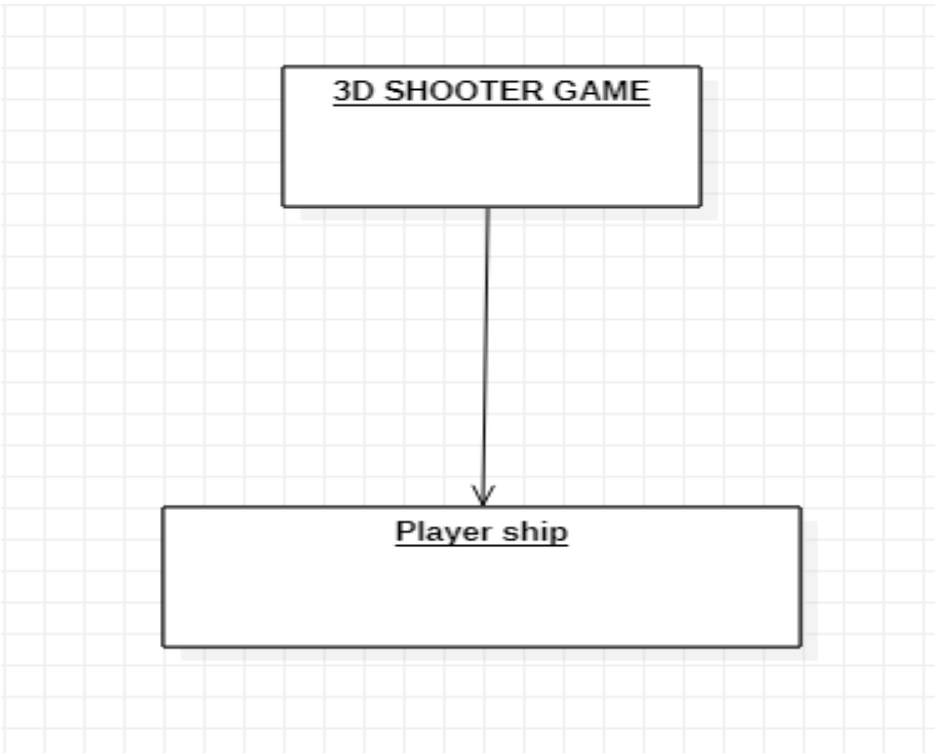
SEQUENCE DIAGRAM




13 : Collides with enemy
14 : Health reduced and if health is 0 then game over
15 : Click on ESC
16 : Pause the game
17 : Click on option
18 : Mute
19 : Click on Exit
20 : quits the game and open the main menu

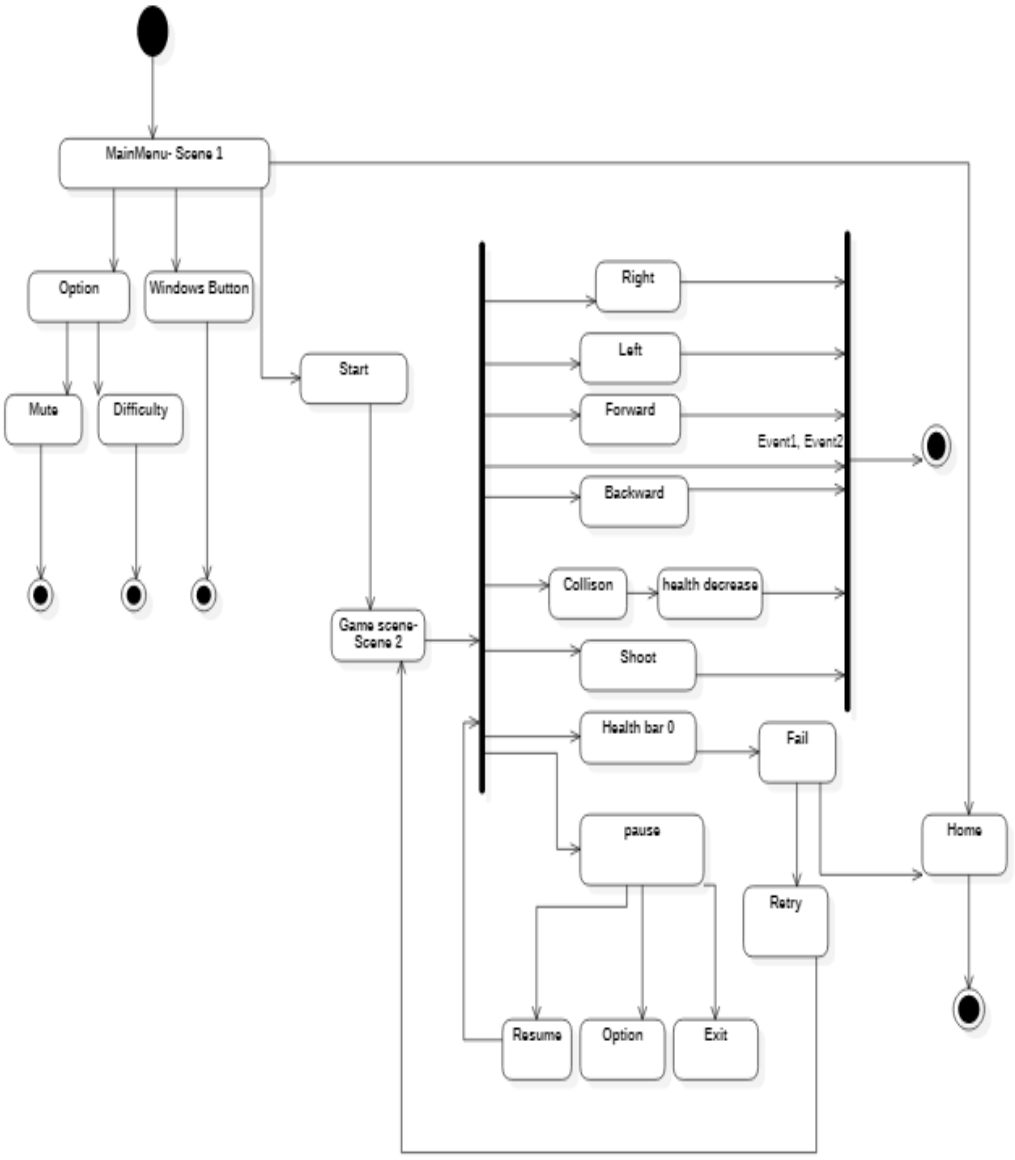
OBJECT DIAGRAM



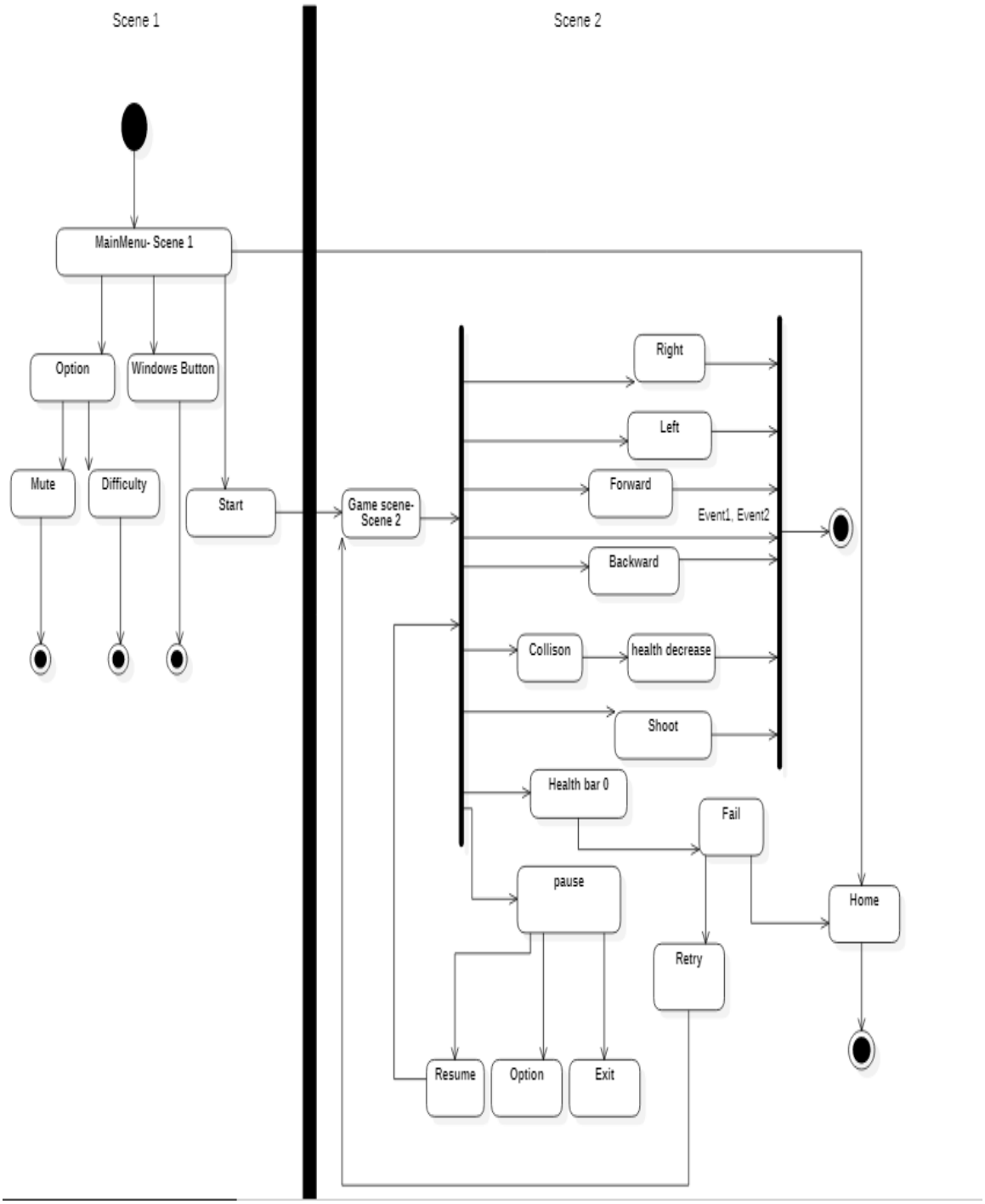

3D SHOOTER GAME
Player ship

STATE DIAGRAM

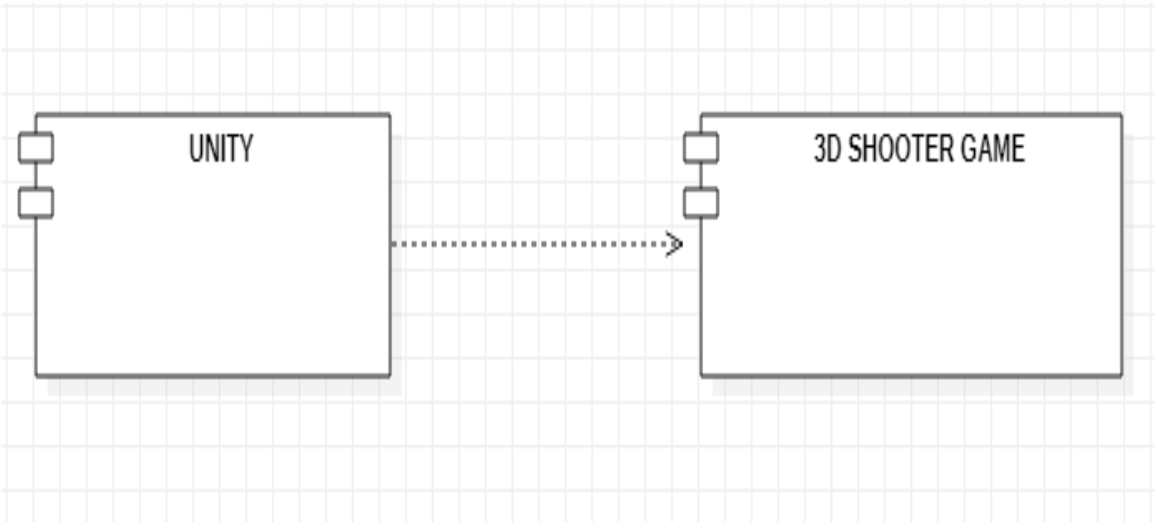
Player



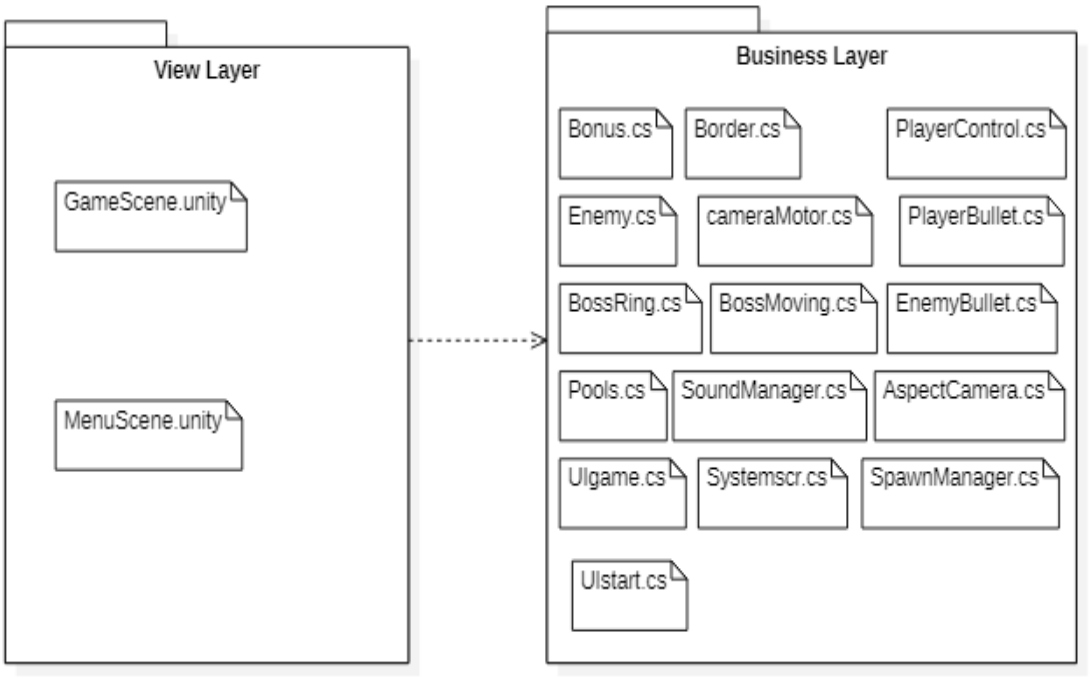
ACTIVITY DIAGRAM



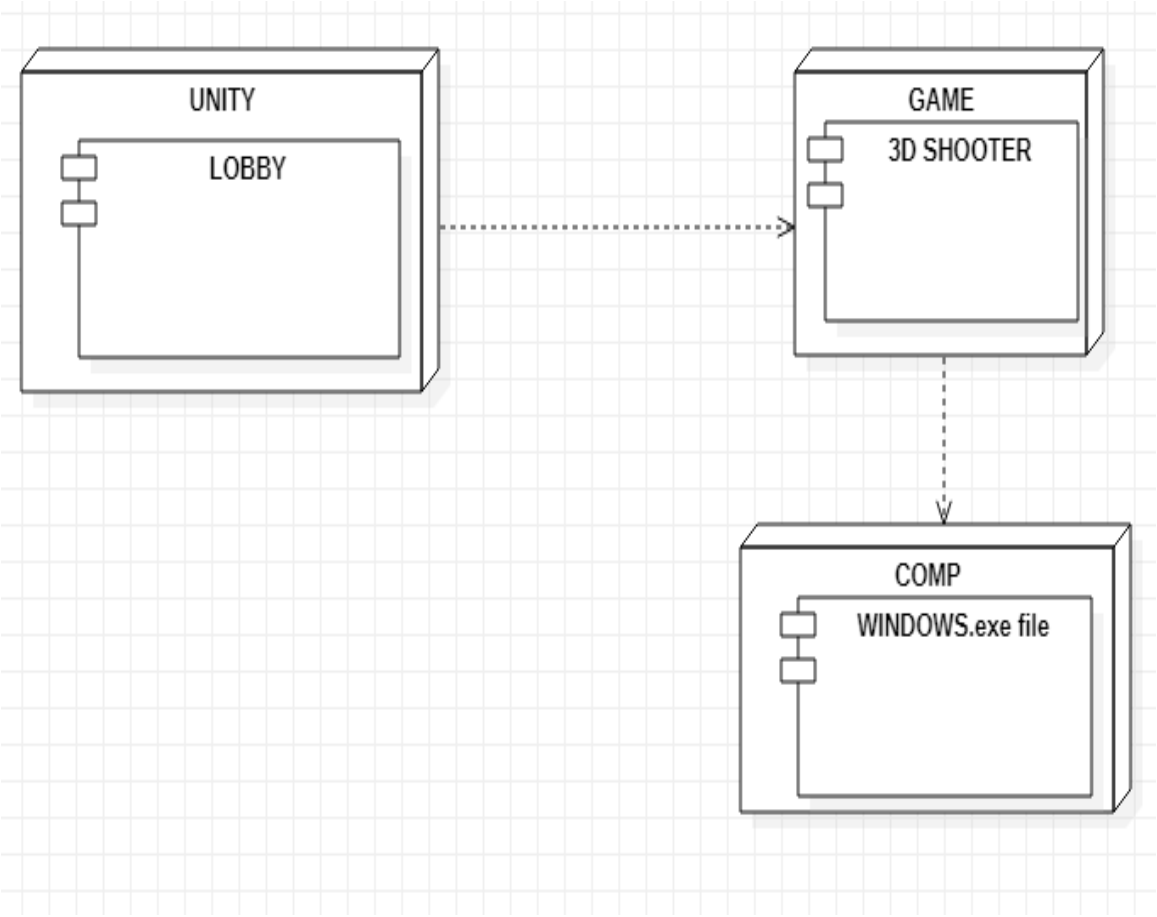
COMPONENT DIAGRAM



PACKAGE DIAGRAM



DEPLOYMENT DIAGRAM



SYSTEM CODING

VALIDATIONS

1.Player must have a windows operating system required.

2.The movement of the player is based on the control buttons on the keyboard.

3.Different types of sounds are played on different types of collisions.

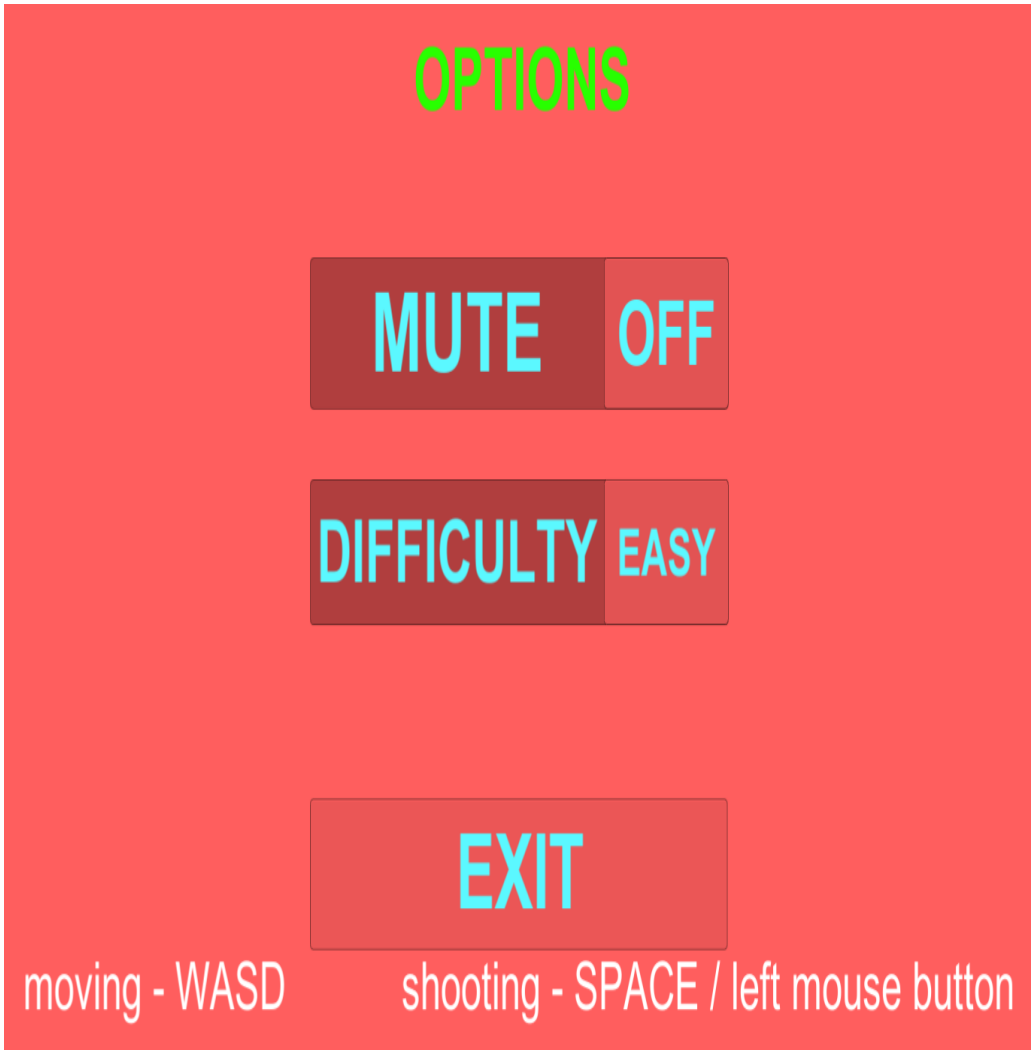
TEST CASES, TEST DATA AND TEST RESULTS

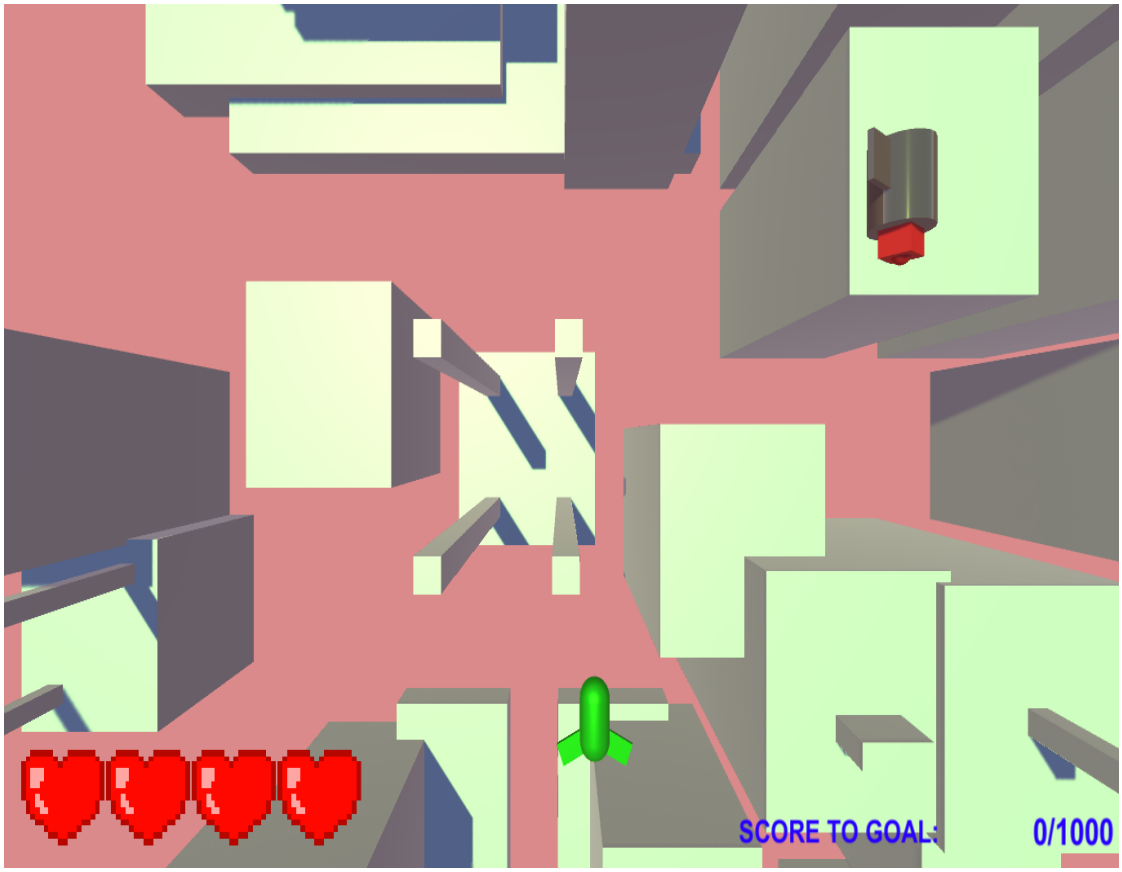
Test Case Id	Test Scenario	Test Steps	Test Data	Expected Result	Actual Result	Pass/Fail
01	Clicks on space button	Clicks on shoot	Shoot movement	Player Shoots	As Expected	Pass
02	Clicks on D	Right swipe	Right move	Player move right	As Expected	Pass
03	Clicks on A	Left swipe	Left Move	Player moves left	As Expected	Pass
04	Clicks on S	Back swipe	Back move	Player moves back	As Expected	Pass
05	Clicks on W	Forward swipe	Forward move	Players moves Forward	As Expected	Pass
06	Check type of collision	Detects Collision type	Checks appropriate actions performed	Plays appropriate collision sounds and gives damage to player	As Expected	Pass
07	Check players health	Players health	Health is above 0 or not	Player dies as soon as health=0	As Expected	Pass

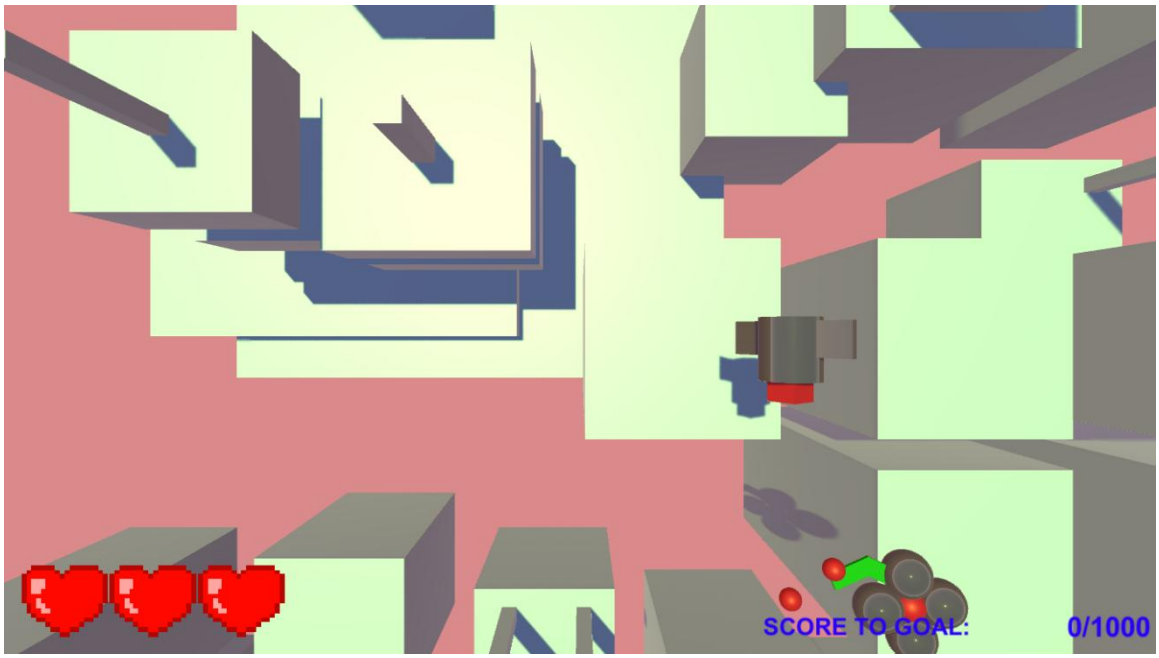
SCREEN AND REPORT LAYOUTS


SIMPLE
SHOOTER
START
OPTIONS
moving - WASD
shooting - SPACE / left mouse button

- **Option menu**


OPTIONS
MUTE
OFF
DIFFICULTY
EASY
EXIT
moving - WASD
shooting - SPACE / left mouse button


SCORE TO GOAL:
0/1000


SCORE TO GOAL:
0/1000


SCORE TO GOAL:
1060/1000

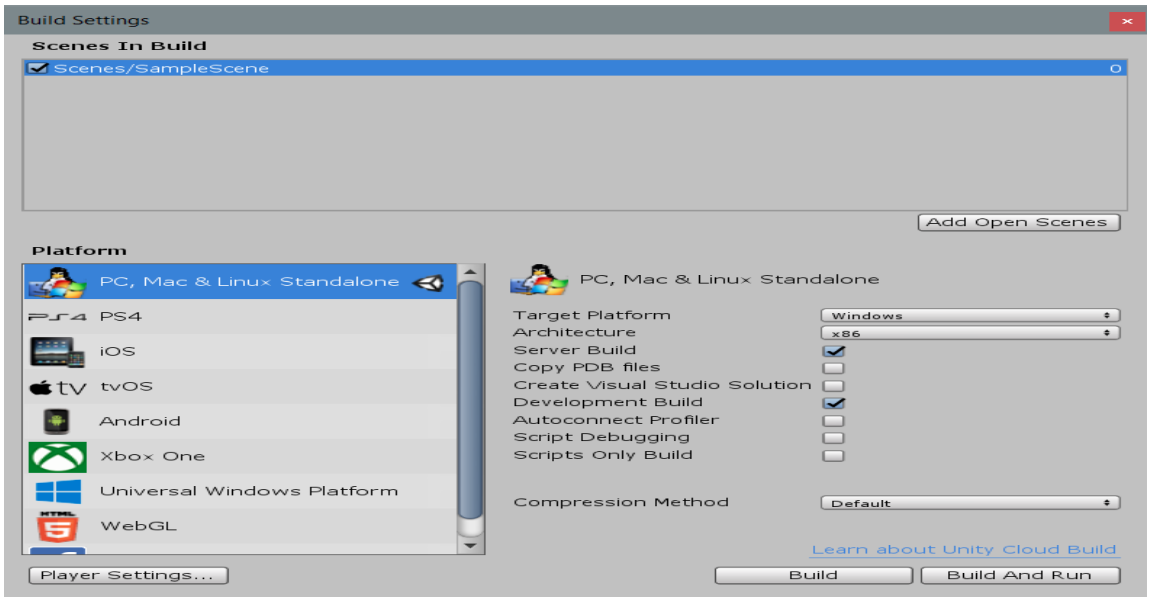

FAIL
EXIT
RETRY
SCORE TO GOAL:
1060/1000

SYSTEM IMPLEMENTATION AND UPLOADING

Now as we are done developing a game, we need to export game into an Application file(.exe file) so that the user can install it in his/her system.
For this Unity has provided a pre-build tool facility through which we can build and export our game on various systems like Android, Standalone machine (like Windows, Linux, MacOS), Xbox, PS4 etc.
For building and exporting we need to follow some steps

1. Save the game.
2. Go to the File > Build settings.
3. Now select the scene which are to be exported and arrange them according to the game flow.
4. Now select a proper platform on which game should be deployed.
5. Click on the build button.

As this game is developed for cross platforms, we need to build it for 3 different platforms individually
(ie. Windows, MacOS, Linux) by selecting proper Target Platforms.
For Windows system a SetUp file is created using “innosetup” application (www.jrsoftware.org/isdl.php)
which all users to install game with proper installer steps with a shortcut created on



the Desktop. User can uninstall this game, following the same steps to uninstall software.

You can also download the build game files for different system by using the links below:

1. Windows
https://drive.google.com/uc?export=download&id=1TT8eLHteVfxqyg4fulRz2N4n_46qVtEA
2. Linux
https://drive.google.com/uc?export=download&id=1z0B_zd8sNzJS0t9uZ0VihfG_ZdhloZXj
3. MacOSX https://drive.google.com/uc?export=download&id=1A_-pUa7F4CPe9PB9txi9F3q2VBd_Vdw0

CONCLUSION AND FUTURE SCOPE

- This project helped me to understand the concept of animations and controlling animations in Unity and how to implement it in games. It also helped me to improvise core basics of Unity, which are linking GameObjects and animations etc.
- Unity community also provides a platform where anyone can ask their doubts, helps me solving and understanding my queries. Also there are many reference videos and blog which help me to understand this topic in depth.
- I would like to develop my project further for better gameplay and adding various features for the players.
- I would also like to add gyroscope control for the movements of the player.
- Anyone wants to build a simple game can create by using the unity software. Its very simple to install and it does not required huge storage.

FUTURE ENHANCEMENTS

- I would like to provide better UI design in future updates.
- I would like to add more characters so that player can buy those characters by spending game coins.
- The future added characters will be having upgraded skills, weapons and more health than the current ones.
- According to the power of upgraded characters the difficulties will be little higher level than the current ones.
- More better the animations of objects will be there.
- There will be many level available in the game.
- I also wants that at least two players can play the game and the same time
- I would also like to provide different gameplay scenarios.
- There will be timer mode too it will be like a Arcade mode, in which there will be timer based game the player has to collect maximum number of coins and dodge the obstacles and maintain the health bar high as much as possible to gain higher scores.
- As there will be more number of users, hence I would like to provide a global leaderboard so that players can compete to appear their name in top of the leaderboard.
- I also wants to build this game for android and IOS.

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