

[LINE TO BASKET]

Final Year Project

Session 2016-2020

A project submitted in partial fulfillment of the degree of

BS in Software Engineering



Department of Software Engineering

Faculty of Computer Science & Information Technology

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Type (Nature of project)	[✓] Development (GAMING)			
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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

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Project Report

[LINE TO BASKET]

Change Record

Author(s)	Version	Date	Notes	Supervisor's Signature
	1.0		<Original Draft>	
			<Changes Based on Feedback from Supervisor>	
			<Changes Based on Feedback From Faculty>	
			<Added Project Plan>	
			<Changes Based on Feedback from Supervisor>	

APPROVAL

PROJECT SUPERVISOR

Comments: _____

Name: _____

Date: _____

Signature: _____

PROJECT MANAGER

Comments: _____

Date: _____ Signature: _____

HEAD OF THE DEPARTMENT

Comments: _____

Date: _____ Signature: _____

Dedication

*This work is dedicated to our supervisor (Mr.zaman Aziz), family, teachers and
Friends who always supported us in our educational career.*

Acknowledgement

We are really thankful to Mr. Zaman Aziz who has given us the golden opportunity to do this wonderful project under his supervision. During the documentation of “line to Basket”

We have done a lot of research and have learn many concepts regarding FYP. We would like to express our great appreciation to all Teachers, Family and Friends.

Executive Summary

LINE TO BASKET is a challenging and a brain-training puzzle game that activates your mind as you play. You can score as many dunk as possible by avoiding the obstacles and drawing a line.

In this game randomly balls are coming toward you draw a line and make the falling ball to score the basket! If a ball hits to a Golden star you will get some extra bonus points and if the

ball hit any obstacles your points will decrease. Draw a line and try to reach the basket within the time limit, the higher score you get the longer you can play!

- At first, it starts off with simple shapes, but each time your level increases, the number of lines increases, score increases and it gets more and more complicated.
- You might think it's too easy early on.
- However, clearing the simple stages is also important.
- More complicated stages can all be found scattered through the simple stages.

Table of Contents

Final Year Project	i
Session 2016-2020	i
BS in Software Engineering	i
*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	ii
Plagiarism Free Certificate	ii
Dedication.....	vi
Acknowledgement	vii
Executive Summary	viii
LINE TO BASKET is a challenging and a brain-training puzzle game that activates your mind as you play. You can score as many dunk as possible by avoiding the obstacles and drawing a line.....	viii
Table of Contents.....	x
List of Figures.....	xiv
List of Tables	xv
Chapter 1	1
Introduction	1
1.1. Background	2
1.2. Motivations and Challenges.....	3

1.3. Goals and Objectives	3
1.4. Literature Review/Existing Solutions.....	3
8.1. Gap Analysis	4
8.2. Proposed Solution.....	4
8.3. Project Plan	5
8.3.1. Work Breakdown Structure	5
8.3.2. Roles & Responsibility Matrix.....	6
8.3.3. Gantt chart.....	7
8.3.4. Proposed Methodology	8
8.4. Report Outline	9
Chapter 2	11
Software Requirement Specifications	11
.....	12
9.1. Introduction.....	12
9.1.1. Purpose.....	12
9.1.2. Document Conventions.....	12
Main Section:	12
9.1.3. Intended Audience and Reading Suggestions	13
9.1.4. References	14
9.2. Requirement Gathering.....	14
9.2.1. Technique selected	14
9.2.2. Reason of Selection	15
9.2.3. User Classes and Characteristics	15
9.2.4. Operating Environment.....	16
9.2.5. Design and Implementation Constraints	16
9.2.6. User Documentation	18
9.2.7. Assumptions and Dependencies	19
9.3. External Interface Requirements	19

9.3.1. User Interfaces.....	19
‘Line to Basket’ game will give access to player when player are connected to internet.....	19
9.3.2. Hardware Interfaces.....	22
9.3.3. Software Interfaces	22
9.3.4. Communications Interfaces.....	22
9.4. Functional Requirement.....	23
9.5. Other Nonfunctional Requirements.....	24
9.5.1. Performance Requirements	24
9.5.2. Safety Requirements	25
9.5.3. Security Requirements	25
9.5.4. Software Quality Attributes	25
9.5.5. Business Rules.....	25
9.6. Other Requirements	26
Chapter 3	26
Use Case Analysis.....	26
3.1. Use Case Model	28
3.2. Use Case Specification & Fully dressed Use cases.....	28
Chapter 4	38
System Design	38
4.1. Architecture Diagram	39
4.2. Entity Relationship Diagram with data dictionary	40
4.3. Class Diagram	42
4.4. Sequence / Collaboration Diagram.....	43
4.5. Activity Diagram.....	46
Chapter 5	48
Implementation	48
5.1. Important Flow Control/Pseudo codes	49
5.2. Components, Libraries, Web Services and stubs	53

5.3. Deployment Environment	53
5.4. Tools and Techniques	54
5.5. Best Practices / Coding Standards	54
5.6. Version Control	55
Chapter 6	56
Testing and Evaluation	56
6.1. Use Case Testing	57
6.2. Boundary value analysis	63
6.3. Data flow testing	63
6.4. Unit testing	65
Chapter 7	73
Summary, Conclusion and Future Enhancements	73
7.1. Project Summary	74
7.2. Achievements and Improvements	74
7.3. Critical Review	75
7.4. Lessons Learn	76
7.5. Future Enhancements/Recommendations	76
Appendices	77
Appendix A: User Manual	78
Reference and Bibliography	88

List of Figures

1.1	Caption of first figure of first chapter	6
1.2	Caption of second figure of first chapter	7
2.1	Caption of first figure of second chapter	14
2.2	Caption of second figure of second chapter	22
2.3	Caption of third figure of second chapter	26
5.1	Caption of first figure of fifth chapter	49
5.2	Caption of second figure of fifth chapter	49

List of Tables

1.1 label of first table of first chapter 6

1.2	label of second table of first chapter	7
2.1	label of first table of second chapter	14
2.2	label of second table of second chapter	22
2.3	label of third table of second chapter	26
5.1	label of first table of fifth chapter	49
5.2	label of second table of fifth chapter	49

Chapter 1

Introduction

Chapter 1: Introduction

'LINE TO BASKET' is a brain training puzzle game.

Draw a line and make the falling ball to score the basket! Time your drawings properly and avoid the Obstacles, Score as many balls as possible by drawing a lines before time out!

1.1. Background

A mobile game is a game played on a feature phone, smartphone/tablet, smart watch, PDA, portable media player or graphing calculator. The earliest known game on a mobile phone was a Tetris variant on the Hagenuk MT-2000 device from 1994.

In 1997, Nokia launched the very successful Snake. Snake (and its variants), that was preinstalled in most mobile devices manufactured by Nokia, has since become one of the most played games and is found on more than 350 million devices worldwide. A variant of the Snake game for the Nokia 6110, using the infrared port, was also the first two-player game for mobile phones.

Today, mobile games are usually downloaded from an app store as well as from mobile operator's portals, but in some cases are also preloaded in the handheld devices by the OEM or by the mobile operator when purchased, via infrared connection, Bluetooth, or memory card, or side loaded onto the handset with a cable.

Downloadable mobile games were first commercialized in Japan circa the launch of NTT DoCoMo's I-mode platform in 1999, and by the early 2000s were available through a variety of platforms throughout Asia, Europe, North America and ultimately most territories where modern carrier networks and handsets were available by the mid-2000s. However, mobile games distributed by mobile operators and third party portals (channels initially developed to monetize download able ringtones, wallpapers and other small pieces of content using

premium SMS or direct carrier charges as a billing mechanism) remained a marginal form of gaming until Apple's iOS App Store was launched in 2008. As the first mobile content marketplace operated directly by a mobile platform holder, the App Store significantly changed the consumer behavior and quickly broadened the market for mobile games, as almost every smartphone owner started to download mobile apps.

1.2. Motivations and Challenges

Play the games for more than you can afford to lose...

Only then you will learn the game.

Winston Churchill.

In today's busy times, everyone is running away. Someone is making money. Someone is worrying about taking care of their family. If the mind needs comfort you can play games to forget your worries, keep you and your game engaged. A brain-training puzzle games keep your mind active and Sharpe and increase the learn ability.

1.3. Goals and Objectives

- ✓ Brain training
- ✓ Make the brain active, Sharpe and fresh
- ✓ Good graphics quality
- ✓ Fun

1.4. Literature Review/Existing Solutions

2. Some competitive of **LINE TO BASKET** are;

3. Finger line Dunk
4. Flappy Dunk
5. Basketball shoot
6. Dunk a lot
7. Dunk line
8. Hop basket

But, all of competitors '**Line to Basket**' game are coming with new and interesting features and Events that providing more fun to the player.

8.1. Gap Analysis

Line to Basket:

Line to Basket Game is a challenging and a brain-training puzzle game that activates your mind as you play. You can score as many dunk as possible by avoiding the obstacles and drawing a line. It provides you more fun and good graphic experience. The main purpose is to engage your spare time with this game.

8.2. Proposed Solution

1. The human ability to play is very powerful. The reason we are so attracted to games; get spellbound, yes, even obsessed by playing mind games, is a few of our basic psychological needs are largely satisfied when we play games. We play mind games because it makes us feel powerful and allows us to avoid taking responsibility for our feelings.
2. When you've got a spare moment, on your daily commute, or before going to bed, why not experience what it feels like to activate you mind?
3. Perfect for killing a few minutes with some pure FUN.
4. A unique basketball game that will put your skills to the test!

8.3. Project Plan

We are three team members, who are working on this project, bcsm-f16-463 & bcsm-f16-464, Bcsm-f16-359 we divided half-half load of the project to each other, which is shown in **WBS** and in **Gantt chat**

8.3.1. Work Breakdown Structure

Initiate Project

- ✓ Training
- ✓ Pre project plan
- ✓ Define Requirements
- ✓ Gain approvals
- ✓ Review project plan
- ✓ Develop a Work Plan
- ✓ Develop Work Breakdown Structure

Taking requirement

- ✓ Gathering requirement
- ✓ Requirement analysis
- ✓ Verification
- ✓ validation

Analysis and design documentation

- ✓ Analysis document
- ✓ Risk management
- ✓ System architect design

Software product

- ✓ Prototyping
- ✓ Front-end design
- ✓ Back-end design
- ✓ Databases integration

Software testing

- ✓ Unit testing
- ✓ Security testing
- ✓ Integration testing

Deployment and maintenance

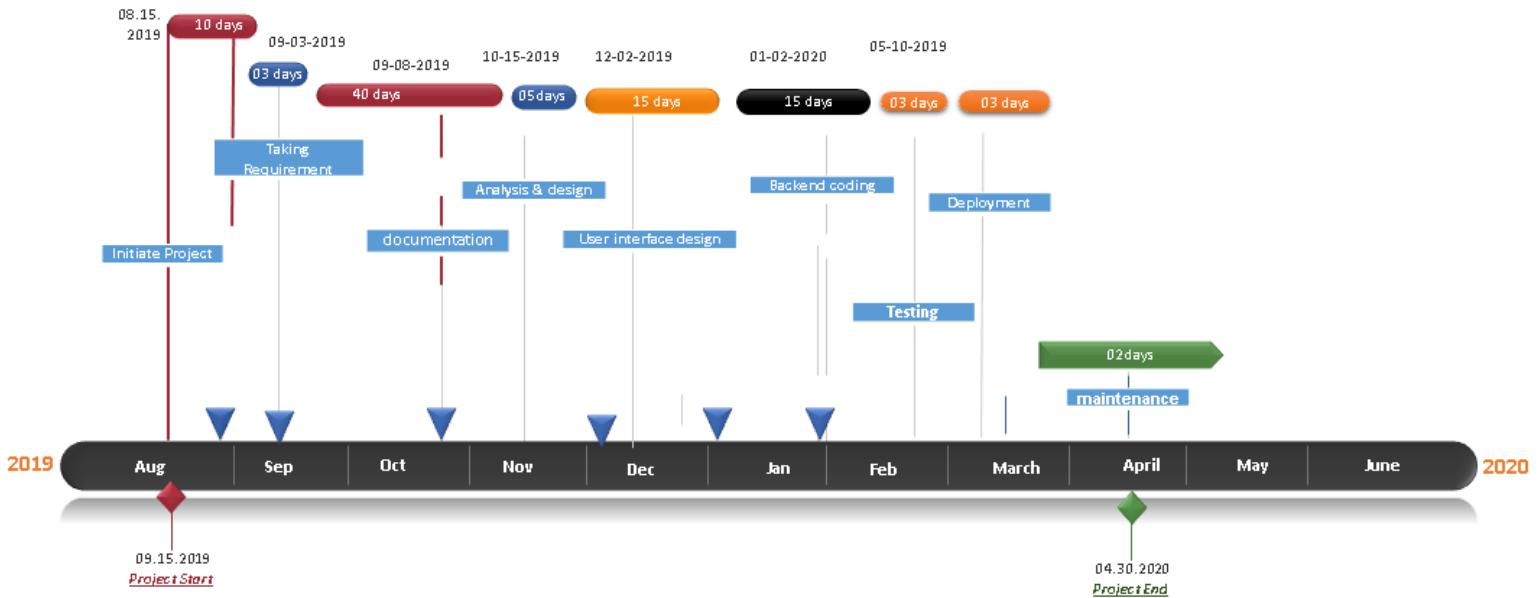
- ✓ Users satisfaction
- ✓ Users feedbacks
- ✓ Upgrade system

8.3.2. Roles & Responsibility Matrix

WBS #	WBS Deliverable	Activity to Complete the Deliverable	Duration	Responsible Team Member(s)
			(# of Days)	
1	Initiate Project	Documentation	10	Ubair ,Hira, Zeeshan
2	Taking Requirement	Documentation	03	Hira, Ubair
3	documentation	Documentation	40	Ubair, Zeeshan

4	Analysis& design	Documentation	05	Hira, Ubair, Zeeshan
5	User interface design	C#, java coding	15	Zeeshan, Ubair
6	Backend coding	Coding	15	Ubair
7	Testing	Checking	03	Hira
8	Deployment	Documentation(user manual)	03	Zeeshan, Ubair
9	maintenance		02	Ubair, Hira

8.3.3. Gantt chart



8.3.4. Proposed Methodology

As in any project, some planning and methodologies have been considered to develop this game, mobile application and, among all of them, I have adapted **AGILE** methodologies that focus at releasing working versions of software early and often, which was perfect for the project at hand since I needed to obtain feedback after each version. In this context, projects can be split into sprints, which can be defined as time boxes of one month or less during which a list of specified tasks can be considered as "DONE".

8.4. Report Outline

The title page:

- ❖ **Title:** “LINE TO BASKET”
- ❖ **Author:**
 - Ubair Najum
 - Hira Najum
 - Zeeshan Haider
- ❖ **Course:** “Final Year Project”

Abstract:

- ❖ **Brief description:**

In this report, we have briefly described about the project and its features, we describe all the functionalities of player and creator. All work is shown out with the help of WBS and Gantt Chart

This report is generated using researched based techniques

Table of contents:

- Introduction
- Background
- Motivations and challenges
- Literature review/ existing solution
- Gap analysis
- Proposed solution
- Project plan <<WBS>> <<roles and responsibility>> <<Gantt chart>>
- Report outline

Objectives:

Provides you more fun and good graphic experience. The main purpose is to engage your spare time with this game.

Equipment:

- Internet
- Android devices
- Laptop

Chapter 2

Software Requirement Specifications

Chapter 2: Software Requirement Specifications

9.1. Introduction

9.1.1. Purpose

An introduction of the Software Requirements Specification (SRS) provides an overview of the entire SRS with purpose, scope and overview of the SRS. The main aim of this document is to defining the problem statement.

'Line to Basket' is brain training game.

9.1.2. Document Conventions

Main Section:

1. Font: Calibri (Body)
2. Face: Bold
3. Size : 20

Sub Section:

1. Font: Calibri(Body)
2. Face: Bold
3. Size: 16

Other Section:

1. Font: Calibri(Body)
2. Face: Normal
3. Size: 12

9.1.3. Intended Audience and Reading Suggestions

Line To Basket project documentation is carried out under the supervision of Mr. Zaman Aziz.

Developers are Ubair, Hira and Zeeshan.

Intended audience will be:

- Players
- Creator

Players will play game firstly, with simple shapes, but each time level, lines, and score will increases and the game will get more complex and more interesting.

Creator will update the game and upload the game on play store and also provide some reward, Events to make the game more interesting.

Product Scope

- At first, it starts off with simple shapes, but each time your level increases, the number of lines increases, score increases and it gets more and more complicated.
- You might think it's too easy early on.
- However, clearing the simple stages is also important.
- More complicated stages can all be found scattered through the simple stages.
- Different events include
- LEADERBOARD Includes on which you can see higher scorer from WORLDWIDE.

- There are 200+ stages.
- Good graphics
- Perfect for killing a few minutes with some pure FUN
- much more

9.1.4. References

[1] Cellular Phones, ACM Computers in Entertainment, vol. 3, no. 3, Article 3B, July 2005.

[2] M. Abolins, Platforms for Play, <http://www.pocketgamer.co.uk/r/Mobile/feature.asp?c=1266>, 21 July 2006.

[3] J. R. Briggs, J2ME: The next major games platform?, <http://www.javaworld.com/javaworld/jw-03-2001/jw-0309-games-p2.html>, 9 March 2001.

[4] Ola Davidsson, Johan Peitz, Staffan Björk. Game Design Patterns for Mobile
Chris Games, Project report to Nokia Research Center, Finland, 2004.

9.2. Requirement Gathering

9.2.1. Technique selected

Prefer Technique: **Interviews gathering**

9.2.2. Reason of Selection

The reason why we selected this technique

What?	Interviews gathering technique
Why?	They are useful to obtain detailed information about personal feelings, perceptions and opinions. They allow more detailed questions to be asked. they usually achieve a high response rate, new ideas generated, gather good and new advices
When?	when I want to know about people's opinion about my project
How?	Online, Sitting face to face
Where?	Office, Home, university, cafe etc
Who?	My team

9.2.3. User Classes and Characteristics

'Line to Basket' game will support two types of users.

Player & Creator/Developer

Player will play the game

Creator will upload the game on play store and update the different new and interesting features in the game.

9.2.4. Operating Environment

- **Game Engine:** UNITY 3D, UNITY 2D
- **Graphic Designing:** Adobe Photoshop, CS6, coral draw X9, GIMP
- **Language:** C-sharp, java, c++
- **OS:** ANDROID

9.2.5. Design and Implementation Constraints

There are some key tools and techniques that will help to ensure the successful implementation of a project. [LINE TO BASKET]

1) Objects

The game will use the following major objects:

- Balls
- Obstacles

Game Engine: UNITY 3D, UNITY 2D

Graphic Designing: Adobe Photoshop, CS6, coral draw X9, GIMP

Language: C-sharp, java, c++

OS: ANDROID

- Golden Star
- Hoop
- Etc...

Objects movements;

Objects move on the screen. Different levels have different velocity, speed of movements, [difficulties increase → when level increase]

Variables;

- x coordinate • y coordinate
- x velocity • y velocity • rotation • rotational velocity

2) Functions

The game will use the following major functions:

- Left (boolean): start turning left if true
- Right (boolean) start turning right if true
- Random(): balls random locations
- die(): if not basket a ball
- draw(): draw a lines
- start(): when games start
- score(): calculate the score
- obstacles: (X)→ obstacles decrease the score
- basket(): if all balls are basket update(); will call and level will change.
- Update(): update the levels of games by calling level(); funct.
- Levels():games level.

- Reset(): restart the game or level
- Etc.....

3) Classes

- Shapes{}
- Settings{}
- Levels{}
- Events{}
- User{}
- Etc...

4) Scoreboard

The scoreboard keeps track of and displays the score, number of lives, and level for the player.

Variables;

- Score
- level
- lives

9.2.6. User Documentation

- Game tutorials are provided for the beginners.
- We will provide with web page named "Help"
- Complaint section is provided for any query or issue.

- Ask for feedback

9.2.7. Assumptions and Dependencies

- Line to Basket game is totally free. It is available to players and is accessible through internet.
- Anyone can download it from play store.
- To assume that every player has internet connection.

9.3. External Interface Requirements

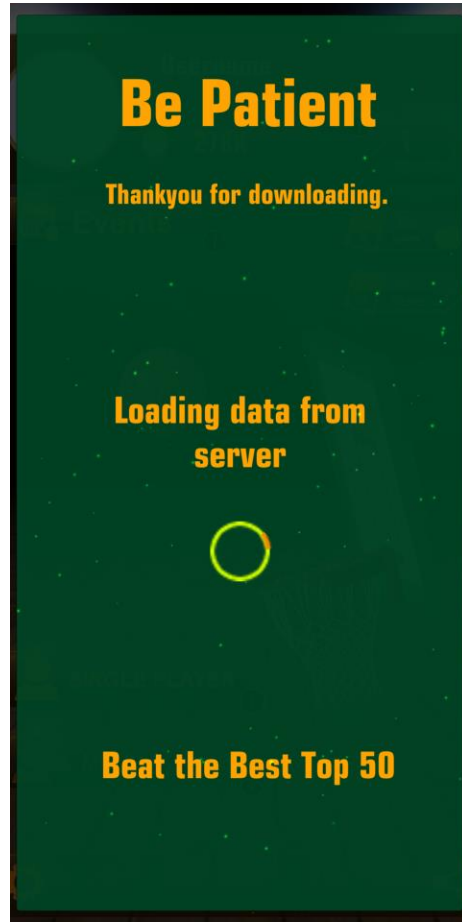
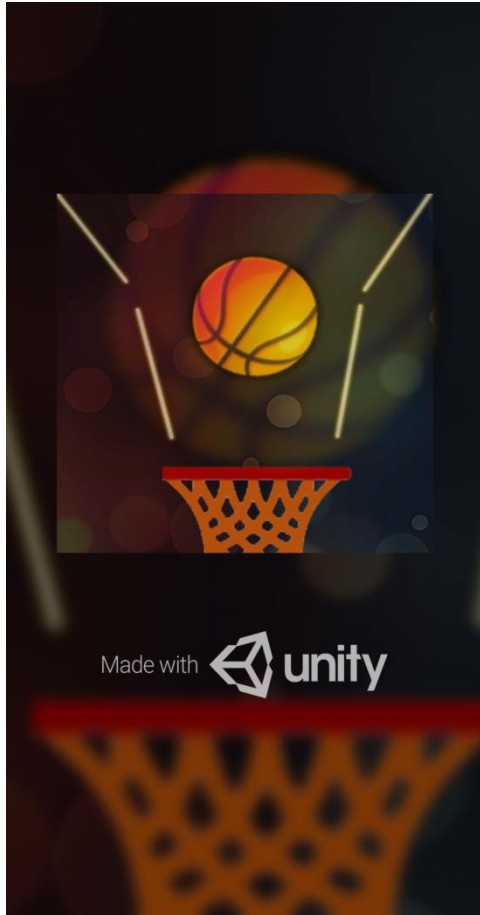
It includes hardware, software and database elements with which a system or component must interact. This information provides us how the system communicates with external components.

9.3.1. User Interfaces

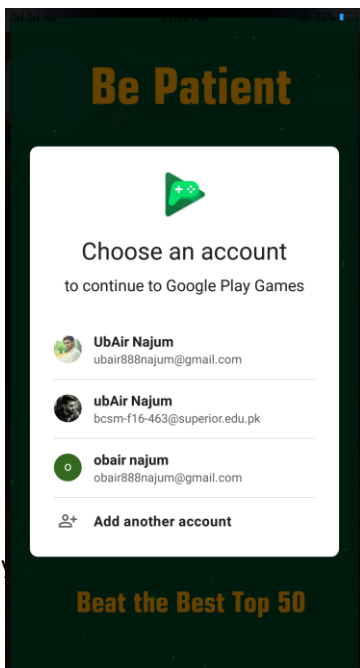
'Line to Basket' game will give access to player when player are connected to internet.

User functionalities:

- Splash screen



- User choose an account to continue to Google play Game



- Main Menu will open



9.3.2. Hardware Interfaces

- Workstation

1. **PC (personal computers)**

It consists of CPU, monitor and mouse.

2. **Handheld devices:**

Handheld devices include mobile phones, tablets, and many other smart devices.

3. **Laptops:**

It is a portable device. It can also be used as a desktop machine.

9.3.3. Software Interfaces

- **Game Engine:** UNITY 3D, UNITY 2D
- **Graphic Designing:** Adobe Photoshop, CS6, coral draw X9, GIMP
- **Language:** C-sharp, java, c++
- **OS:** ANDROID
- **Android Version:** (Jelly bean versions 4.1---- Pie Version 9.0)

9.3.4. Communications Interfaces

- **Google playStore:** play store of Google
- **Google play game:** Google games record server

9.4. Functional Requirement

Registration:

REQ-REG-1: Add user: User/player register through **Google play games** (name and Avatar) automatically fetch from Google play games account.

REQ-REG-2: Assign Id: This system provide id for every registered player.

REQ-REG-3: view info: The menu interface of player showed the information that who is playing.

Record System:

REQ-RS-1: Google play game: The game play account keeps player information (Name and Avatar).

Player Module:

REQ-PM-1: Data Members: Player Name and Avatar.

Splash:

REQ-Sp-1: Splash: This is the initial screen and introduces the **LINE TO BASKET** logo.

Main Menu:

REQ-MM-1: Presents all of the possible choices for the user as well as a captivating graphic image that introduces the look and feel of the game and of the series.

New Game:

REQ-NG-1: New Game/selection: player can select the level which he wants to play and can choose the previous levels also to improve score or can select the new game from the beginning.

Settings:

REQ-OP-1: Settings: Gives the user ability to checkout the more related apps, or give feedbacks or exit option

Share:

REQ-C-1: sharing: player can share the game link through whatsapp, imo, messenger etc (social media) with friends and family.

Task Module:

REQ-TM-1: S: The player displays the event mood.

REQ-TM-2: Score/Coins: Display high score and coins.

REQ-TM-3: levels: Display numbers of level (remaining or clear/pass).

REQ-TM-4: profile: Display profile.

REQ-TM-5: Leaderboard: The game includes a leaderboard to display the best results obtained by the player and compare them to others.

REQ-TM-6: Settings: change the game settings (sound, music, hoop, balls) etc.

REQ-TM-7: Playing: Start new game, Pause, resume, quite game.

Data Storage:

REQ-DS-1: use Google play services

REQ-DS-2: all data is stored in *Google play games*, against the Google account

REQ-DS-3: store player's name, avatar, score and passing level or remaining level history.

9.5. Other Nonfunctional Requirements

9.5.1. Performance Requirements

- ✓ This Game should have high performance and low failure rates.
- ✓ Good graphics interface.
- ✓ Smooth running

- ✓ Feedbacks
- ✓ Launch update versions
- ✓ Android version 5.0-onword (Lollypop.....).
- ✓ All android devices (mobile, tablets, pads).

9.5.2. Safety Requirements

- ✓ Hacking and Cracking.

9.5.3. Security Requirements

- ✓ User data (name and avatar) handle by Google play games services
- ✓ Accounts responsibility.
- ✓ Profile responsibility.
- ✓ Data is encrypted.

9.5.4. Software Quality Attributes

- ✓ Flexibility: user friendly interface
- ✓ Reliability: smooth running
- ✓ Graphics quality: good
- ✓ Accuracy
- ✓ performance

9.5.5. Business Rules

- ✓ Name and Avatar.
- ✓ User has to follow terms and conditions of game.

9.6. Other Requirements

Some sort of internationalization and localization features nowadays that is the case for Unity3D (some interesting solutions are available on the Asset Store), XCode and Android Studio, just to name a few. No need to reinvent the wheel when great solutions already exist.

Chapter 3

Use Case Analysis

Chapter 3: System Analysis

Use case designed for describing about the whole scenario that how your software will interact with user. Describing actors and their property. How player will interact with the game and what actions actors will allow to perform within the system.

<<Use case Specifications>>

Use case Specification	
Use case name	Login
Actors	Player(primary) ,Google play service(secondary)& Game System(Secondary)
Description	Allow the player to logging in with Google account
Pre-condition	Player has Google account to insert in Google play
Post-condition	User name show in game menu
Basic path	<ul style="list-style-type: none"> • The player insert the Google account (ID,Pass) • Google play verify the account is valid or not • Logging in successfully
Alternative path	<ul style="list-style-type: none"> • Invalid account • Don't have Google account • Internet connection is failed
Business rules	<ul style="list-style-type: none"> • Logging in with only one account • Connected with internet
Non-functional req	<ul style="list-style-type: none"> • Time for complete the process • Security of the account
Extension Points	<<include>> Signup with Google play

Use case Specification	
Use case name	View Info
Actors	Player(primary) , Game System(Secondary)
Description	player view the info about the game
Pre-condition	Player is on main screen
Post-condition	Viewed
Basic path	<ul style="list-style-type: none"> • Tab on (i) button

Alternative path	<ul style="list-style-type: none"> • Tab on other options
Business rules	<ul style="list-style-type: none"> • Install the game
Non-functional req	No
Extension Points	No

Use case Specification	
Use case name	Single Player
Actors	Player(primary),Game System(Secondary)
Description	play by single player
Pre-condition	Only single player
Post-condition	start playing
Basic path	<ul style="list-style-type: none"> • The player is on main screen • Tab single player • Choose the level • Start single playing
Alternative path	<ul style="list-style-type: none"> • Tab on other options
Business rules	<ul style="list-style-type: none"> • Player must be single
Non-functional req	<ul style="list-style-type: none"> • Time for complete the process
Extension Points	<<include>> Level Selection → <<extent>>Play game → <<include >>View score <<extend>>play again

Use case Specification	
Use case name	Multiplayer
Actors	Player(primary) , Game System(Secondary)
Description	you can play with your friends
Pre-condition	Having group of friends
Post-condition	Enjoy the game with friends
Basic path	<ul style="list-style-type: none"> • The player is on main screen • Tab Multiplayer player • Choose the level • Start multiplying
Alternative path	<ul style="list-style-type: none"> • Tab on other options
Business rules	<ul style="list-style-type: none"> • Must have two or more players
Non-functional req	<ul style="list-style-type: none"> • Time for complete the process
Extension Points	<<extend>> → coming soon

Use case Specification	
Use case name	Events
Actors	Player(primary) , Game System(Secondary)
Description	Event are actually a chance to get more and more coin and show your friends that you are the best by beating there score and put your name on the Top of Leader board
Pre-condition	Logging with Google play
Post-condition	Enjoy the event
Basic path	<ul style="list-style-type: none"> • Tab on event • Choose the event • Start playing
Alternative path	<ul style="list-style-type: none"> • Tab on other options • Insufficient coins

Business rules	<ul style="list-style-type: none"> • Logging in with Google account • Sufficient coins
Non-functional req	<ul style="list-style-type: none"> • Time for complete the process
Extension Points	<<include>> Choose event (Saturday challenge, sweet Sunday challenge, Thursday Trophy)

Use case Specification	
Use case name	Settings
Actors	Player(primary) , Game System(Secondary)
Description	Display different Settings option
Pre-condition	Player is on main screen
Post-condition	Make changes
Basic path	<ul style="list-style-type: none"> • Tab settings • Choose setting
Alternative path	<ul style="list-style-type: none"> • Tab on other option •
Business rules	<ul style="list-style-type: none"> • Logging in with only one account • Connected with internet
Non-functional req	<ul style="list-style-type: none"> • Time for complete the process
Extension Points	More apps , Feedback , Exit

Use case Specification	
Use case name	Share
Actors	Player(primary) , Game System(Secondary)
Description	share the link of the game

Pre-condition	Games is installed
Post-condition	Able to sharing with others
Basic path	<ul style="list-style-type: none"> • Tab on share • Chose the options to share the link via • Select the sharing platform • share
Alternative path	<ul style="list-style-type: none"> • tab on other options • internet connection failed
Business rules	<ul style="list-style-type: none"> • Must connected with internet connection • Select the path (share via)
Non-functional req	<ul style="list-style-type: none"> • Time for complete the process • Internet speed
Extension Points	Gmail, Whatsapp, Facebook, share It

Use case Specification	
Use case name	View coins
Actors	Player(primary) , Game System(Secondary)
Description	player view the number of coins he earned
Pre-condition	Player is on main screen
Post-condition	Viewed
Basic path	<ul style="list-style-type: none"> • Main menu screen
Alternative path	<ul style="list-style-type: none"> • Player is on other screen
Business rules	<ul style="list-style-type: none"> • Play the game and earn the coins
Non-functional req	No
Extension Points	No

Use case Specification	
Use case name	View Tickets
Actors	Player(primary) , Game System(Secondary)
Description	Player view the number of tickets
Pre-condition	Player is on main screen
Post-condition	Viewed
Basic path	<ul style="list-style-type: none"> • Main menu screen
Alternative path	<ul style="list-style-type: none"> • Player is on other screen
Business rules	<ul style="list-style-type: none"> • Wait 60min for per ticket
Non-functional req	No
Extension Points	No

Use case Specification	
Use case name	Get Tickets
Actors	Player(primary) , Game System(Secondary)
Description	if player want to play and don't want to wait for 60mins so player can get the ticket by watching a video
Pre-condition	<ul style="list-style-type: none"> • Internet connection • Player is on main screen
Post-condition	<ul style="list-style-type: none"> • Get Tickets
Basic path	<ul style="list-style-type: none"> • Main menu screen • Watch video • Get ticket
Alternative path	<ul style="list-style-type: none"> • Internet connection failed

	<ul style="list-style-type: none"> • Tab on other option
Business rules	<ul style="list-style-type: none"> • Must watch video to get a ticket
Non-functional req	<ul style="list-style-type: none"> • Connection speed
Extension Points	<<include>>Watch Video

Use case Specification	
Use case name	Store
Actors	Player, Creator
Description	Store is an online market from where the player get this game to play
Pre-condition	<ul style="list-style-type: none"> • Internet connection
Post-condition	<ul style="list-style-type: none"> • install
Basic path	<ul style="list-style-type: none"> • store • search • install the game
Alternative path	<ul style="list-style-type: none"> • Internet connection failed
Business rules	<ul style="list-style-type: none"> • Must have internet
Non-functional req	<ul style="list-style-type: none"> • Connection speed
Extension Points	No

Use case Specification	
Use case name	Install game

Actors	Player, Creator
Description	Installing the game
Pre-condition	<ul style="list-style-type: none"> • Internet connection
Post-condition	<ul style="list-style-type: none"> • Installed
Basic path	<ul style="list-style-type: none"> • store • search • install the game
Alternative path	<ul style="list-style-type: none"> • Internet connection failed
Business rules	<ul style="list-style-type: none"> • Must have internet
Non-functional req	<ul style="list-style-type: none"> • Connection speed
Extension Points	<<include>> uninstall

Use case Specification	
Use case name	Upload
Actors	Creator
Description	creator will upload the game on STORE like play store etc ..., from where the user can install it in their devices
Pre-condition	<ul style="list-style-type: none"> • Internet connection
Post-condition	<ul style="list-style-type: none"> • Uploaded successfully
Basic path	<ul style="list-style-type: none"> • Logging with account • Upload the game
Alternative path	<ul style="list-style-type: none"> • Internet connection failed
Business rules	<ul style="list-style-type: none"> • Must have internet • Must have store account
Non-functional req	<ul style="list-style-type: none"> • Connection speed
Extension Points	<<include>> install game

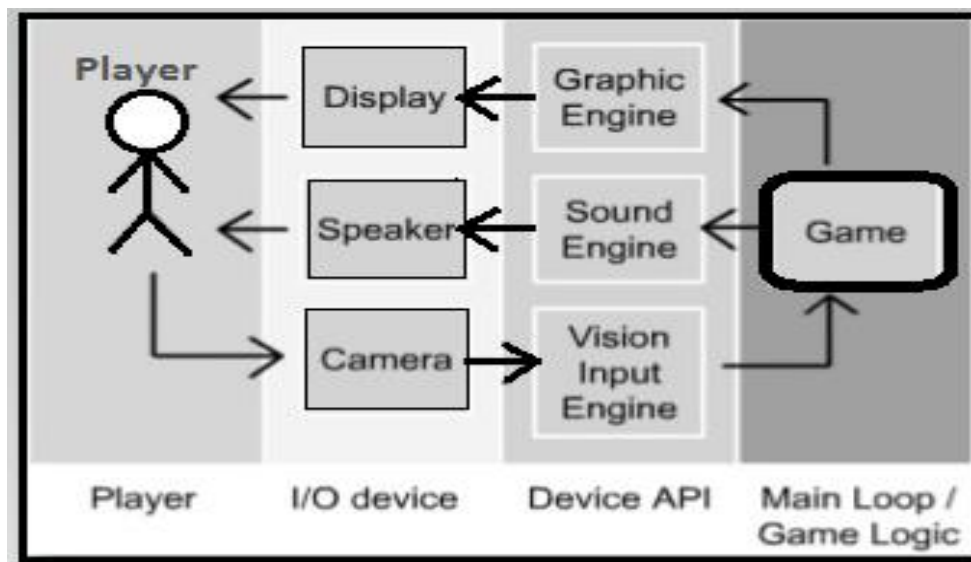
Use case Specification	
Use case name	Adjust/update/edit and Fix
Actors	Creator
Description	The developer is the person who only update , fix and edit the game issues after the feedback of players
Pre-condition	<ul style="list-style-type: none"> • Internet connection • Logging in with store account
Post-condition	<ul style="list-style-type: none"> • Overwrite new Apk file
Basic path	<ul style="list-style-type: none"> • Logging with store account • Fix /edit • Upload apk
Alternative path	<ul style="list-style-type: none"> • Internet connection failed
Business rules	<ul style="list-style-type: none"> • Must have internet • Must have store account • Make some changes in previous apk file
Non-functional req	<ul style="list-style-type: none"> • Connection speed
Extension Points	No

Chapter 4

System Design

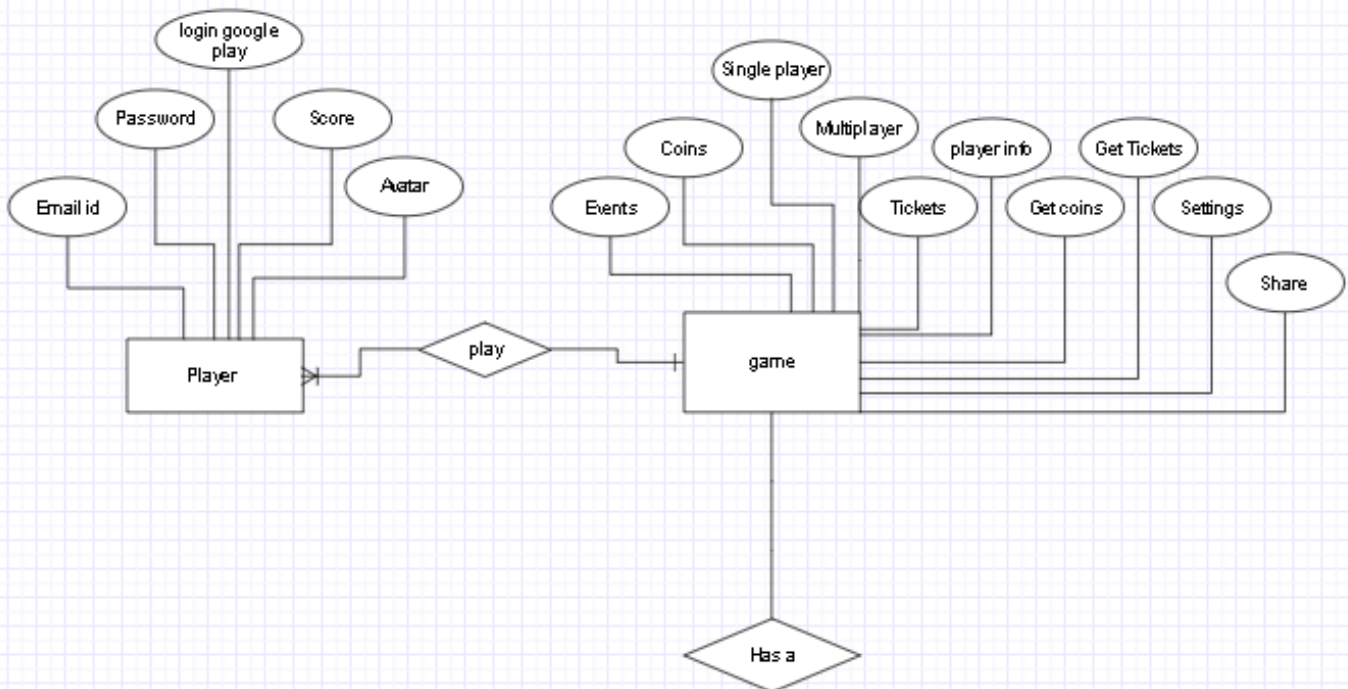
Chapter 4: System Design

We are designing the whole system conceptually, just to clear out how our system will look like. We have designed the architecture diagram how software will interact and look like in real world. We design different models like domain model and ERD model which indicates the relationship between all components and classes. Concluding from diagrams how system will work and interact with end user and administration.

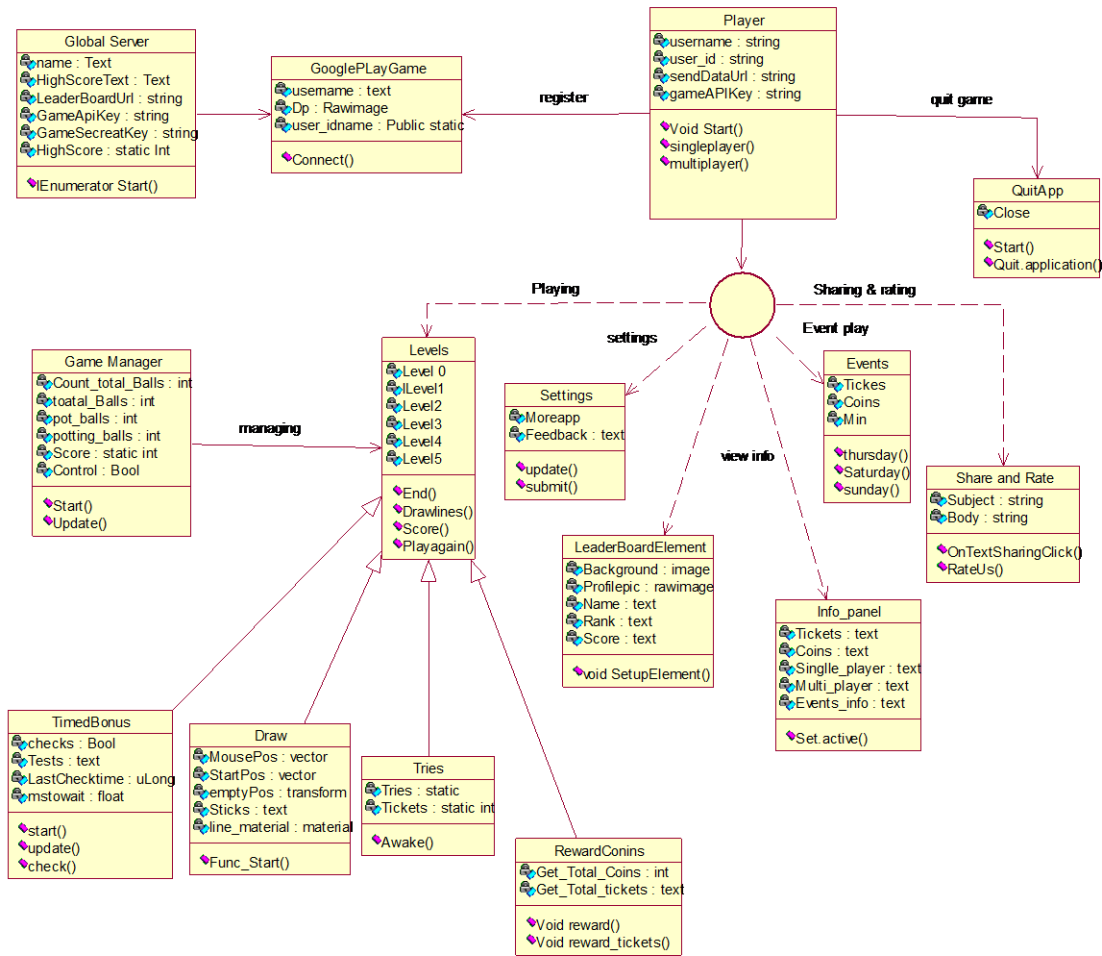


4.1. Architecture Diagram

4.2. Entity Relationship Diagram with data dictionary

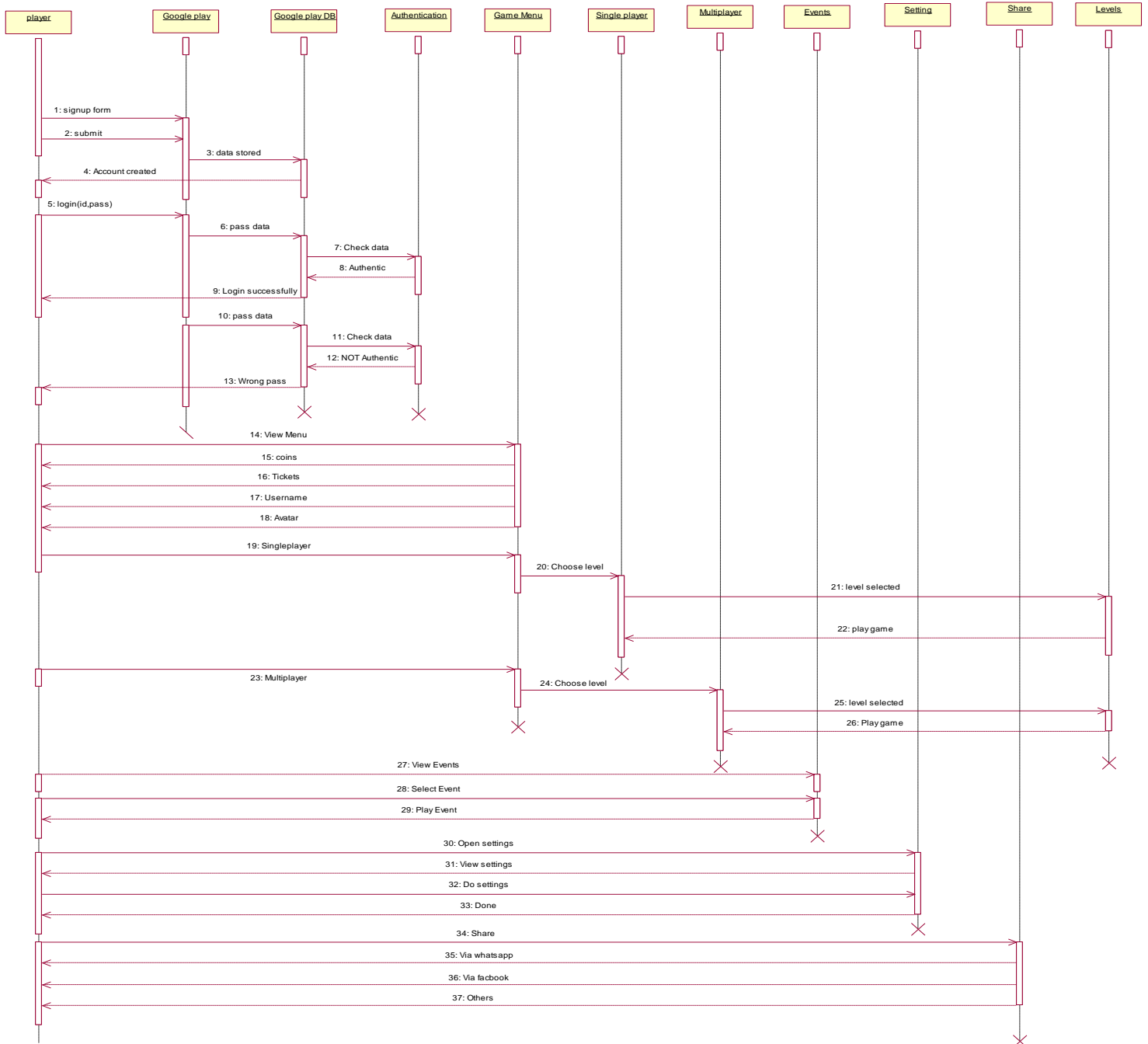


4.3. Class Diagram

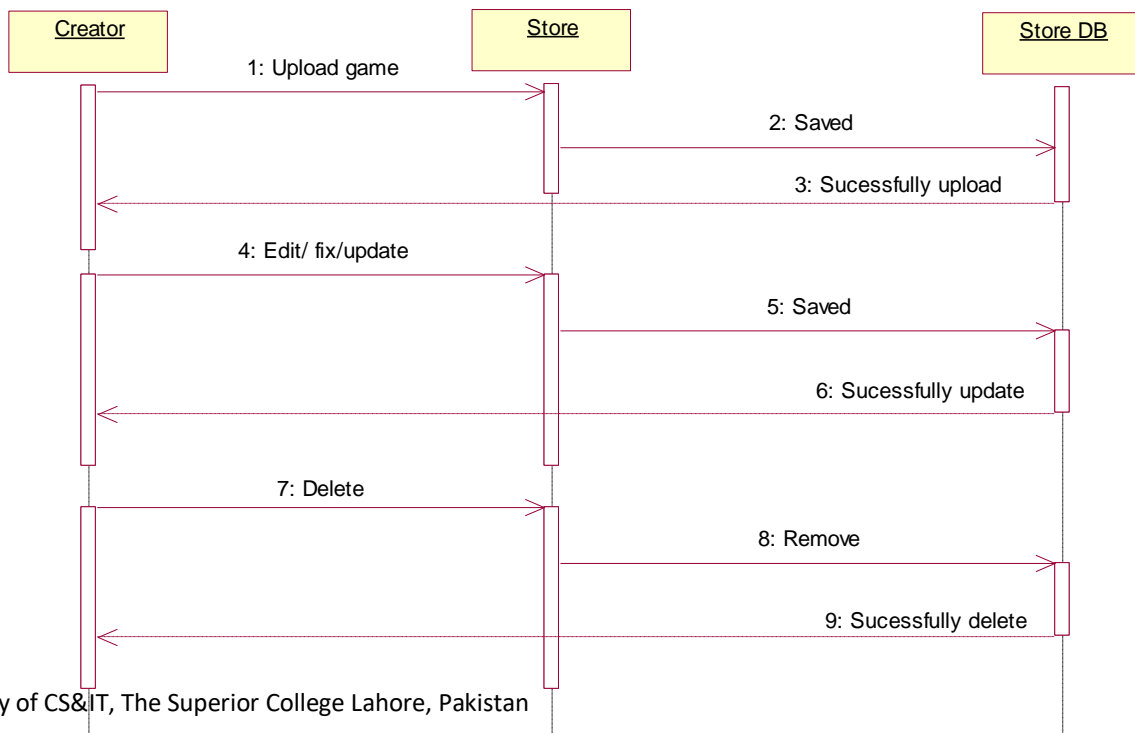


4.4. Sequence / Collaboration Diagram

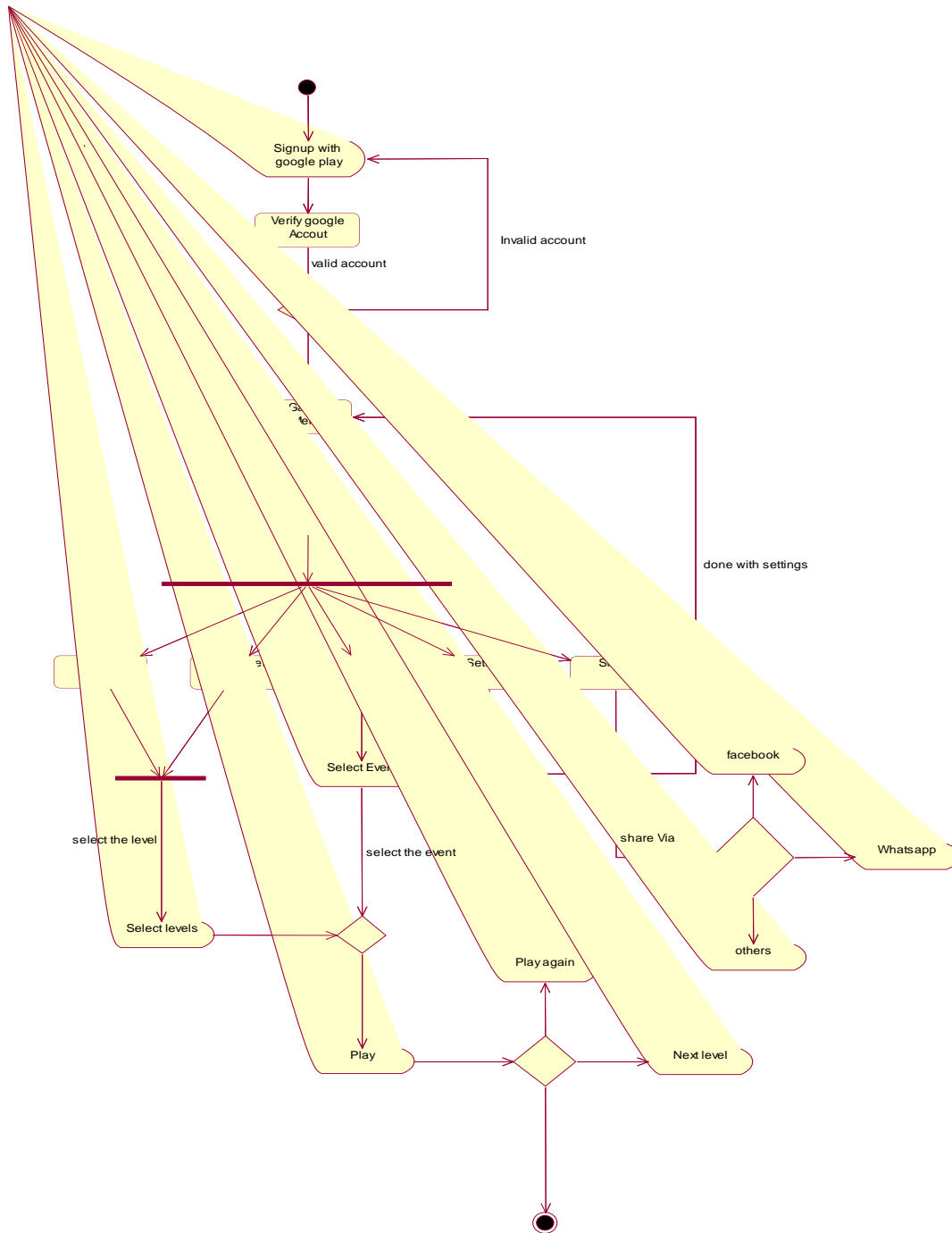
Sequence diagram of Player



Sequence diagram of creator



4.5. Activity Diagram




Chapter 5

Implementation

Chapter 5: Implementation

5.1. Important Flow Control/Pseudo codes

Info panle code



```
1 using System.Collections;
2 using System.Collections.Generic;
3 using UnityEngine;
4
5 public class info_panel_functionality : MonoBehaviour {
6     public GameObject info_panel;
7     public void single_player_info(){
8         button_click_sound.click_sound.click ();
9         info_panel.SetActive (true);
10        info_panel.transform.GetChild (0).gameObject.SetActive (true);
11        info_panel.transform.GetChild (1).gameObject.SetActive (false);
12        info_panel.transform.GetChild (2).gameObject.SetActive (false);
13        info_panel.transform.GetChild (3).gameObject.SetActive (false);
14        info_panel.transform.GetChild (4).gameObject.SetActive (false);
15    }
16
17    public void Event_info(){
18        button_click_sound.click_sound.click ();
19        info_panel.SetActive (true);
20        info_panel.transform.GetChild (0).gameObject.SetActive (false);
21        info_panel.transform.GetChild (1).gameObject.SetActive (true);
22        info_panel.transform.GetChild (2).gameObject.SetActive (false);
23        info_panel.transform.GetChild (3).gameObject.SetActive (false);
24        info_panel.transform.GetChild (4).gameObject.SetActive (false);
25    }
26 }
27
28 public void multi_player_info(){
29     button_click_sound.click_sound.click ();
30     info_panel.SetActive (true);
31     info_panel.transform.GetChild (0).gameObject.SetActive (false);
32     info_panel.transform.GetChild (1).gameObject.SetActive (false);
33     info_panel.transform.GetChild (2).gameObject.SetActive (true);
34     info_panel.transform.GetChild (3).gameObject.SetActive (false);
35     info_panel.transform.GetChild (4).gameObject.SetActive (false);
36 }
37 }
38
39 public void
40     button_c
41     info_panel.SetActive (true);
```

This file has line endings (UNIX) which differ from the policy settings (Windows). Convert to Windows line endings OK

Click button sound code

o selection

```

1 using System.Collections;
2 using System.Collections.Generic;
3 using UnityEngine;
4
5 public class button_click_sound : MonoBehaviour {
6
7     public static button_click_sound click_sound;
8     AudioSource audios;
9     public AudioClip sound_clip;
10    // Use this for initialization
11    void Awake () {
12        if (!click_sound) {
13            click_sound = this;
14            audios = GetComponent<AudioSource> ();
15        }
16    }
17 }
18
19 public void click(){
20     audios.PlayOneShot (sound_clip);
21 }
22 }
23

```

Menu code

ball_Col | get_sco | get_sco | info_an | get_coll | timing.c | initialize | initialize | targetCr | Lose_Hli | restartE | Next_Scr | rotation | Getting | grab_sci | show_sc | show_sc | IAPMan | countin | Menu x | wait_

Run Version Control Tools Window Help

MonoDevelop-Unity

Press 'Control+' to search

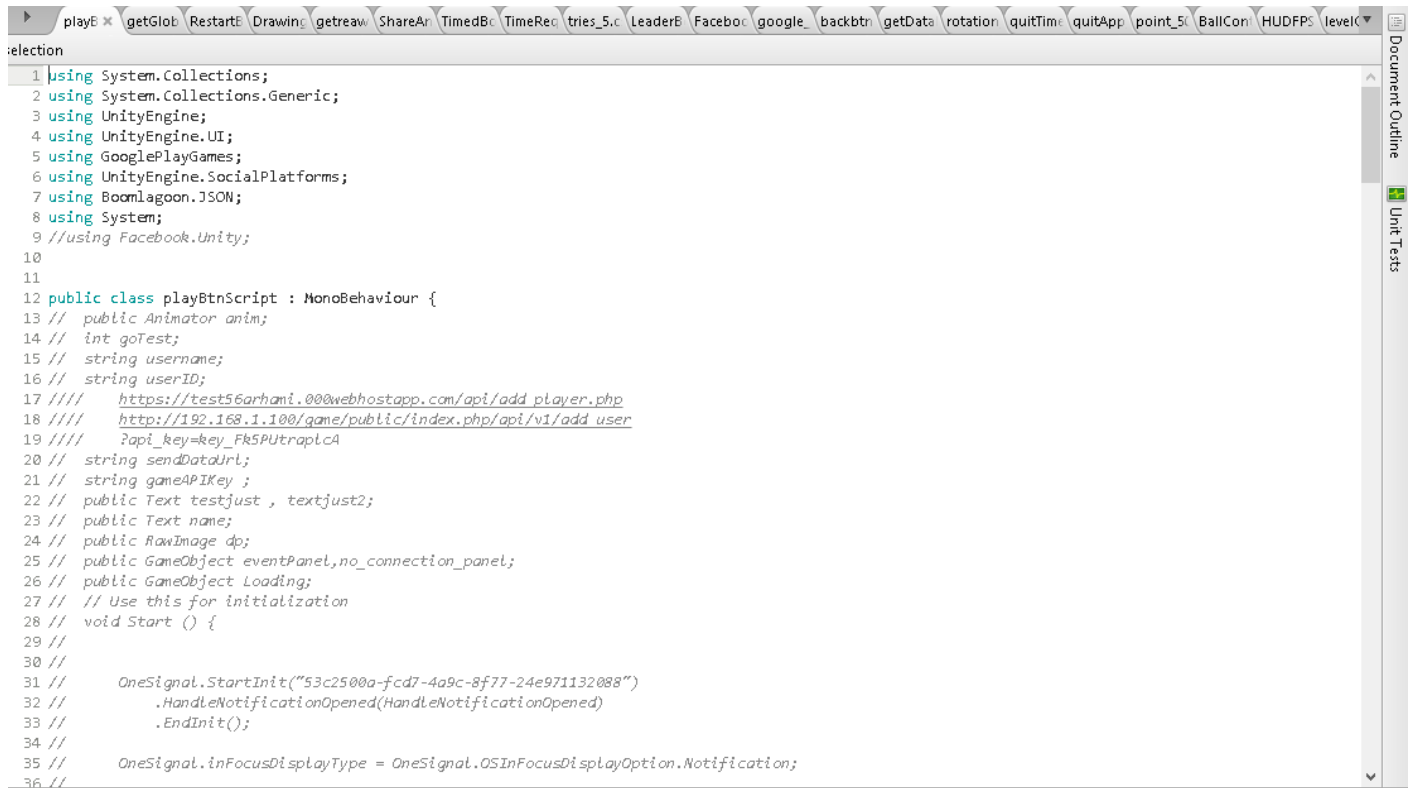
```

1 var curtain : Animation;
2 private var time : float = 1;
3 private var getticket : int;
4
5 function Start(){
6
7 //AdnobAd.Instance().LoadInterstitialAd(true);
8 }
9 function OnMouseUp () {
10 SmallPlayButton.pauseTouch = true;
11 if(PlayerPrefs.GetInt("SoundBoolean") == 0){
12 //play sounds when it is switched on
13 gameObject.GetComponent(AudioSource).Play();
14 }
15 //time runs
16 Time.timeScale = 1;
17 getticket = PlayerPrefs.GetInt ("count_tickets");
18 getticket -= 1;
19 PlayerPrefs.SetInt("count_tickets",getticket);
20 Application.LoadLevel("Main_Game_Menu");
21
22
23 }
24

```

Document Outline
Unit Tests

Play button code



```
1 using System.Collections;
2 using System.Collections.Generic;
3 using UnityEngine;
4 using UnityEngine.UI;
5 using GooglePlayGames;
6 using UnityEngine.SocialPlatforms;
7 using Boomlagoon.JSON;
8 using System;
9 //using Facebook.Unity;
10
11
12 public class playBtnScript : MonoBehaviour {
13 // public Animator anim;
14 // int goTest;
15 // string username;
16 // string userID;
17 //// https://test56arhami.000webhostapp.com/api/add_player.php
18 //// http://192.168.1.100/game/public/index.php/api/v1/add_user
19 //// ?api_key=key_Fk5PUtraplCA
20 // string sendDataUrl;
21 // string gameAPIKey ;
22 // public Text testjust , textjust2;
23 // public Text name;
24 // public RawImage dp;
25 // public GameObject eventPanel,no_connection_panel;
26 // public GameObject Loading;
27 // // Use this for initialization
28 // void Start () {
29 //
30 //
31 //     OneSignal.StartInit("53c2500a-fcd7-4a9c-8f77-24e971132088")
32 //         .HandleNotificationOpened(HandleNotificationOpened)
33 //         .EndInit();
34 //
35 //     OneSignal.inFocusDisplayType = OneSignal.OSInFocusDisplayOption.Notification;
36 //
```

5.2. Components, Libraries, Web Services and stubs

- Google Play Games Server
- Secure user profile
- Unity engine
- System collections
- Mobile friendly
- Social media components

5.3. Deployment Environment

Unity 3d, unity2D , and some graphic designing software's are used to development of this project, Google play Games server is used.

There are some processes in deployment environment.

- Developing
- Testing
- Staging
- deployment

5.4. Tools and Techniques

Front end:

- Images
- Background
- Buttons
- Assets

Back end:

- C#
- Java

5.5. Best Practices / Coding Standards

- Ask for Feedback

- No repetition of code
- WBS should be made to follow plan
- Meetings should be arranged

5.6. Version Control

We are launching the first version of 'Line to basket'. New version will be planned to launch in future.

Chapter 6

Testing and Evaluation

Chapter 6: Testing and Evaluation

Testing and Evaluation is the process by which a system or components are compared against requirements and specifications through testing, The results are evaluated to assess progress design, performance and support ability, Test-case specification is performed for system testing by keeping in mind several issues, which are discussed in the following subtopics

6.1. Use Case Testing

Use Case Testing is a functional black box testing technique that helps testers to identify test Scenarios that exercise the whole system on each transaction basis from start to finish.

- Use Cases capture the interactions between 'actors' and the 'system'.
- 'Actors 'represents user and their interactions that each user takes part into.
- Test cases based on use cases and are referred as scenarios.

Login

Main Success Scenario	Description
A = Actor	A:Enter Email and password
S = System	S:Valid Password(login)

Extension	S:Invalid password (Re Enter Password)
-----------	--

Logout

Main Success Scenario	Description
A = Actor	A:Hit Logout
S = System	S:User logout successfully
Extension	S:User must be login

View Info

Main Success Scenario	Description
A = Actor	A:Player is on main screen (view the info about the game)
S = System	S:Valid Password(login)
Extension	<ul style="list-style-type: none"> • Tab on (i) button • Tab on other options • Install the game

Single Player

Main Success Scenario	Description
A = Actor	A:play by only single player
S = System	S:The player is on main screen

	<p>Tab single player</p> <p>Choose the level</p> <p>Start single playing</p>
Extension	<p><<include>> Level Selection → <<extent>>Play game → <<include >>View score <<extent>>play again</p>

Multi Player

Main Success Scenario	Description
A = Actor	A:You can play with your friends (one or more)
S = System	<p>S:The player is on main screen</p> <p>Tab Multiplayer player</p> <p>Choose the level</p> <p>Start multiplying</p>
Extension	<<extend>> →coming soon

Events

Main Success Scenario	Description
A = Actor	A:Event are actually a chance to get more and more coin and show your friends that you are the best by beating there score and put your

	name on the Top of Leader board
S = System	S:Tab on event Choose the event Start playing
Extension	<<include>> Choose event (Saturday challenge, sweet Sunday challenge, Thursday Trophy)

Settings

Main Success Scenario	Description
A = Actor	A:Display different Settings option
S = System	S:Tab settings Choose setting
Extension	More apps , Feedback , Exit

Share

Main Success Scenario	Description
A = Actor	A:share the link of the game
S = System	S:Tab on share Chose the options to share the link via Select the sharing platform share
Extension	G mail, Whats app, Facebook, share It

View Coins

Main Success Scenario	Description
A = Actor	A:player view the number of coins he earned
S = System	S:Main menu screen
Extension	NO

View Tickets

Main Success Scenario	Description
A = Actor	A:player view the number of Tickets
S = System	S:Main menu screen
Extension	NO

Get Tickets

Main Success Scenario	Description
A = Actor	A:if player want to play and don't want to wait for 60mins so player can get the ticket by

	watching a video
S = System	S:Get Tickets
Extension	<<include>>Watch Video

Get Tickets

Main Success Scenario	Description
A = Actor	A:if player want to play and don't want to wait for 60mins so player can get the ticket by watching a video
S = System	S:Get Tickets
Extension	<<include>>Watch Video

Store

Main Success Scenario	Description
A = Actor	A:Store is an online market from where the player get this game to play
S = System	S:store search install the game

Extension	No
-----------	----

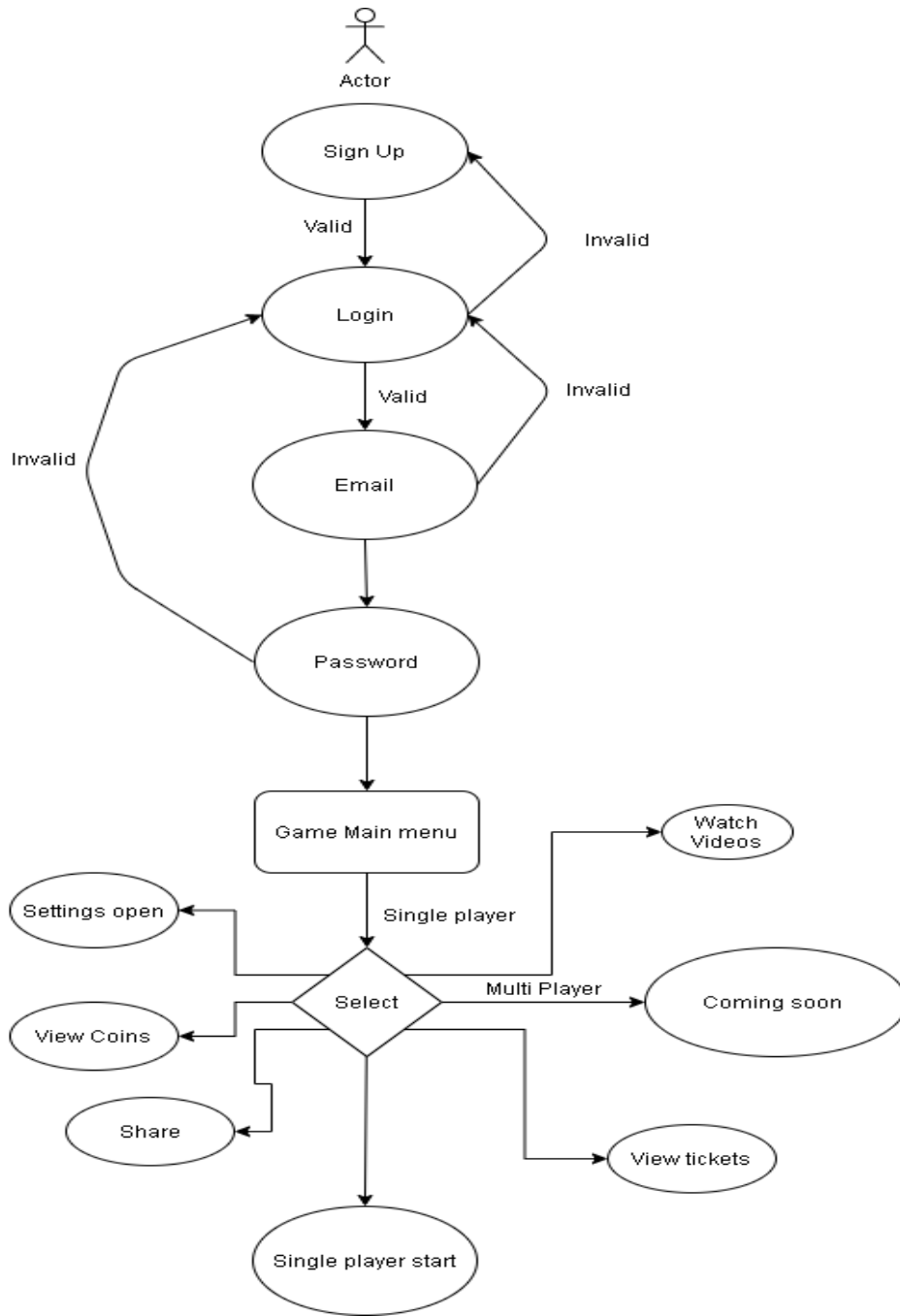
6.2. Boundary value analysis

- Login Google Play service Account (E-mail)

- Password

6.3. Data flow testing

Data Flow testing is a family of test strategies based on selecting paths through the program's control flow in order to explore sequences of events related to status of variables or data objects.



6.4. Unit testing

Unit testing is a white-box testing technique. The main consideration in this test is verification of all modules of the software system. Each module is unit tested, as follows:

- Unit testing for the module User Management is tested by valid user or invalid user.
- Unit testing for the module User Account management is provided by testing Login, Logout and creating new or deleting updating existing user.
- Unit testing for the module Detail of order result give detail accurately.
- Unit testing for the module Add/update/delete food menu detail.

TEST CASES FOR UNIT TESTING MODULES

Test Scenario ID	Test Case Description	Test Case ID	Test Case Procedure	Expected Output	Test date	Result	Note
1. Check Registration "user will registered with Google play game"							
TS_REG_01	User login with google play game account	TC_Reg_001	1. create your Gamil account	Successfully created.		Pass	
TS_REG_02	Verify the login functionality	TC_Reg_002	1. Enter the valid username & valid password 2. Click Login button	Login Successfully		Pass	
		TC_Reg_003	1. Enter the valid username & invalid password	Login		Fail	

			2. Click login button	Successfully			
		TC_Reg_004	1.Enter the invalid username & valid password 2. Click login button	Login Successfully		Fail	
		TC_Reg-005	1.Enter invalid username & invalid password 2. Click login button	Login Successfully		Fail	
2. Check Record System "Google play game: The game play account keeps player information (Name and Avatar).							
TS_RS_01		TC_RS_001	1.user is not login (Ask user to login first)	The player's information levels(locked or unlocked) Score, coins , avatar etc. will not sync with game.		Fail	
	Verify the user is login in or not	TC_RS_002	1. User is Already Login	The player's information levels(locked or unlocked) Score, coins , avatar etc. will sync with game. (Provide user history back)		Pass	
3. Check Splash "Splash screen will display"							
TS_SS_01	Checking the splash screen will appear or not if YES!	TC_SS_001	1.Tab the game icon to start	Splash screen will appeared For few seconds		Pass	

				and then display the Main Menu Screen		
TS_SS_02	Checking the splash screen will appear or not if NOT!	TC_SS_002	1.Tab the game icon to start	Splash screen will NOT appeared and then display the Main Menu Screen.		Fail
4. Check Main Menu " main menu animations , buttons"						
TS_MM_01	Check the main menu Animations is not working!	TS_MM-001	1.Tab the game icon to start 2.Wait for few seconds while the splash screen is displaying 3.Main menu Animated screen will displayed	Just see a simple Main menu screen with out any animation		Fail
TS_MM_02	Check the main menu Animations is working! If YES!	TS_MM-002	1.Tab the game icon to start 2.Wait for few seconds while the splash screen is displaying 3.Main menu Animated screen will displayed	Display a beautiful main menu with animation		Pass
TS_MM_03	Checking the buttons in main menu is working or performing the right operation or not when user tab on a buttons . OnClick();	TS_MM-003	1.Tab the game icon to start 2.Wait for few seconds while the splash screen is displaying 3.Main menu Animated screen will displayed 4. tab the (I) button.	Display the information of that button (for user guide)		Pass
			5.Tab the Single player Button	Display the Next activity Screen (select the level)		Pass

			6.Tab the Multiplayer Button	Coming Soon Message is display		Pass	
			7. Tab the Coins, Ticket Button	Display the coins , tickets information		Pass	
			8. Tab the Event or Leader Board Button	Display the Events(sat event , sweet Sunday event etc) and on click on leader board your high score or rank will display		Pass	
Checking the buttons TS_MM_04 in main menu is not working properly TS_MM-004			1.Tab the game icon to start 2.Wait for few seconds while the splash screen is displaying 3.Main menu Animated screen will displayed 4.tab the buttons	Button is not responding or perform unknown operation or application get crash		Fail	
5. Functional Testing Test Cases							
TS_F_01	To validate whether the application works as per as requirement whenever the application starts/stops.	TS_F_001	1.Tab the game icon to start 2.Wait for few seconds while the splash screen is displaying 3.Main menu Animated screen will displayed 4.tab the Exit button	Game starts/stops smoothly		Pass	

	<p>To Invalidate whether the application works as per as requirement whenever the application starts/stops.</p>	<ol style="list-style-type: none"> 1.Tab the game icon to start 2.Wait for few seconds while the splash should be closed screen is displaying 3.Main menu Animated screen will displayed 4.tab the Exit button 	<p>Game is not start (error) it immediately Exit button is not performing the Close functionality</p>	<p>Fail</p>
<p>TS_F_02</p>	<p>To validate whether the application goes into minimized mode whenever there is an incoming phone call.</p>	<ol style="list-style-type: none"> 1. game is in running mood and incoming call or message is appear. 	<p>Application is an minimized and pause Successfully</p>	<p>pass</p>
<p>TS_F_02</p>	<p>To validate whether the application is Not goes into minimized mode.whenever there is an incoming phone call.</p>	<ol style="list-style-type: none"> 1. game is in running mood and incoming call or message is appear. 	<p>Application is not minimized and game is still in running mood</p>	<p>Fail</p>
<p>TS_F_03</p>	<p>To validate that the application is able to perform required multitasking requirements whenever it is necessary to do so.</p>	<ol style="list-style-type: none"> 1.Tab to Open the Game 2.start playing 3.then minimize the game and tab to open an other application 4. start doing multitasking 	<p>Game Application allow to do multitasking</p>	<p>Pass</p>
	<p>To validate that the application is not able to perform multitasking</p>	<ol style="list-style-type: none"> 1.Tab to Open the Game 2.start playing 3.then minimize the game and tab to open an other application 	<p>Application is restart and multitasking is not allow</p>	<p>fail</p>

	requirements	4. start doing multitasking		
TS_F_04	To validate that the application allows necessary social network options such as sharing, posting and navigation etc.	TS_F_004 1.Tab to Open the Game 2.Tab the share button 3. Select the sharing resource (share via) 4. Share link	The application link address is shared	pass
TS_F_05	To validate that the page scrolling scenarios are being enabled in the application as necessary.	TS_F_005 1. Tab to open 2. Tab single player 3. scroll levels	Scrolling successfully	pass
	To validate that the page scrolling scenarios are being enabled in the application as necessary.	1. Tab to open 2. Tab single player 3. scroll levels	Scrolling view is not working	fail
TS_F_06	To validate that the application enables other applications to perform satisfactorily, and it does not eat into the memory of the other applications.	TS_F_006 1.check the application information by application manager	It does not eat into the memory of the other applications.	pass
	Check that the application is eat the	1.check the application memory	It eat into the memory of the	fail

memory		information by application manager		other applications.	
TS_F_07	To validate whether the installation of the application can be done smoothly provided the user has the necessary resources and it does not lead to any significant errors.	TS_F_007	1.Install form the provided resources(play store , apple-store etc).	installing smoothly with any error	pass
	Validate the error while installing the application		1.Install form the provided resources(play store , apple-store etc).	Error While installing (network,change link,)etc.	fail
6.Performance Testing Test Cases					
TS_P_01	Check Response Time	TS_P_001	1. start or end the game and check the starting /close time	start and close time is less	Pass
TS_P_02	Scalability	TS_P_002	The ability of the system to handle increased loads	application doesn't crash while the user is increased	pass
TS_P_03	Validate the Reliability	TS_P_003	Verify that it consistently response the desired results for given set of functions.	Functions Working perfectly	pass
			Verify that system is not consistently response the desired results for given set of functions.	Functions doesn't Working properly	Fail
7. Usability Test Case					

TS_UT_01	validate the game is meeting user's expectations	TS_UT_001	1.user interface is cashy 2.graphic quality is good 3.user friendly interface 4.interesting levels	Meets with user's expectations	Pass
TS_UT_02	validate the game is not meeting user's expectations		1.user interface is bad 2.graphic quality is not Good 3.Not user friendly interface 4.Boring levels	Doesn't meet with user's exceptions	Fail
TS_UT_03	Verify the Bugs and errors		Make sure there is no error or a bug	Successfully Running.	pass
TS_UT_04	Bugs and errors	TS_UT_002	having bugs	unfortunately application is stooped	fail

Chapter 7

Summary, Conclusion and Future Enhancements

Chapter 7: Summary, Conclusion & Future Enhancements

7.1. Project Summary

LINE TO BASKET is a challenging and a brain-training puzzle game that activates your mind as you play. You can score as many dunk as possible by avoiding the obstacles and drawing a line.

In this game randomly balls are coming toward you draw a line and make the falling ball to score the basket! If a ball hits to a Golden star you will get some extra bonus points and if the ball hit any obstacles your points will decreases. Draw a line and try to reach the basket within the time limit, the higher score you get the longer you can play!

At first, it starts off with simple shapes, but each time your level increases, the number of lines increases, score increases and it gets more and more complicated.

You might think it's too easy early on.

However, clearing the simple stages is also important.

More complicated stages can all be found scattered through the simple stages.

7.2. Achievements and Improvements

- Learn Unity.

- Learn how to develop a game.
- Learn time management
- Learn to work in a team
- Our game is providing the user to fresh his mind.
- Line to Basket is a brain training game.
- We will try to improve and take care of our project, we will try to make it more secure , attractive and interesting by adding more features, and maintain its availability.

7.3. Critical Review

Our main goal is to develop an attractive and good graphics interface game, which build interest of user to play it.

It trains the brain and having interesting game levels.

Fun with your friends

7.4. Lessons Learn

We learn how to work on Unity a game developing tool, we learn how to work in a team and make a successful project without failure. We briefly learn C#, java, Graphic designing tools. Learn how to compare with compete with competitors for more earning for survival in market.

7.5. Future Enhancements/Recommendations

We will develop a game 'Line to Basket' which take away the boredom of our players. And train's the users mind, later on we will add some more features in it which is more fun.

Appendices

Appendix A: User Manual

Introduction

'LINE TO BASKET' is a brain training puzzle game.

Draw a line and make the falling ball to score the basket! Time your drawings properly and avoid the Obstacles, Score as many balls as possible by drawing a lines before time out!

Features

At first, it starts off with simple shapes, but each time your level increases, the number of lines increases, score increases and it gets more and more complicated.

You might think it's too easy early on.

However, clearing the simple stages is also important.

More complicated stages can all be found scattered through the simple stages.

Different events include

LEADERBOARD Includes on which you can see higher scorer from WORLDWIDE.

There are 200+ stages.



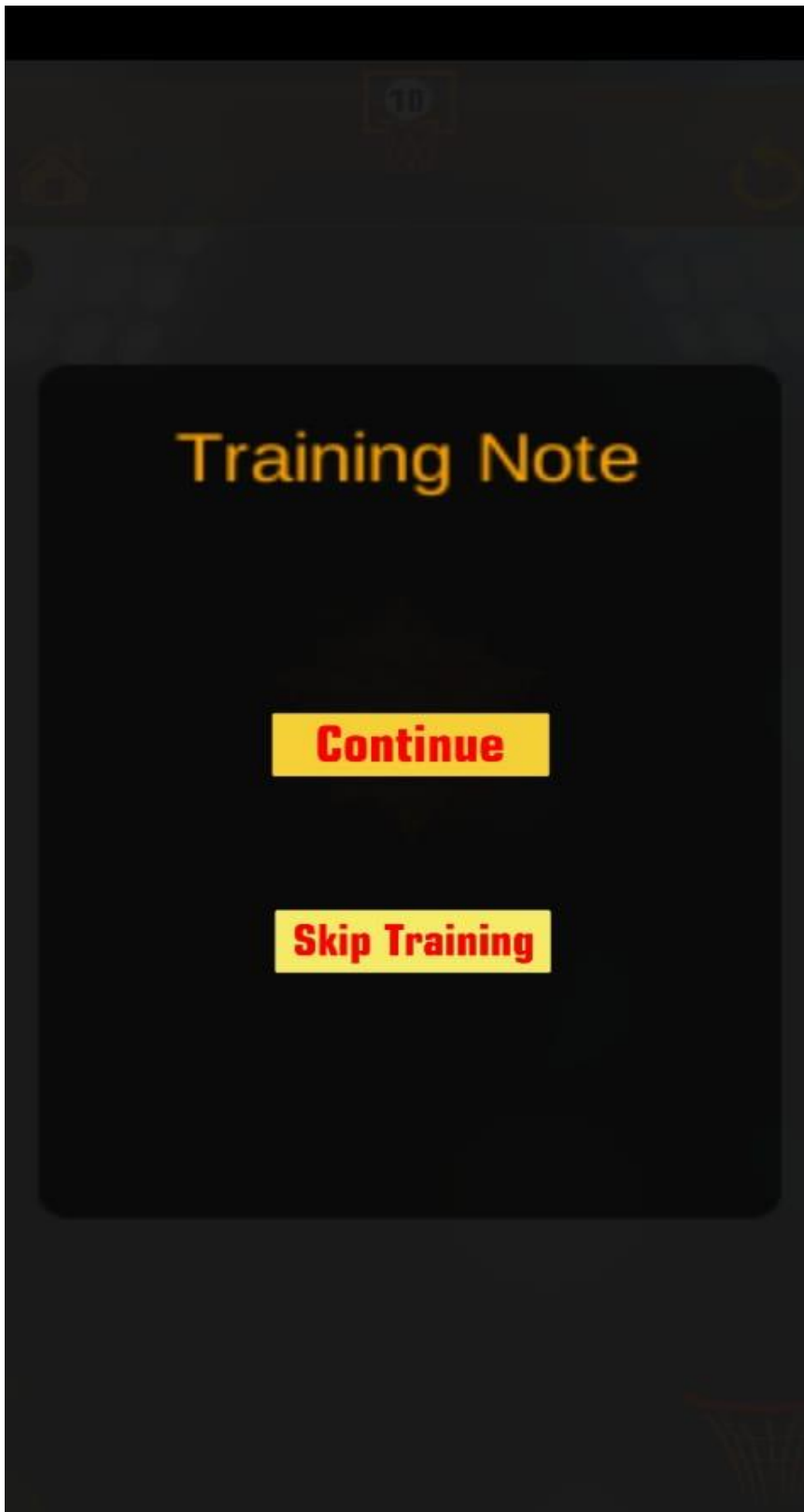
Good graphics

Perfect for
killing a few
minutes with
some pure
FUN

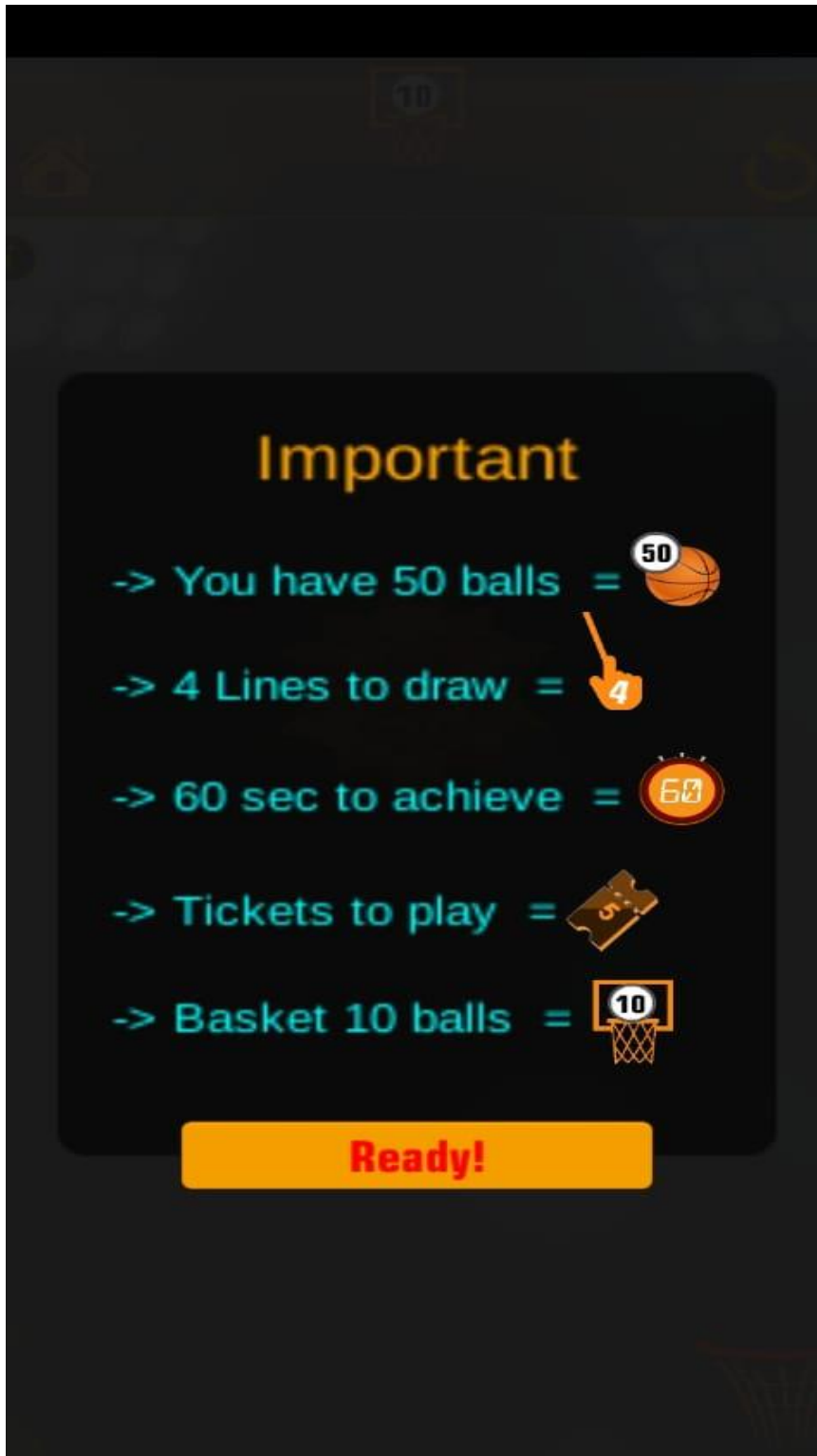
much more

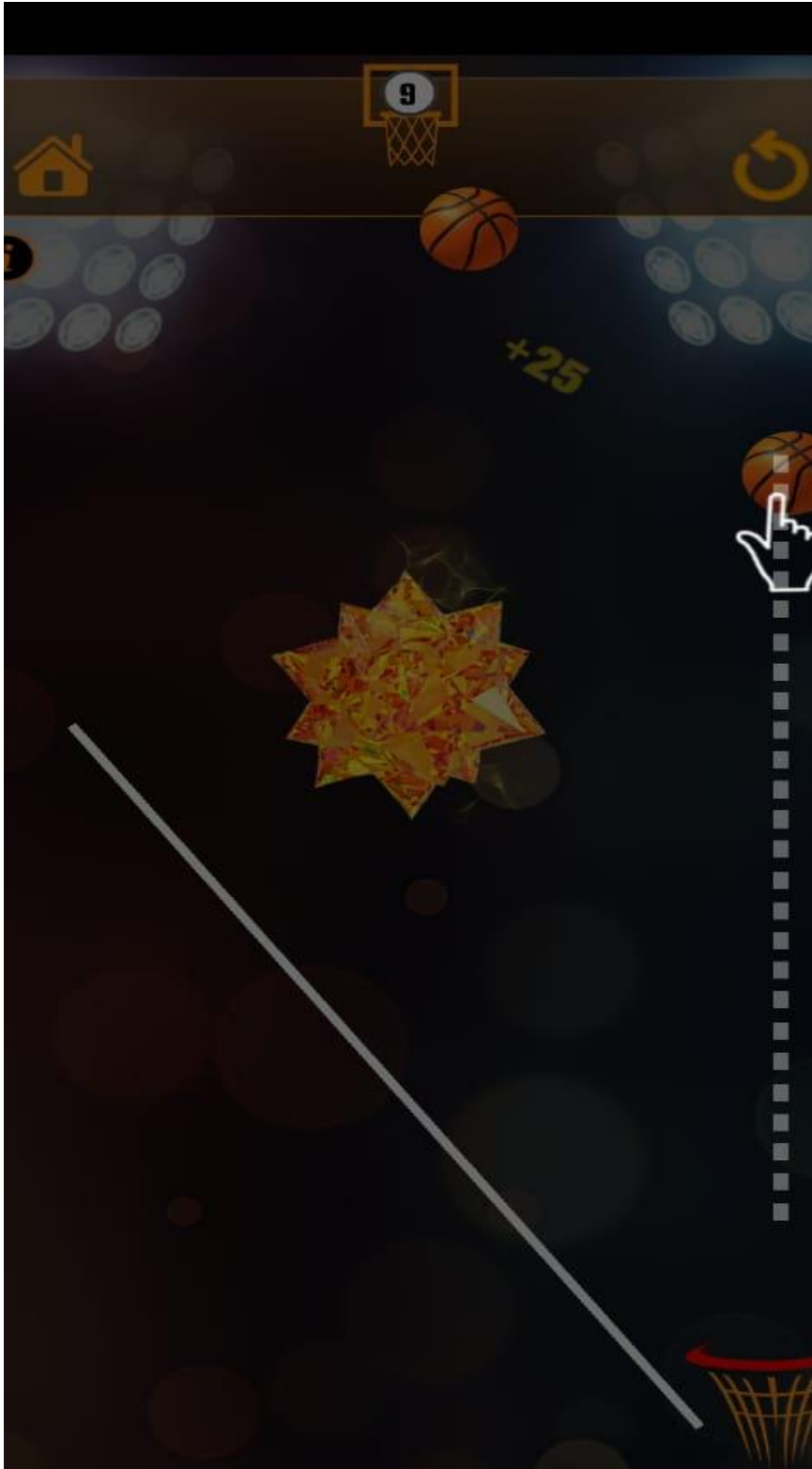
User interface

- User name: Fetch from Google play services
- Avatar: Fetch from Google play services
- Events: Have different events to play and get a chance to get more coins and high score in leader board
- Coins: As much as you play and get coins
- Tickets: You have 5 chance to play, if tickets is insufficient you have to wait for 60 min
- Get Tickets: watch video and get tickets.
- Single player: play alone.
- Multi player: coming soon.
- Settings: more app, feedback, exit
- Share: share app via.
- I button: provide information.

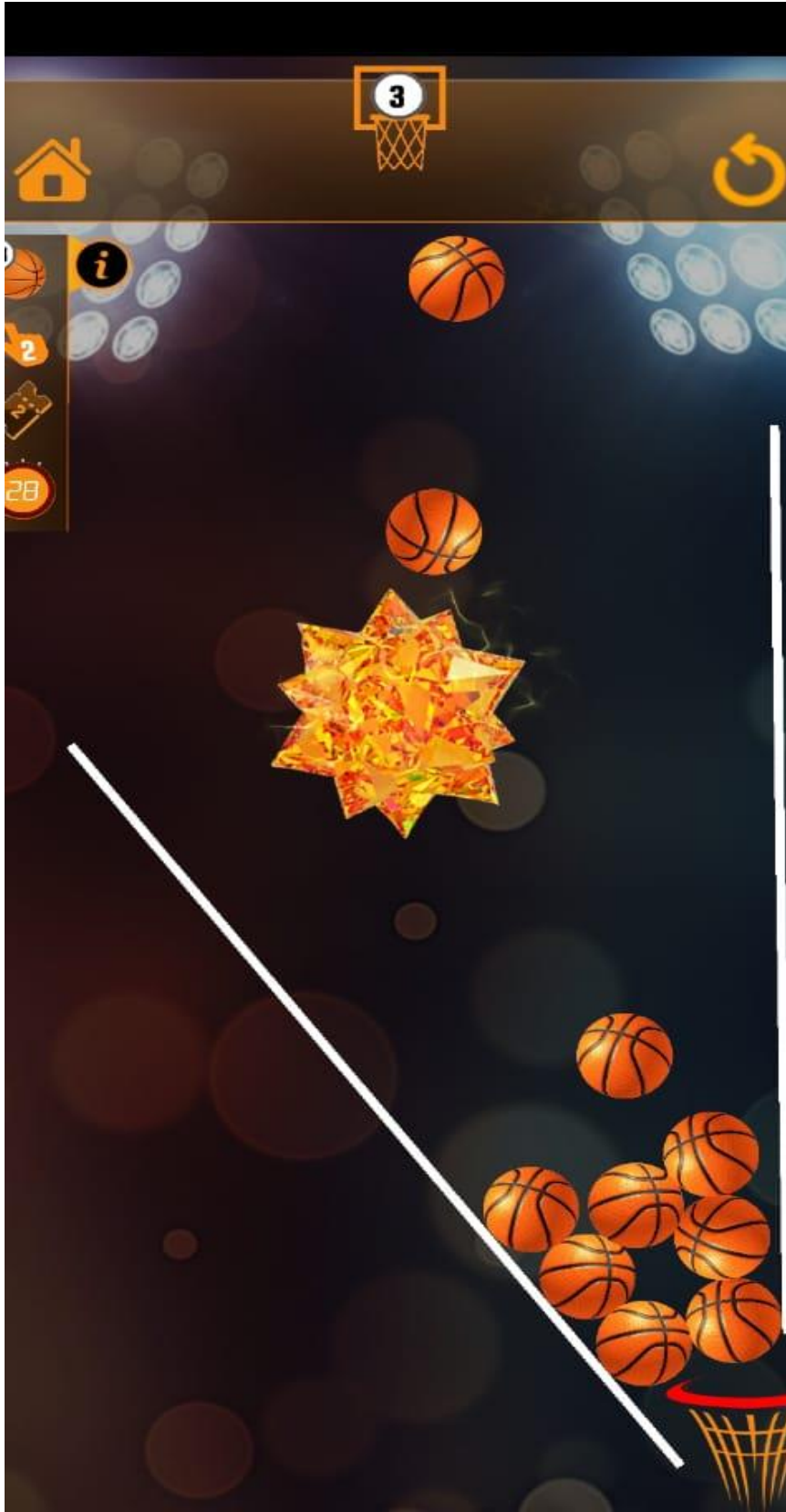


*Learn with tanning
Activity*









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