

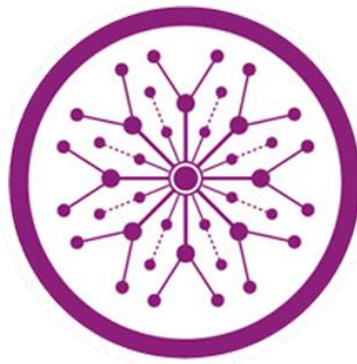
GGEZ (Good Game Easy)

Final Year Project

Session 2018-2022

A project submitted in partial fulfillment of the degree of

BS in Computer Science



Department of Computer Science

Faculty of Computer Science & Information Technology

Superior University, Lahore

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*The candidates confirm that the work submitted is their own and appropriate credit has been given where reference has been made to work of others

Plagiarism Free Certificate

This is to certify that, I __Muhammad Rahim__ S/D of Muhammad Nadeem, group leader of FYP under registration no __BCSM-F18-073__ at Computer Science Department, Superior University, Lahore. I declare that my FYP report is checked by my supervisor.

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Designation: **Lecturer**

Signature: _____

HoD: **Dr. Irfan Ud Din**

Signature: _____

Project Report

GGEZ (Good Game Easy)

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

I devote this task to my make Allah almighty, after Allah SWT I dedicate this to my beloved parents and teachers who always helped me out in times of woe and distress and taught me to follow the path of truth, justice and honesty.

Acknowledgements

I am really thankful to my supervisor **Sir Noman Jazeb** who has supported and guided as all along. I am profoundly obliged to him for his directions and steady oversight just as for giving important data in regards to venture and likewise for their helping hand. I'm also thankful to my group members for their support.

Executive Summary

Our aim is to provide a soothing experience where the customer can receive good and quality information of eSports. For this purpose an app is a must thing to have to know what's going on in the gaming world. It includes all the gaming zone prices, eSports news, tournaments brackets. Gaming Zone is a very growing business. It provides all the latest games which includes all genre of platforms as well.

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Chapter 1

Introduction

Chapter 1: Introduction

GGEZ is an application for gamers that includes local gaming café, games news and also includes eSports competitions category wise and their ranking and opportunities to go big. The purpose of this application is to simplify the rise of gaming industry in Pakistan. The gaming industry is at its best growing stage at the moment and there is no application where all of the gamers requirements can get meet. This application contains the gaming zones section where user can view all the gaming zones along with their complete details at one place, maps are there for precise location, blogs section will help user to get more knowledge and excel in this field where as he can polish his content writing skills as well and get an opportunity as a game reviewer. eSports section will help the gamers in their career as gaming industry is even bigger than the movie industry, the eSports carry a lot more career opportunity and the beauty of it is anyone can achieve if given a chance and the eSports section is all about the ongoing tournaments along with their registration link. This application has scalability options and it can grow as user requirements gets change.

1.1. Background

GGEZ is a social media app for gamers that includes the local gaming café, games news and also includes eSports competitions category wise and their ranking and opportunities to go big. This way the eSports industry of Pakistan will grow as it will introduce more options for gamers and they won't miss any new opportunity in their eSports career. [5]

1.2. Motivations and Challenges

Challenges that we can face are as follows:

- Lack of resources
- Lack of team communication
- Requirement gathering
- Time and cost effective

1.3. Goals and Objectives

The goal is to develop this app with complete optimization and secure user privacy and security, our objective is to make this app unique and user friendly.

1.4. Literature Review/Existing Solutions

As of now there is no such App or system, so there's no competitor right now.

1.5. Gap Analysis

With the growth of gaming industry, there is a need to have updates of the gaming world and eSports industry, with this app we can fill this gap.

1.6. Proposed Solution

GGEZ is an app by which we can provide news feed, blogs updates, gaming zones location their prices and eSports tournaments schedule. The users can login their account and have all the gaming news and updates on their finger tip.

1.7. Project Plan

Project plan is the most important phase of any project. Our main objective for this project is development and requirement gathering. As we all do our work together and divide our tasks so we have broke-down our structure. The work breakdown structure is listed below. Since we have to keep budget in our mind so we need investors. After financing the project we need to gather information by user stories and research as well. Our main goal is optimization of software. It should be highly optimized.

1.7.1. Work Breakdown Structure

The work breakdown structure is divided among three members:

- Muhammad Rahim
- Arslan Shahab
- Sheikh Muhammad Ahmad

1.7.2. Roles & Responsibility Matrix

Table 1.1: Roles and responsibility matrix

WBS	WBS Deliverable	Predecessor Activity	Duration	Responsible team members
1. Requirement Phase				
1.1	User Stories	None	1	Rahim
1.2	Stakeholders meeting	None	1	Rahim
1.3	Requirement document	1.1, 1.2, 1.3	1	Rahim
1.4	SRS document		1	Rahim
2. Analyze Phase				
2.1	Analyze Requirement	1	1	Arslan
2.2	Refine Requirements	2.1	2	Arslan
2.3	Validate Requirements	2.2	1	Arslan
2.4	Manage Requirements	2.3	1	Arslan
3. Designing Phase				
3.1	Domain model	2	2	Ahmad
3.2	Activity Diagram	3.2	1	Ahmad
3.3	Class Diagram	3.1 , 3.2	1	Ahmad

1.7.3. Gantt chart

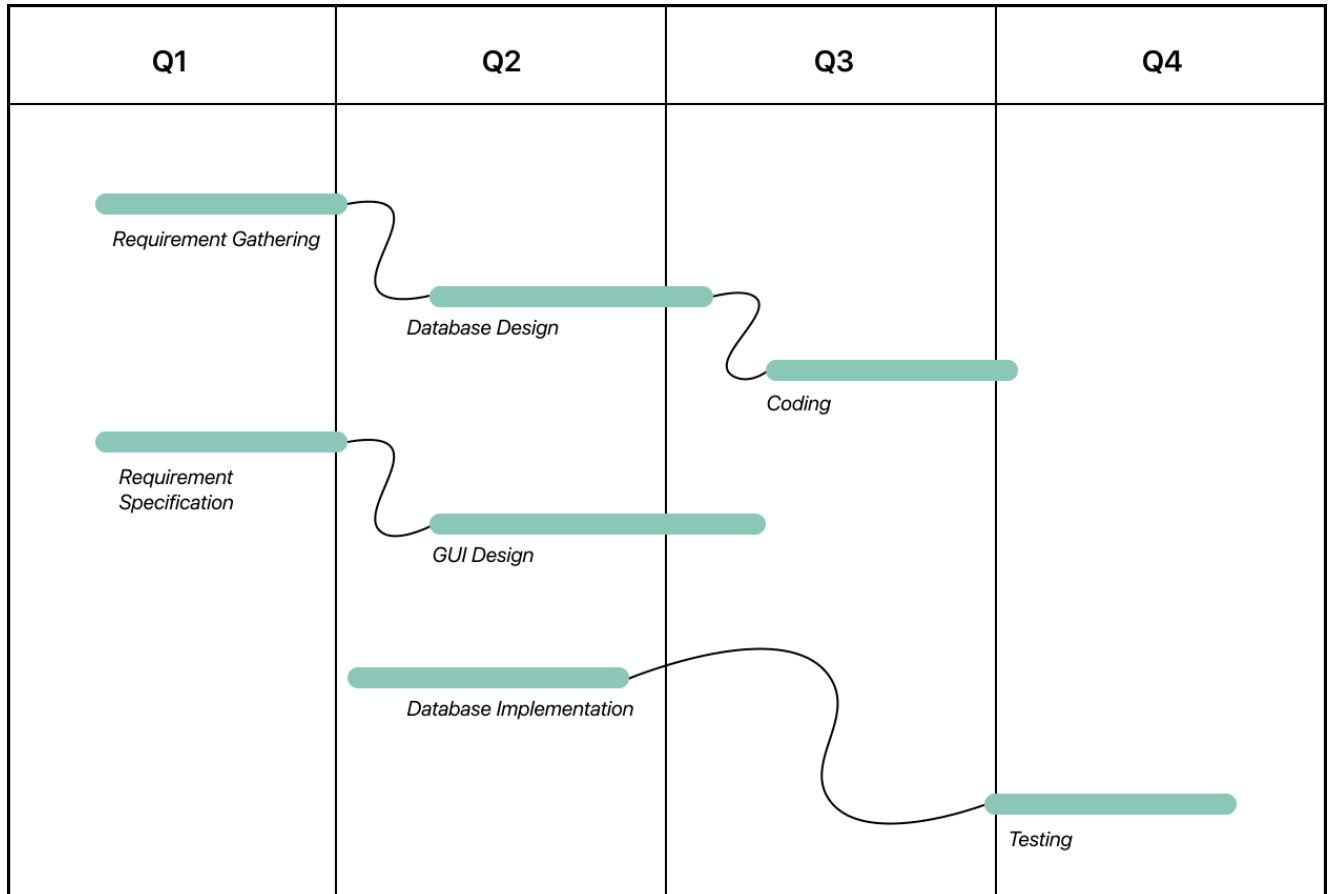


Figure 1.1 Gantt chart

1.8. Report Outline

GGEZ is a basic need of gamers to step up in their career and enjoyment with their friends. This app will solely focus on providing the best news and updates of all the gaming world. A great effort has been put in making this system if any more requirement will surpass we shall add it in future updates. As we have made this system very optimized so we don't hope any bugs in it. If you get any, kindly report to the admin panel. This documentation explains all the possible features of this system with every diagram and functionality.

Chapter 2

Software Requirement Specifications

Chapter 2: Software Requirement Specifications

2.1. Introduction

2.1.1. Purpose

GGEZ's resolution is to offer the facility the youth to excel in this newly emerging field where the rest of the world is already conquering and Pakistan is lacking due to not having enough knowledge about the ongoing events.

2.1.2. Document Conventions

The document is set to guide a thorough description of Gaming World and how it is related to GGEZ. It'll guide us about the features and purpose of this very application, the interfaces and what this app is capable of, the limitations which are to be followed in order to operate and how the application will respond to external inducements.

2.1.3. Intended Audience and Reading Suggestions

The app should be able to record customer information, gaming zone menu records, PC information, tournament log, blog edit and upload log.

There are different modules in this app such as login, register, news, eSports, product, location.

2.1.4. Product Scope

The primary point of this product is to cover all ongoing activities in a gaming zone and eSports industry. On this app the user has all the authorities and user can act as owner by simple convert to business feature. It has a vast scope in current market as this business is growing day by day.

2.1.5. References

- 1 [Human Interface Guidelines - Design - Apple Developer](#)
- 2 [User Interface & Navigation | Android Developers](#)

2.2. Overall Description

2.2.1. Product Perspective

This app is new creation, which has two use cases i.e as a user and as a business.

All the users can view, edit upload news and blogs and participate in tournaments using tournaments section. And as a business perspective a user can post his gaming zone location, specs, number of PCs and other stock. A business user can also generate eSports tournament with a prize pool and can create match brackets. This app uses object oriented approach and that is how it will be developed and tested. [1]

2.2.2. Product Functions

This product has some must do features, such as login/register, enable location for maps, a user profile, if participating in eSports then adding payment method.

Basic app functions

- 1.1 The app shall display all the news updates
- 1.2 The app shall allow users to comment and like the new post
- 1.3 The app shall display the menu of gaming café and their rates
- 1.4 The app shall notify the user about posts and tournaments
- 1.5 The app shall users to confirm the tournament registration
- 1.6 The app shall show the exact search results on keyword searches
- 1.7 The app should alert the users if no corresponding result is found after search.

Maintain customer profile

- 1.1.1 The app shall let users to make their profile and set their credentials.

1.1.2 The app should check user credentials and then let them view their profile.

1.1.3 The app shall let the users to update their profile.

2.2.3. User Classes and Characteristics

- Login / Signup – User can register or login
- CRUD – for create/Read/Update/Delete
- Registration – For tournament registration
- Location Mapping – For gaming café locations
- Blog - For gaming blogs and news
- User – For user profiles
- Advance User – For advance users profile

2.2.4. Operating Environment

The software can run on IOS version 12 or greater, android version 6 or greater.

2.2.5. Design and Implementation Constraints

Few constraints which hold the proper functionalities of Gaming zone Management System are as follows:

- The Gaming zone page can only be generated as form page then requires to assign with the template. It can be viewed by standard users but can only be updated or deleted by advanced users.
- The application is made in single screen in which user can only perform a single task. This application is designed to be very user friendly. Users of this system will be entertained well.

2.2.6. User Documentation

This application is for all the gaming and eSports news updates and participation with pool prizes. This is fully equipped application that alone manages to keep track of all news. The tutorial to use this app will be available on the startup of application.

2.2.7. Assumptions and Dependencies

The user of this application is expected to have their username or email along with password in order to get into the home screen that comes after logging in. User backup capability must be available so there would be no loss of data. If there is no storage of data backup it is to be assumed that there will be no down time in the local server.

2.3. External Interface Requirements

2.3.1. User Interfaces

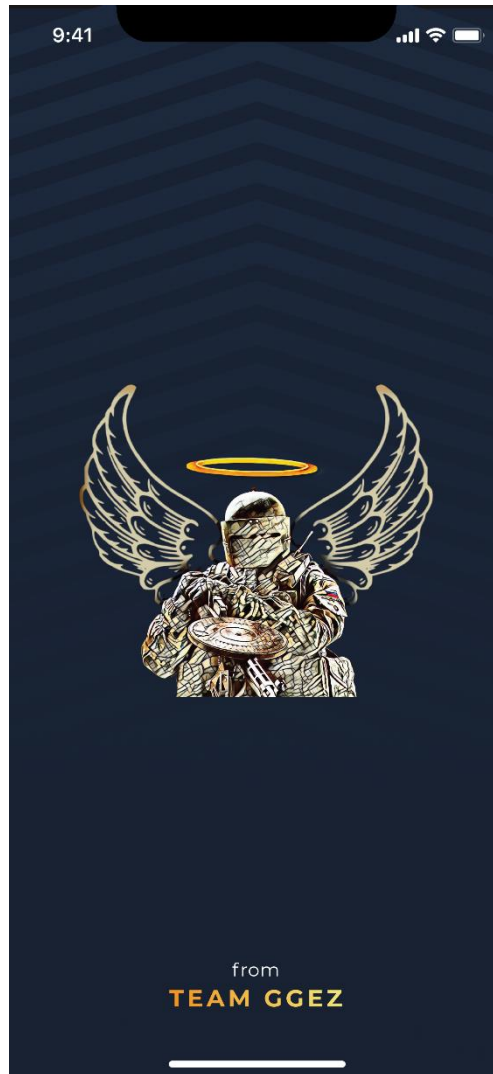


Figure 2.1 Splash screen

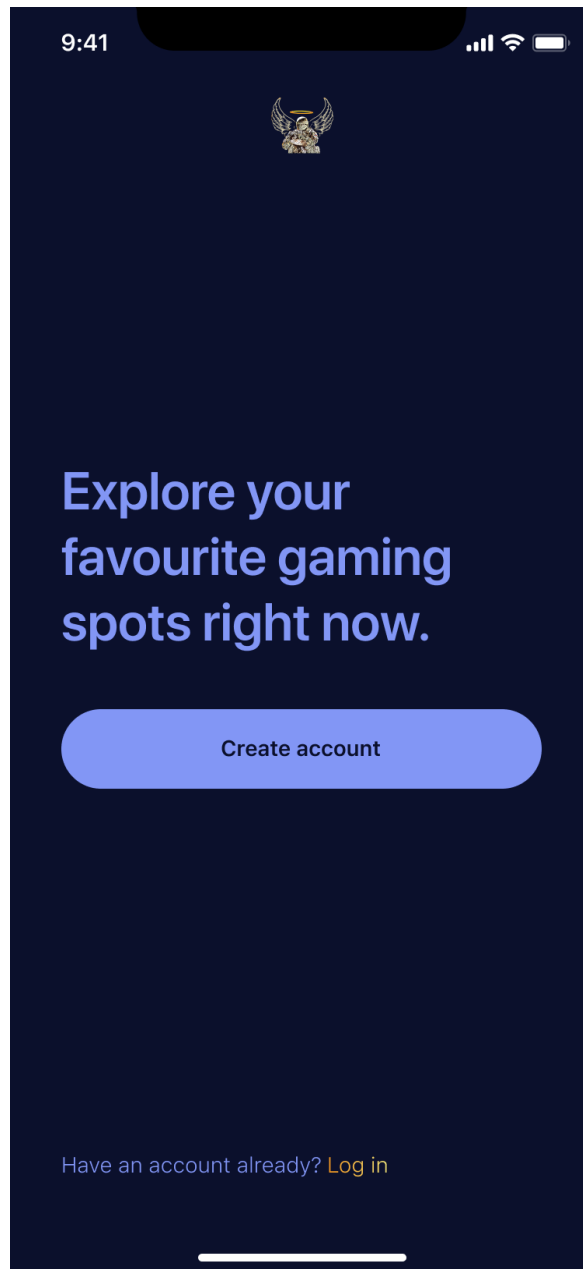


Figure 2.2 Welcome screen

Welcome Screen:

Welcome Screen displays the Welcome text and CTA for account creation or logging in.

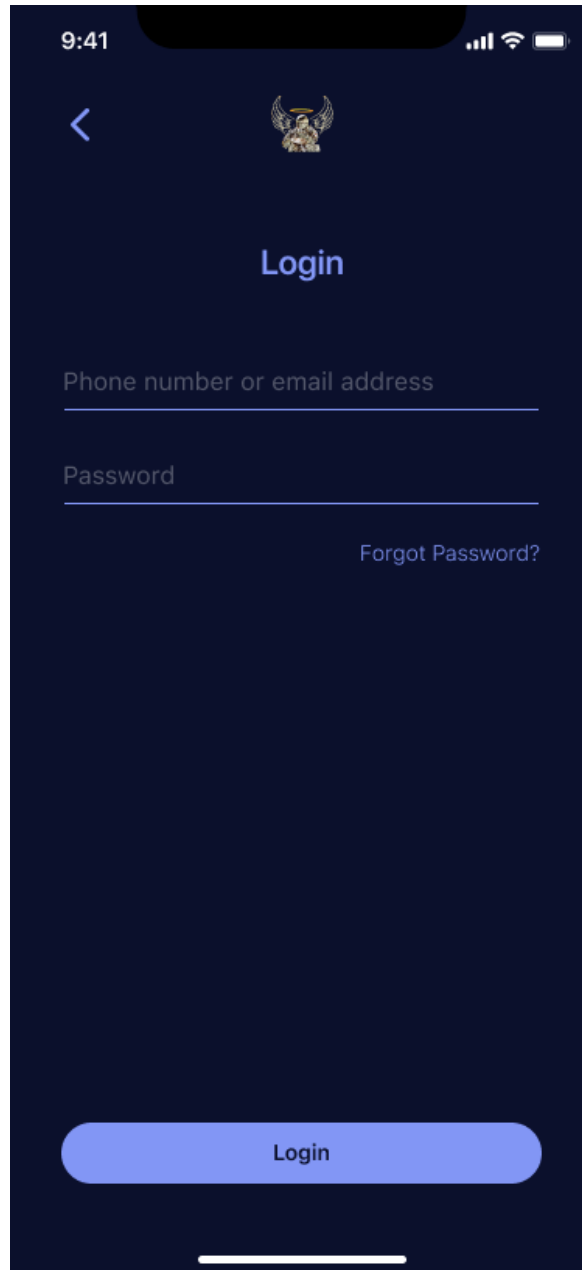


Figure 2.3 Login screen

Login Screen:

Login Screen displays the input fields for credentials and CTA for logging in.

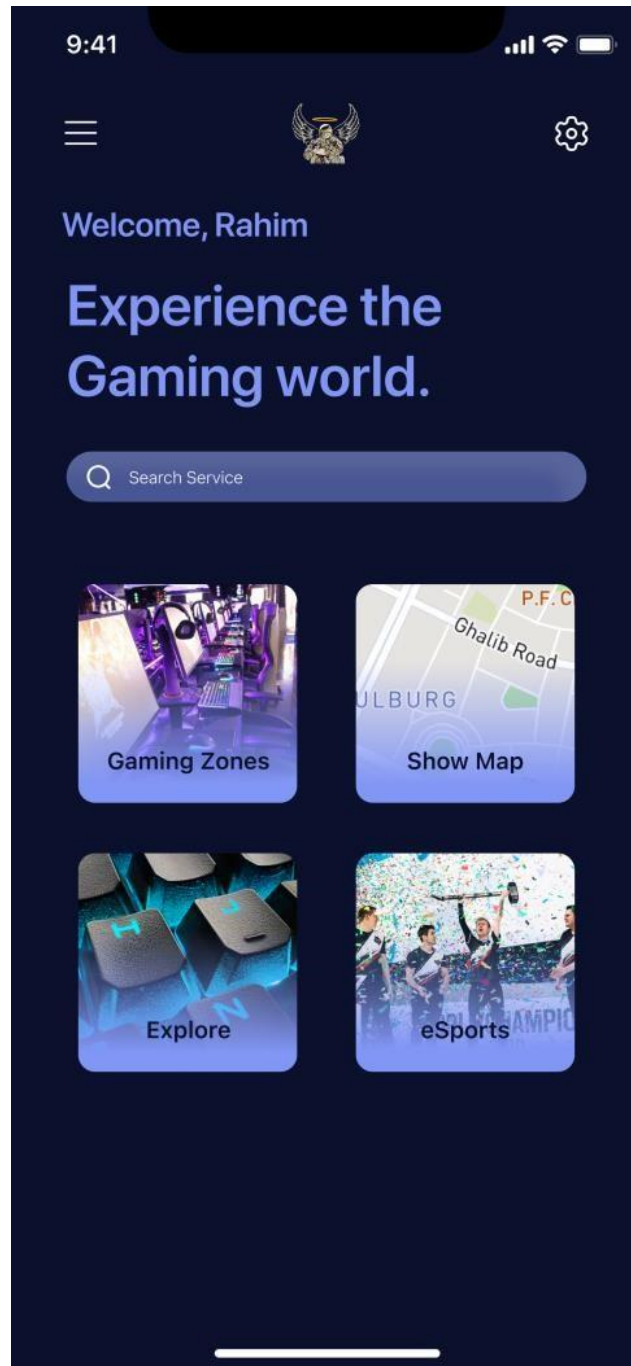


Figure 2.4 Home screen

Home Screen:

Home Screen displays the features of application such as Gaming Zones , maps, Explore and eSports

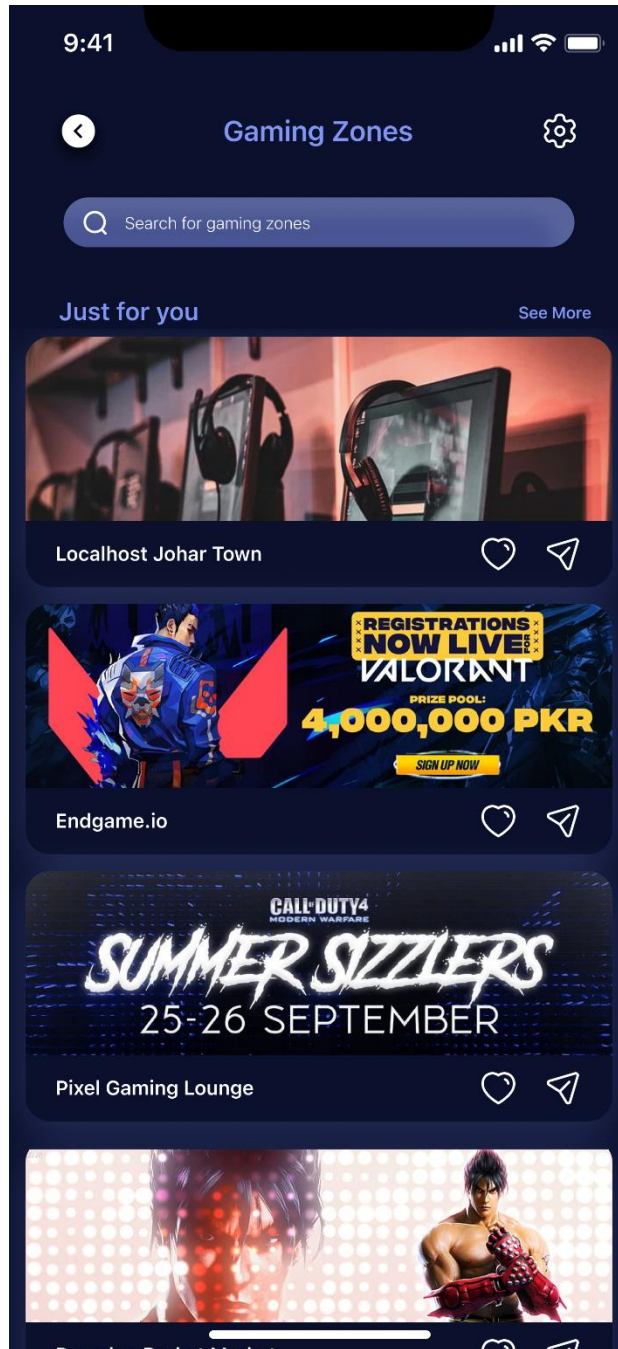


Figure 2.5 Gaming Zones screen

Gaming Zone Screen:

Gaming Zone Screen displays the gaming zones that are available and we can add them to favourites or we can view their details.

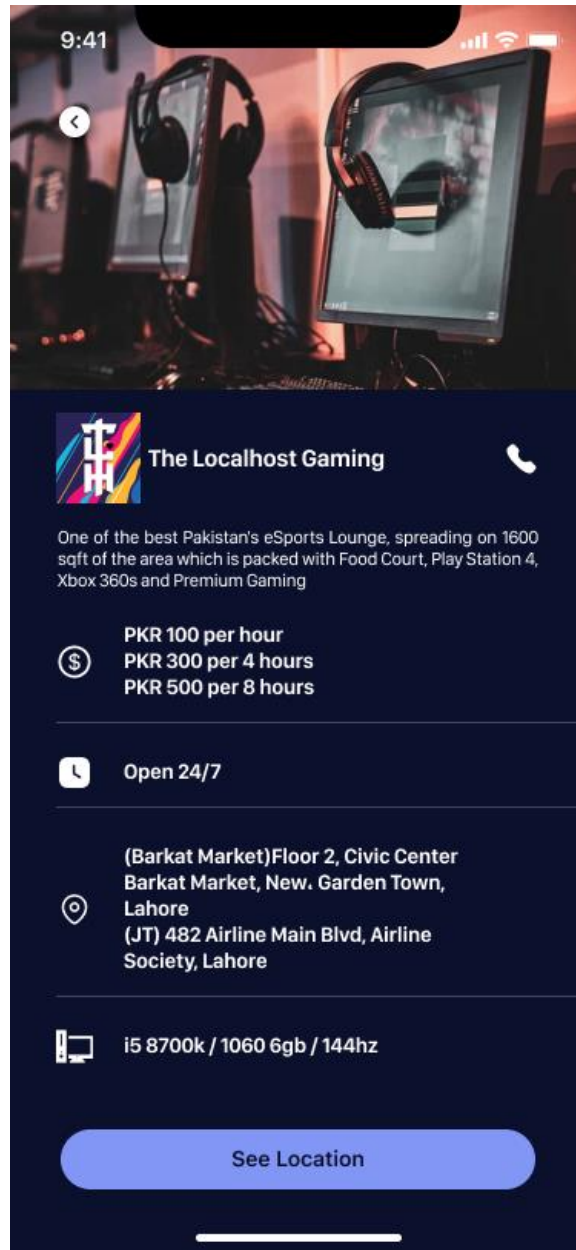


Figure 2.6 Gaming Zones Details screen

Gaming zones details Screen:

Details Screen displays the description, timings, location, PC specs and packages of Gaming Zones.

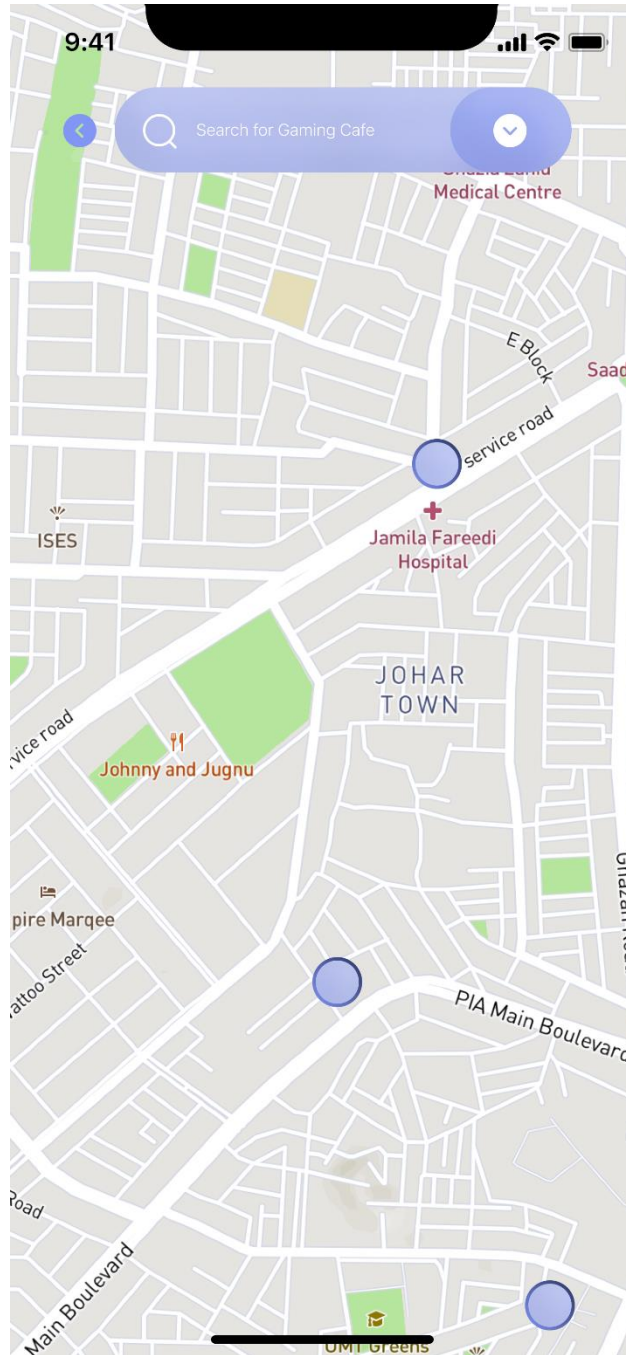


Figure 2.7 Maps screen

Maps Screen:

Maps Screen displays the map with gaming zones locations and filter button and search field.

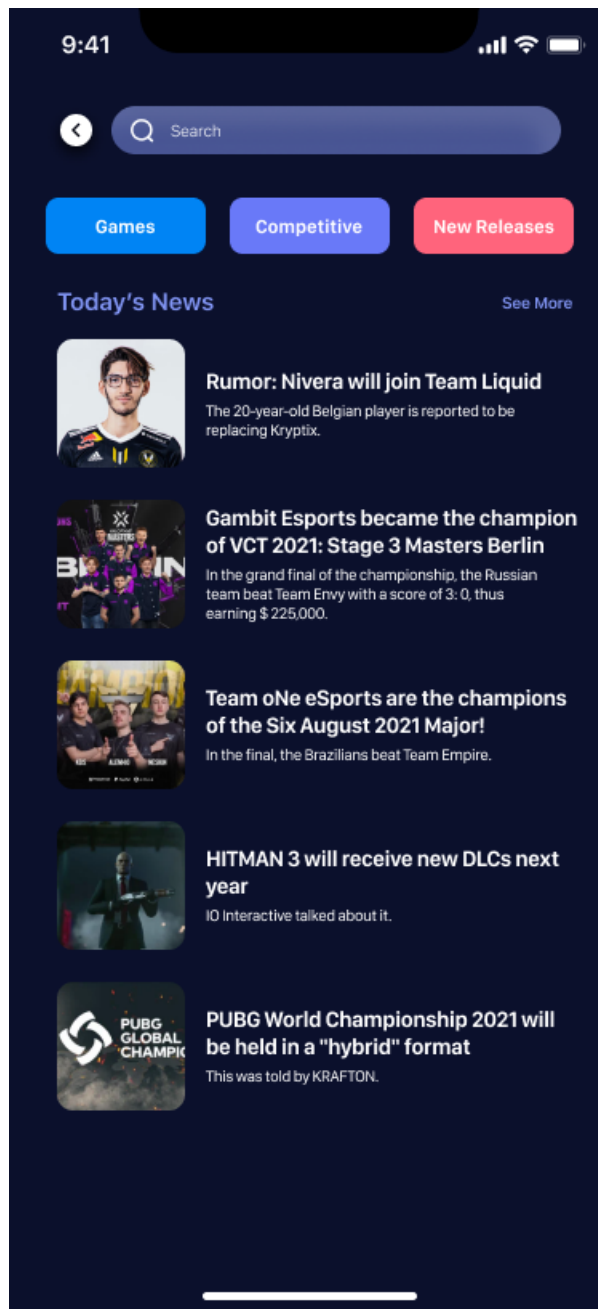


Figure 2.8 Blogs screen

Blogs Screen:

Blogs Screen displays the different blogs which are uploaded by the user, user can search through search field and can open blogs to read.



Figure 2.9 eSports tournament detailed screen

Tournament details Screen:

Tournament details screen shows all the details about tournament happening along with register CTA

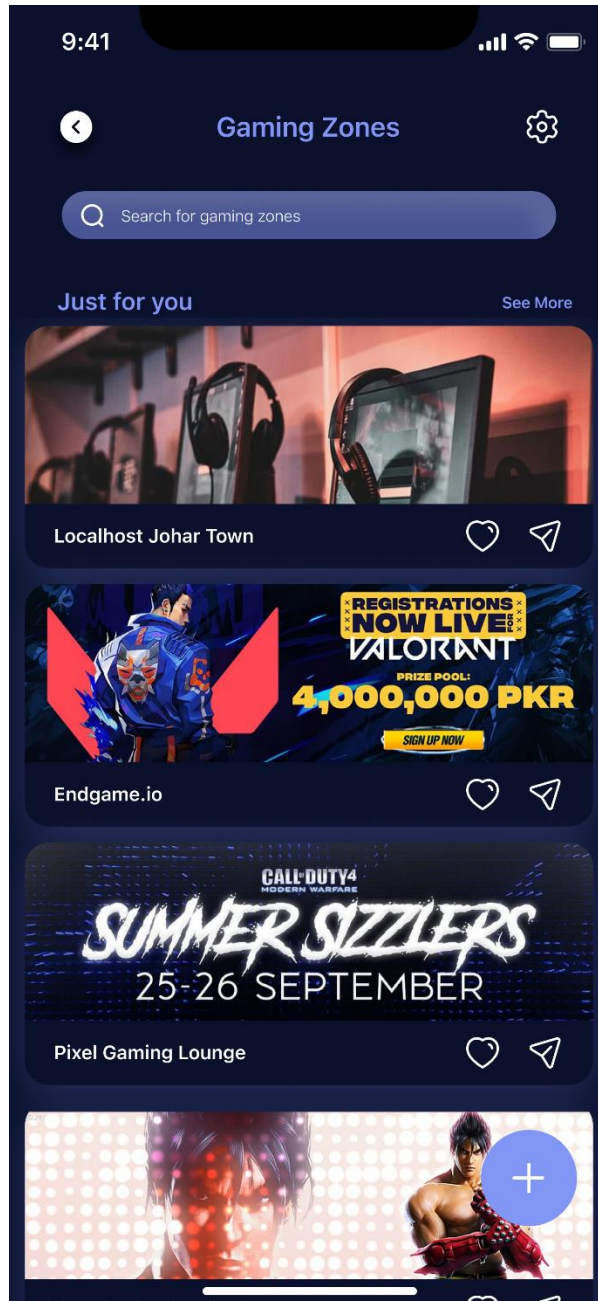


Figure 2.10 Advance User GZ screen

Advance user GZ Screen:

Advance user gets a floating button through which he can upload new gaming zone.

2.3.2. Hardware Interfaces

This application requires basic computer with stable internet connection and Phone with IOS version 12 or android version 6. Since it runs over internet the hardware requires to connect to internet for example LAN, WAN, Modem.

2.3.3. Software Interfaces

- The app should be able to communicate with the server to work flawlessly.
- The app should be able to communicate with law constitutions to not prevail the country's policy.

2.3.4. Communications Interfaces

The app has to use HTTP protocol for connecting to the internet and for the protocol has to be TCP/IP protocol suite.

2.4. System Features

The application design allotted the necessities to either the software or hardware. It can be achieved by establishing the application architecture. The flow chart, DFD, ERD are obliged to act as a foundation in the development process of GGEZ application.

2.4.1. Login Page

2.4.1.1. Description and Priority

Offer an admin / user login page to Gaming zone management system user interface.

Priority = 1

2.4.1.2. Stimulus/Response Sequences

User turns on application.

Response: Login page should be shown automatically.

Stimulus: users enters their credentials.

Response: credentials get validated by database.

Stimulus: User taps on the CTA which is the Login button.

Response: application's home screen is demonstrated.

2.4.1.3. Functional Requirements

REQ-1: User should have the application installed on his mobile or has internet connection for web application.

REQ-2: User should get to fill text fields.

REQ-3: The database should validate the credentials.

2.4.2. Home Screen

2.4.2.1. Description and Priority

Provide access of home screen to user after logging in. Priority = 2

2.4.2.2. Stimulus/Response Sequences

Stimulus: User onboards Home Screen after Logging in.

Response: Home page will be displayed.

2.4.2.3. Functional Requirements

REQ-1: User must login before accessing it

2.4.3. View User Profile

2.4.3.1. Description and Priority

User should be able to check his profile. Priority = 3

2.4.3.2. Stimulus/Response Sequences

Stimulus: User taps on his avatar or image.

Response: User profile gets displayed.

2.4.3.3. Functional Requirements

REQ-1: Users should be able to check their profile screen

2.4.4. View Blog/News

2.4.4.1. Description and Priority

The user should be able to view and read news and blogs. Priority = 4

2.4.4.2. Stimulus/Response Sequences

Stimulus: User taps on Explore Button.

Response: News/Blogs get showed

Stimulus: The user taps on any news

Response: News opens up & the user is able to read.

2.4.4.3. Functional Requirements

REQ-1: There should be some news available for reading.

2.4.5. View eSports

2.4.5.1. Description and Priority

User should have the ability to join and see tournaments. Priority = 5

2.4.5.2. Stimulus/Response Sequences

Stimulus: The user taps on eSports CTA.

Response: Available tournaments gets demonstrated.

Stimulus: The user taps on any tournament

Response: tournament join CTA gets displayed if joining date still has not been met.

2.4.5.3. Functional Requirements

REQ-1: There must have some tournament available for joining.

2.4.6. Logout

2.4.6.1. Description and Priority

The user should have the option for logout. Priority = 6

2.4.6.2. Stimulus/Response Sequences

Stimulus: The user taps on logout button.

Response: The user has been logged out and login screen is demonstrated.

2.4.6.3. Functional Requirements

REQ-1: the user should be safely logged out without any loss of data from the application.

2.5. Other Nonfunctional Requirements

2.5.1. Performance Requirements

The application should ask permission before entering in a tournament or before any changes in post or blog. The app should be such user friendly that a person can easily install and operate it without any hassle. The application must be easy to use for any age group and should be visible to color blind people.

2.5.2. Safety Requirements

The application should be able to provide login authentication to the user. The application can secure our client information.

2.5.3. Security Requirements

- The application should have the feature of login authentication.
- Application should encrypt sensitive data with the help of https protocol and the duplication or repetition of data must be discouraged to enter.

2.5.4. Software Quality Attributes

- **Accessibility:** Application must be light enough to be accessed at any given internet speed this is why it should has low preview options as well.
- **Accuracy:** The rightness of input data to the system was guaranteed.
- **Availability:** Application must be available at any time of the day.
- **Efficiency:** Users should have the ability to perform daily media tasks.
- **Effectiveness:** Users should be given the ability to perform correct tournament tasks and participations.
- **Maintainability:** System maintainability shouldn't be complex.

- **Privacy:** Data confidentiality must be assured.
- **Reliability:** Facility of the application to function under given circumstances should be assured.
- **Security:** The privileges of user access must be secured after the fed data.

2.5.5. Business Rules

GGEZ is a very famous slang in gaming world, people relates to it – The identity is more recognizable. The customers grow as the gaming zones can advertise on this very platform and can enhance their business opportunities. The youth can participate in national and international tournaments and have their name in the representatives of the country and can bring pride to Pakistan.

2.6. Other Requirements

The depiction of the application works and how it needs to be performed are to be discussed here the services which will be offered are to be set by the gaming zone owner himself and he should be able to delete or edit that.

Chapter 3

Use Case Analysis

Chapter 3: System Analysis

3.1. Use Case Model

The following use case shows the working of posting blog in our application.

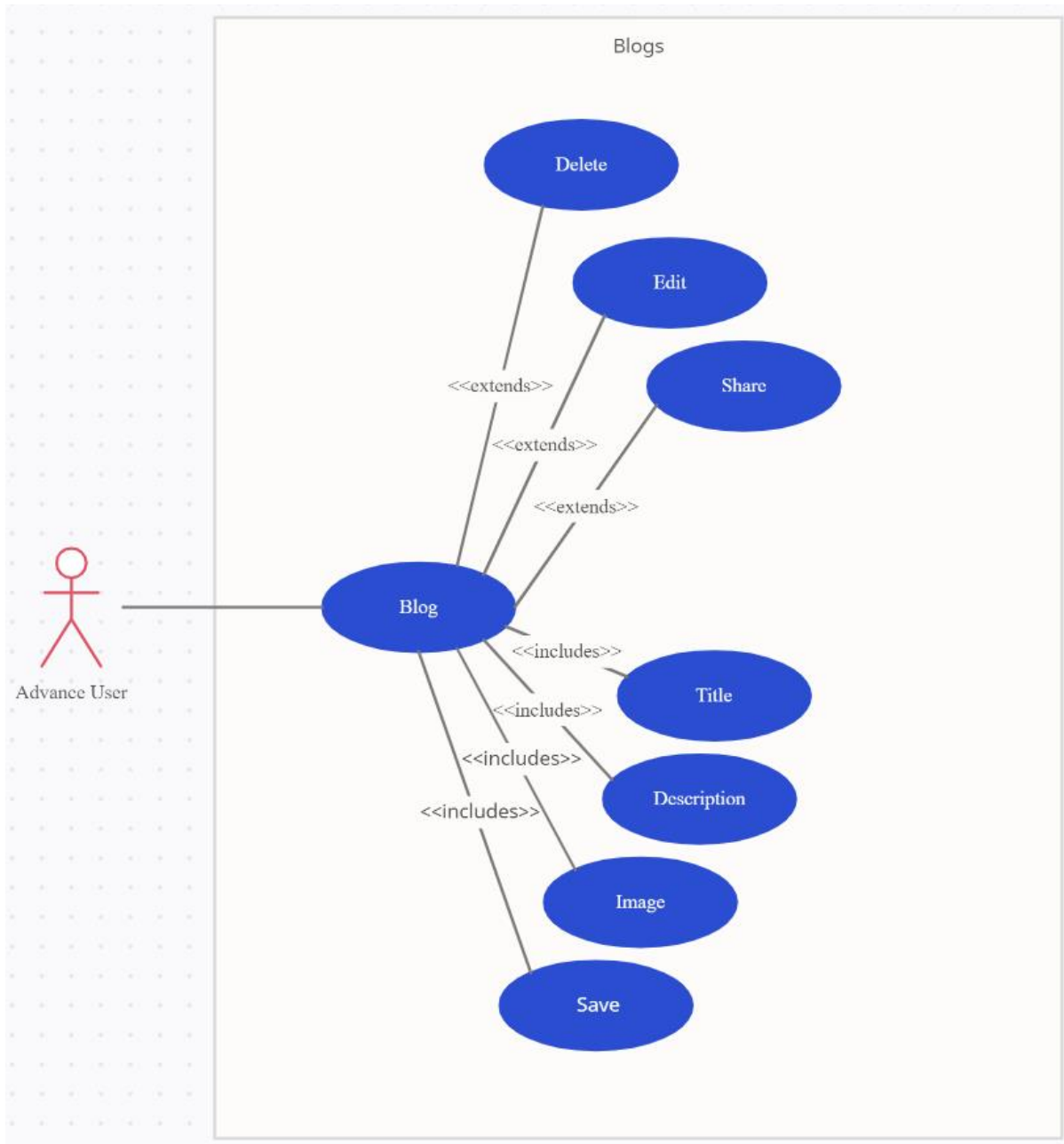


Figure 3.1 Use case of blog posting

This shows the use case for tournament participation between user and advance/business user.

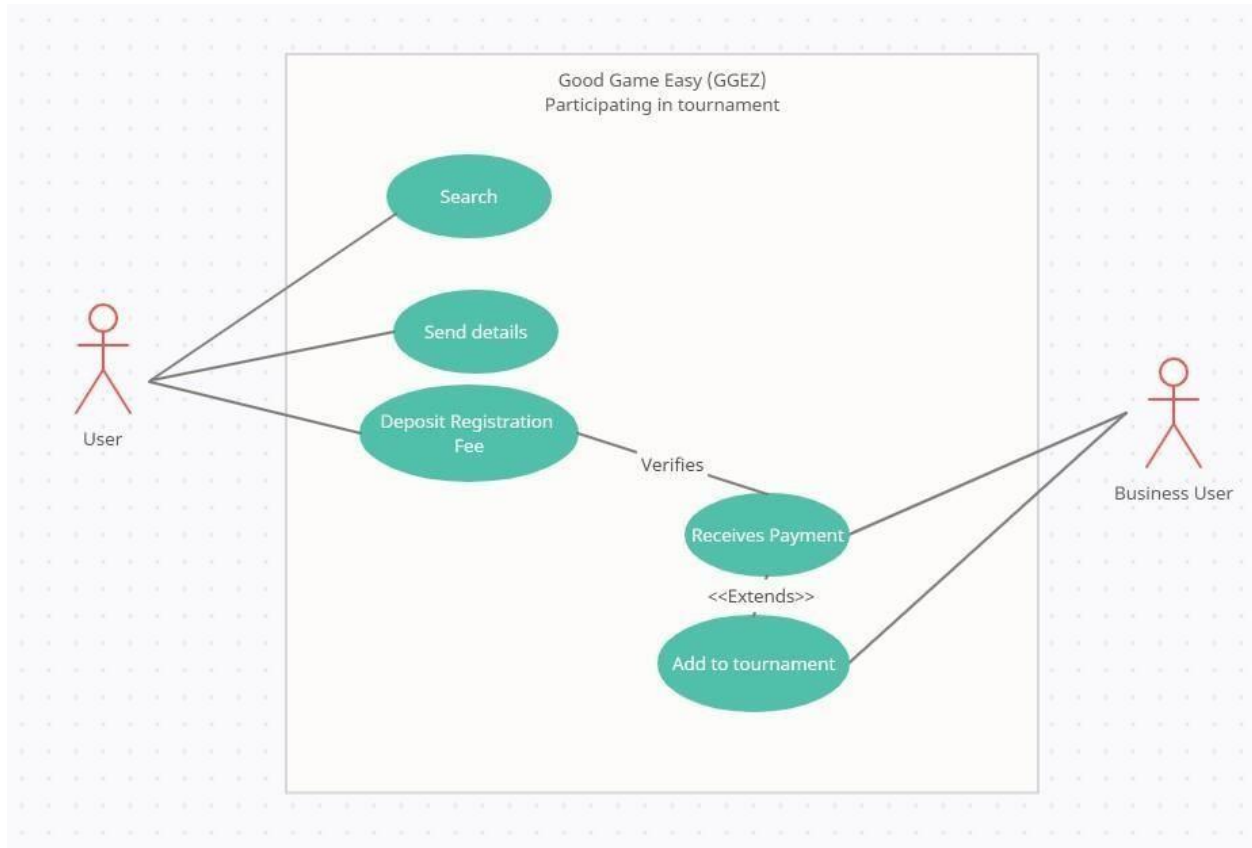


Figure 3.2 Use case of tournament participation

3.2. Use Case Descriptions

Table 3.1: Login

UC-3.2.1: Login		
Actors: user		
Feature: Login		
Pre-condition:	User has Internet Facility or Availability.	
Scenarios		
Step#	Action	Software Reaction
1.	User opens the app	Application displays login form.
2.	User enters the login details.	System will validate and verify the details.
		System will display home screen.
Alternate Scenarios:		
<p>If the connection will be lost, home screen will fail to display. If the User Name and password is not correct the error message will be displayed.</p> <p>If the fields are empty then error must be shown.</p>		
Post Conditions		
Step#	Description	
1.	Home screen will be appeared.	

Table 3.2: View Profile

UC-3.2.2: View Profile		
Actors: User		
Feature: View Profile		
Pre-condition:	User Should have a profile and registered on site logged in	
Scenarios		
Step#	Action	Software Reaction
1.	User opens the app.	System displays login form.
2.	User enters the login details.	System will validate and verify the details.
		System will display the dashboard.
3.	User will request to view the profile	System will display the user's profile.
Alternate Scenarios:		
If the connection will be lost, dashboard will fail to display.		
If the user is not registered, system will not show his profile.		
Post Conditions		
Step#	Description	
1.	Profile is Displayed.	

Table 3.3: Update Profile

UC-3.2.3: Update Profile		
Actors: User		
Pre-condition:	User has to have a profile	
Scenarios		
Step#	Action	Software Reaction
1.	User opens the site through his/her email.	System displays login form.
2.	User will enter the login details.	System will validate and verify the details.
		System will display the dashboard.
3.	User will request to update the profile	System will display the profile update page.
4.	User will Update the Profile.	System will update the Profile.
Alternate Scenarios:		
1. If the connection will be lost, dashboard will fail to display.		
2. If the user has no profile, then profile will not be changed.		

Table 3.4: Logout

UC-3.2.4: Logout		
Actors: User		
Features: Logout		
Pre-condition:	User has to be logged in, in order to logout	
Scenarios		
Step#	Action	Software Reaction
1.	User has to click on side menu	Side menu will open
2.	User click on logout	Logout animation will appear
		System will logout
Alternate Scenarios:		
<ol style="list-style-type: none"> 1. If the connection will be lost, dashboard will fail to display. 2. If the staff member is not logged in than he cannot logout. 		

Chapter 4

System Design

Chapter 4: System Design

4.1. Architecture Diagram

The design of this system is divided into three tiers. In this type of architecture there are three different layers. Which are as follows:

- User Layer
- Application Layer
- Database Layer

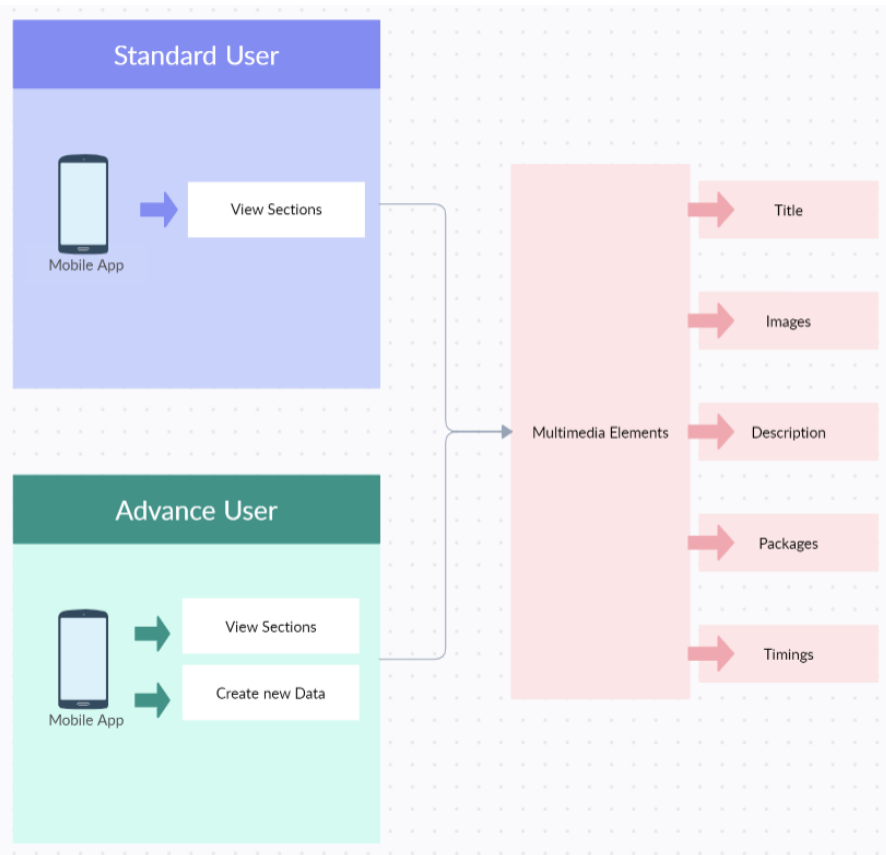


Figure 4.1 Architecture Diagram

4.2. Entity Relationship Diagram with data dictionary

The relation of entites such as people, place or objects. The following figure 4.2 shows the relation which are present in our application.

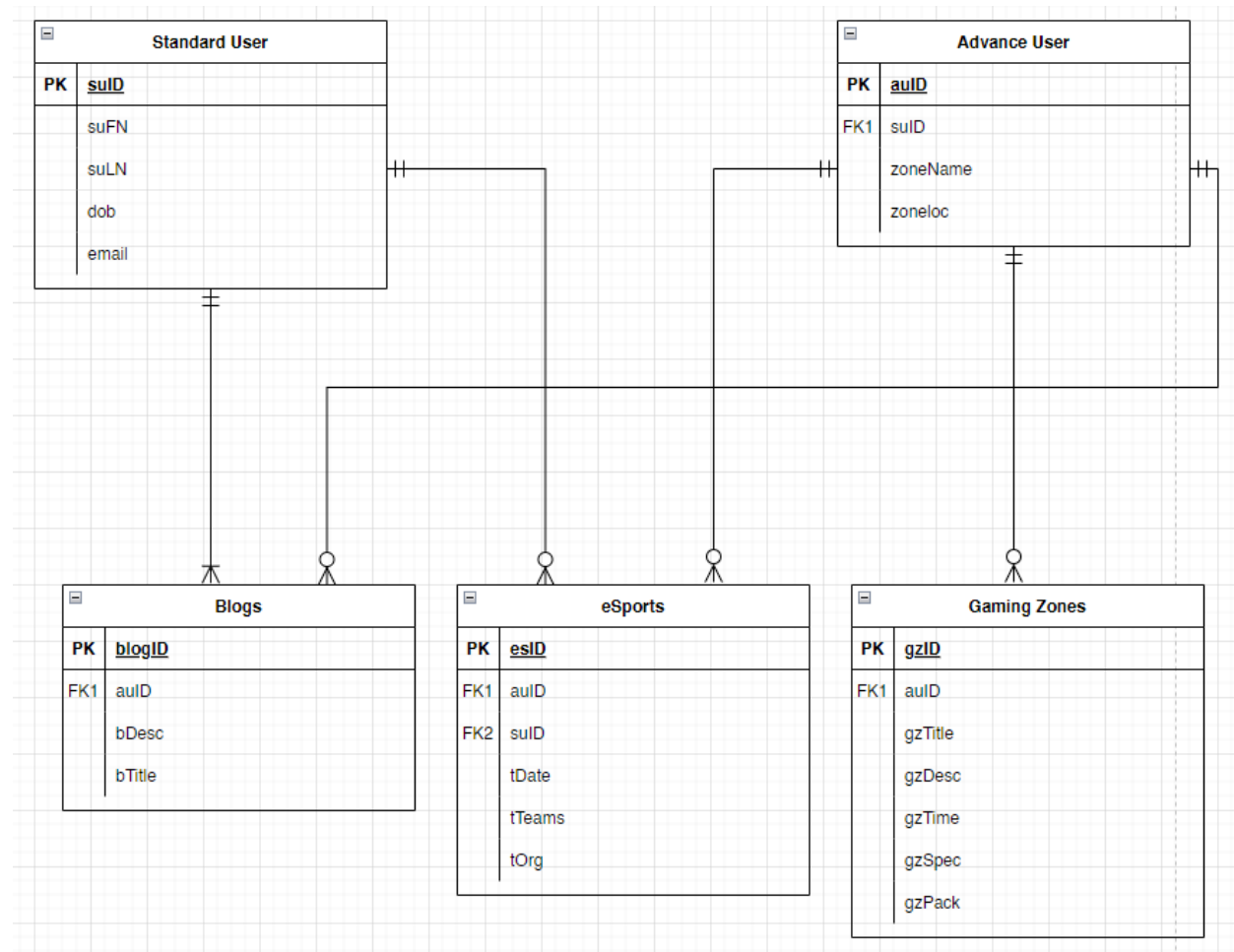


Figure 4.2 ERD

4.3. Class Diagram

Application's static view which is used for describing, visualizing aspects of an application and also helps in the construction of an executable code. The following figure 4.3 represents the detailed view of our application.

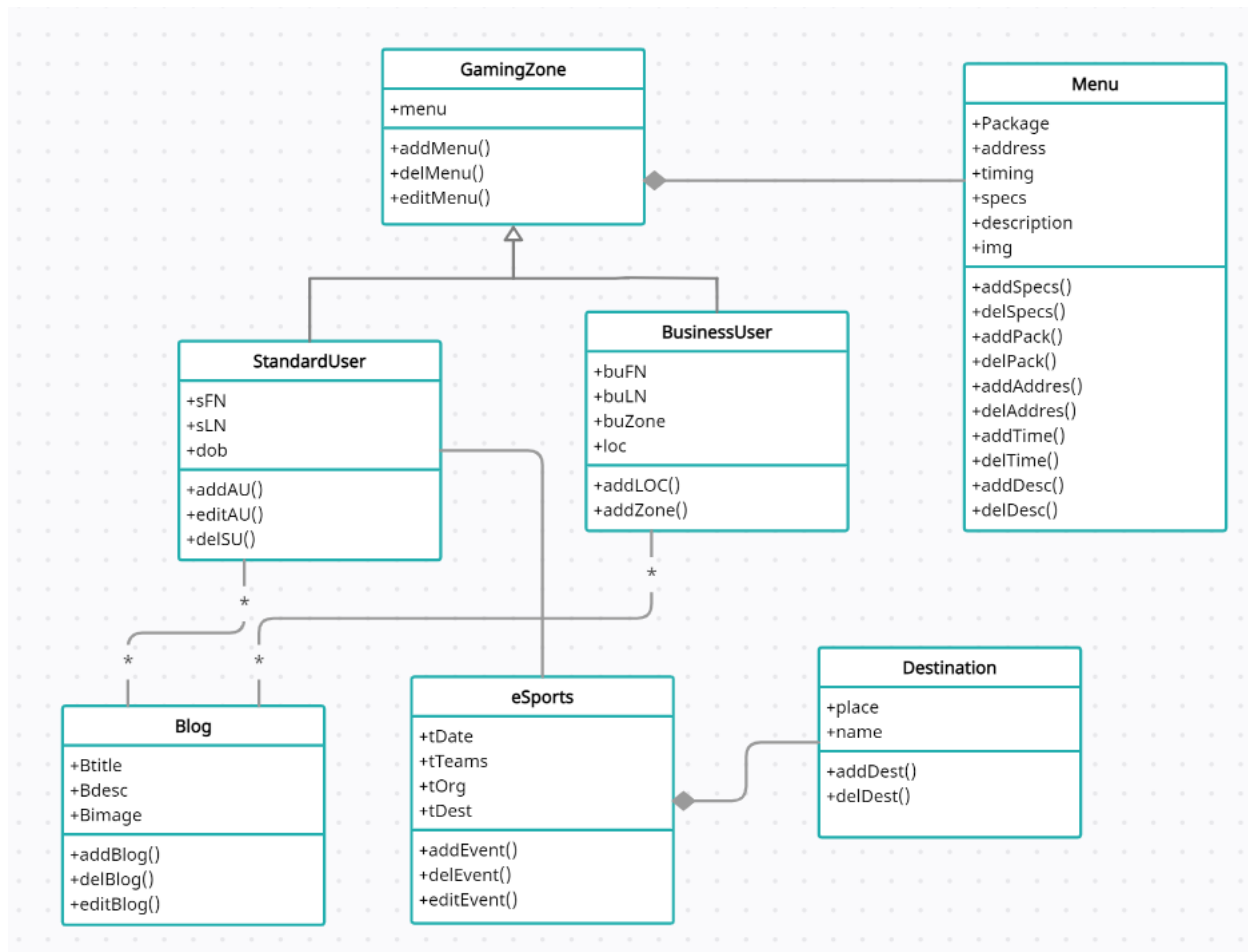


Figure 4.3 Class Diagram

4.4. Sequence / Collaboration Diagram

The figure 4.4 shows the stream of events among objects of advance/business user and system while the figure 4.5 shows the stream of events amid objects of standard user and system, this flow cannot be easily shown in other diagrams.

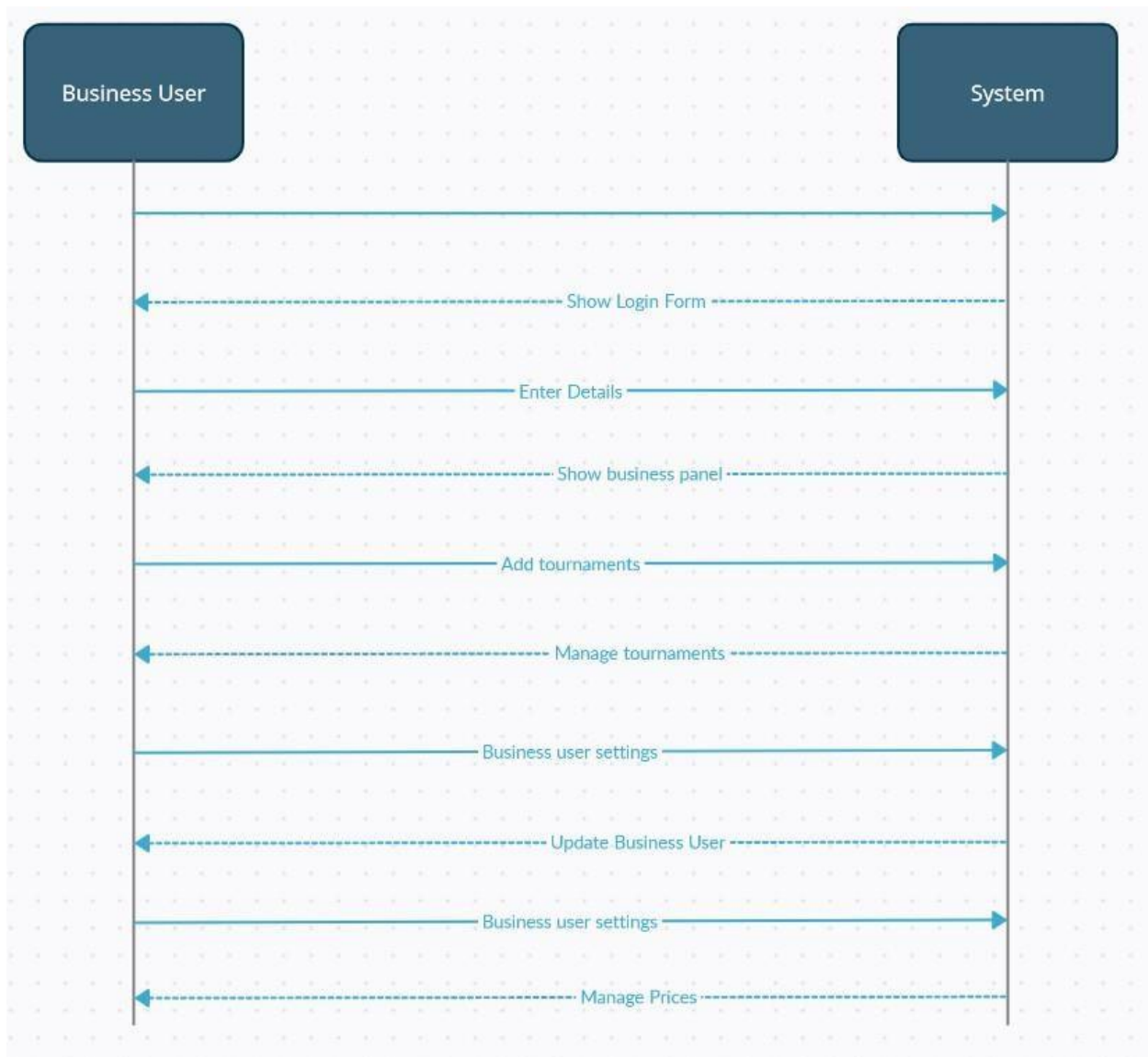


Figure 4.4 Advance/Business & System

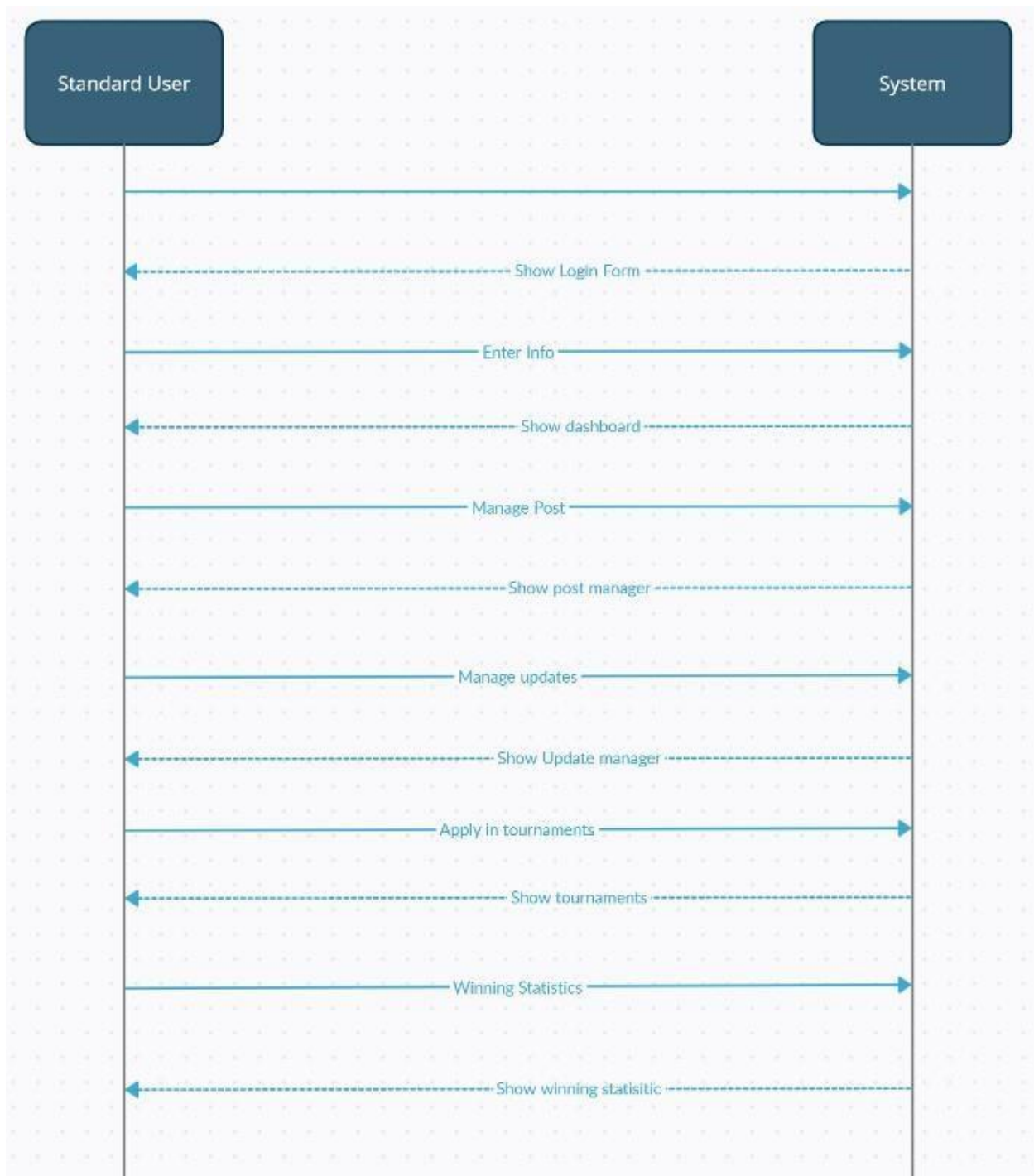


Figure 4.5 Standard User & System

4.5. Activity Diagram

It shows the interaction and relation among objects of an application.

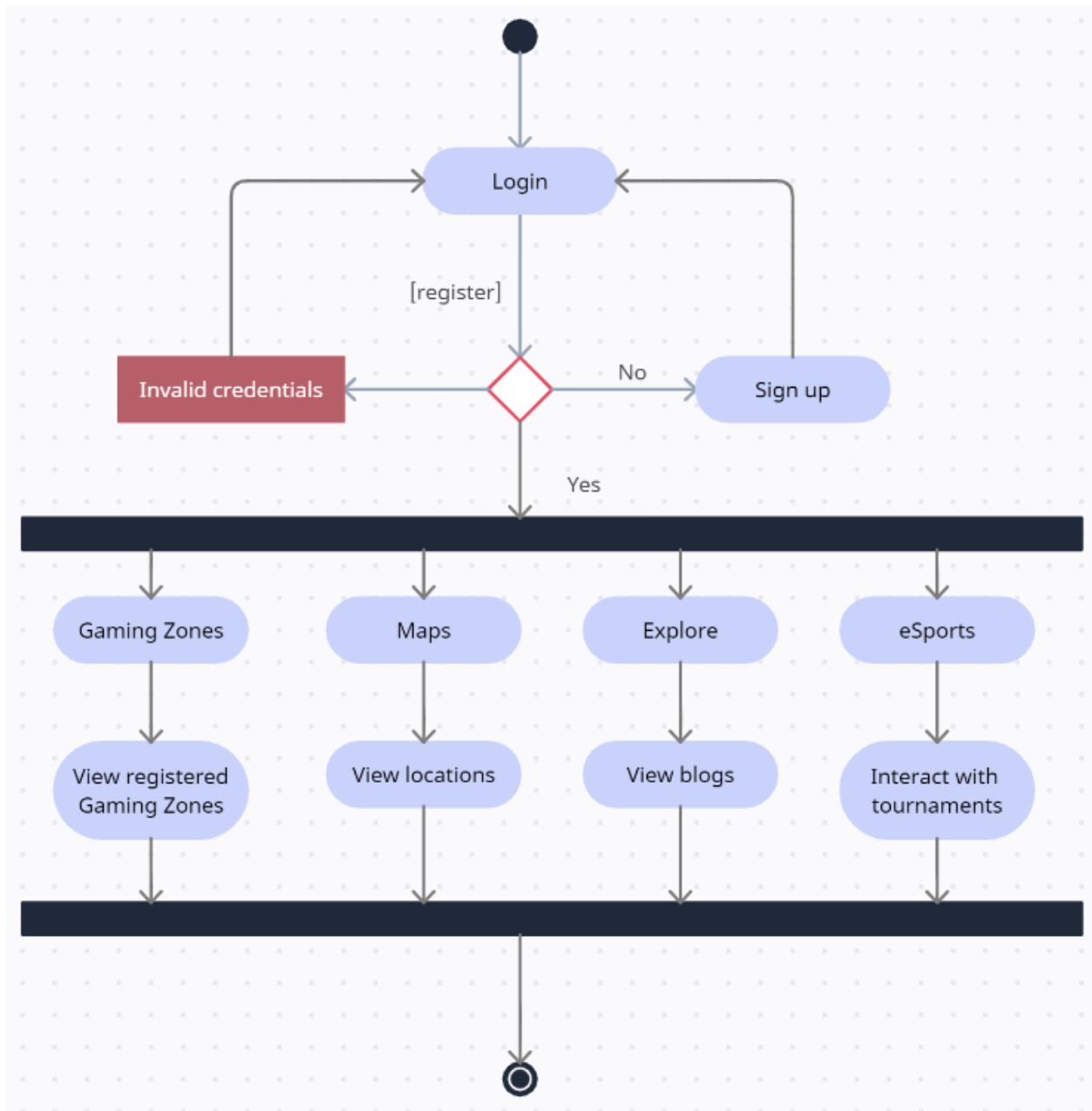


Figure 4.6 Activity Diagram

4.6. State Transition Diagram

The depiction of states (transitions) of an object in which we can see when the state changes. Or the conditions which makes the state to change.

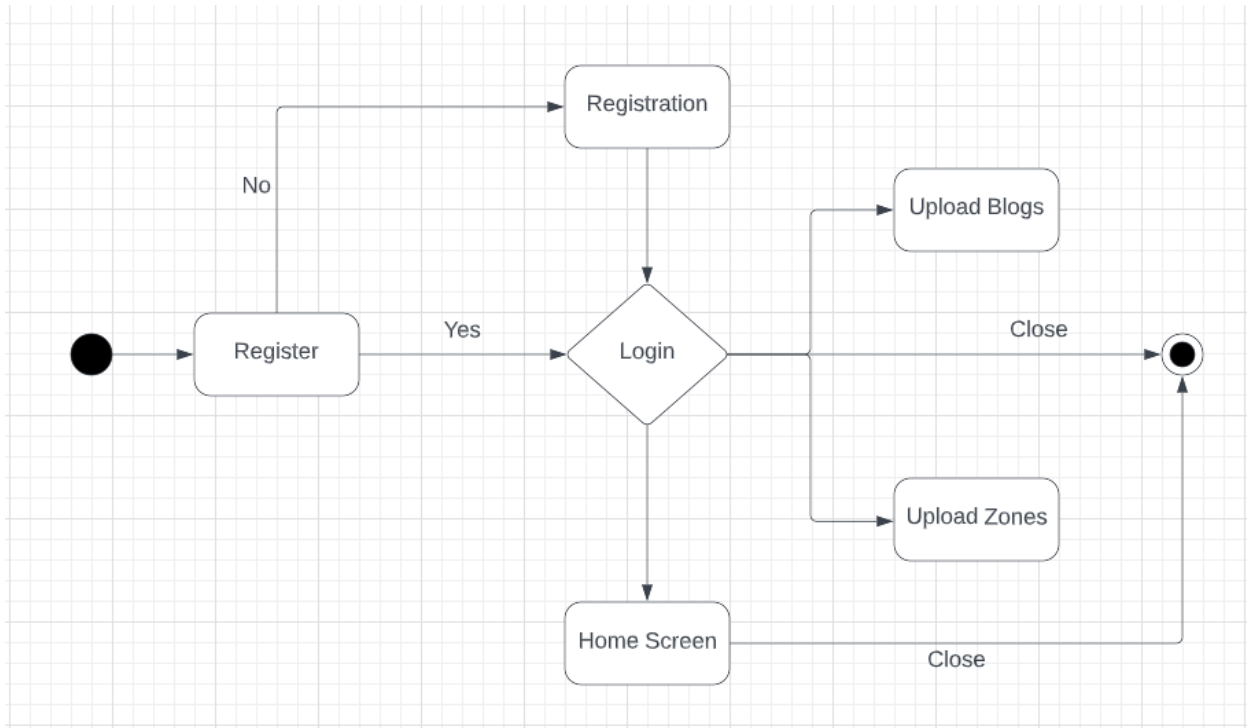


Figure 4.7 State Transition Diagram

4.7. Data Flow diagram

In DFD we see the flow of data, it can be of a system or process. We also get to know about inputs and outputs of entities.

Level 0:

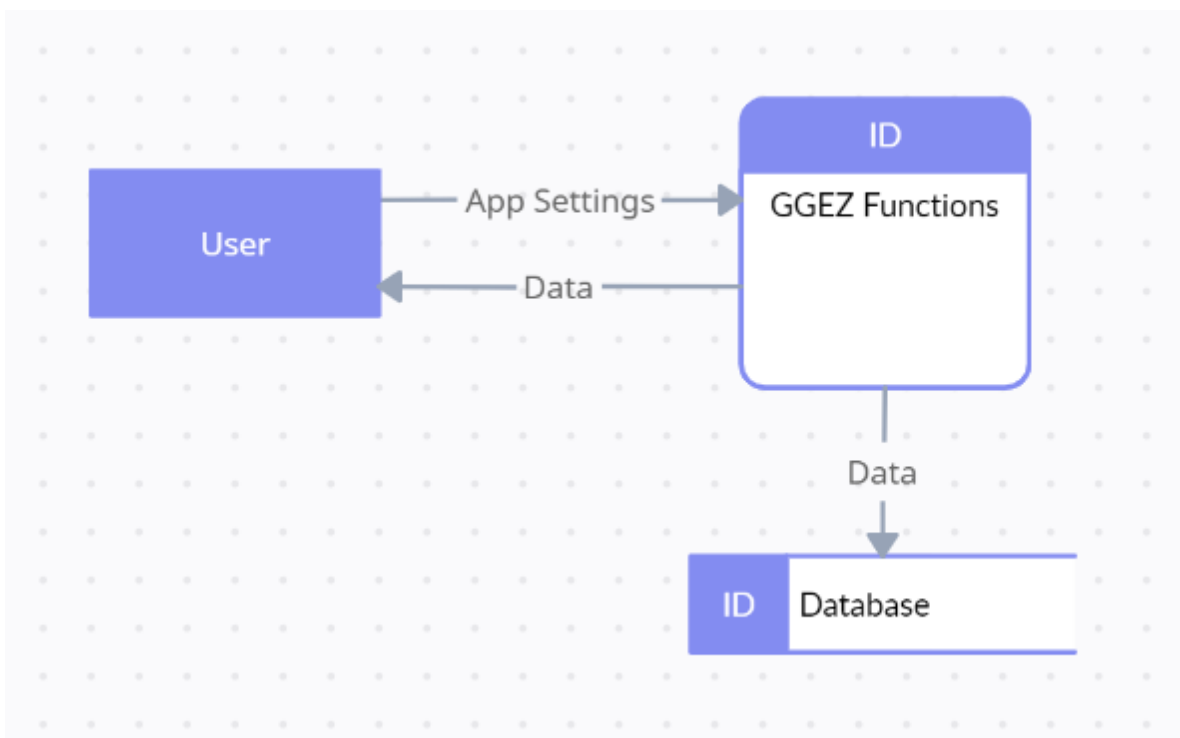


Figure 4.8 Level 0 DFD

Level 1:

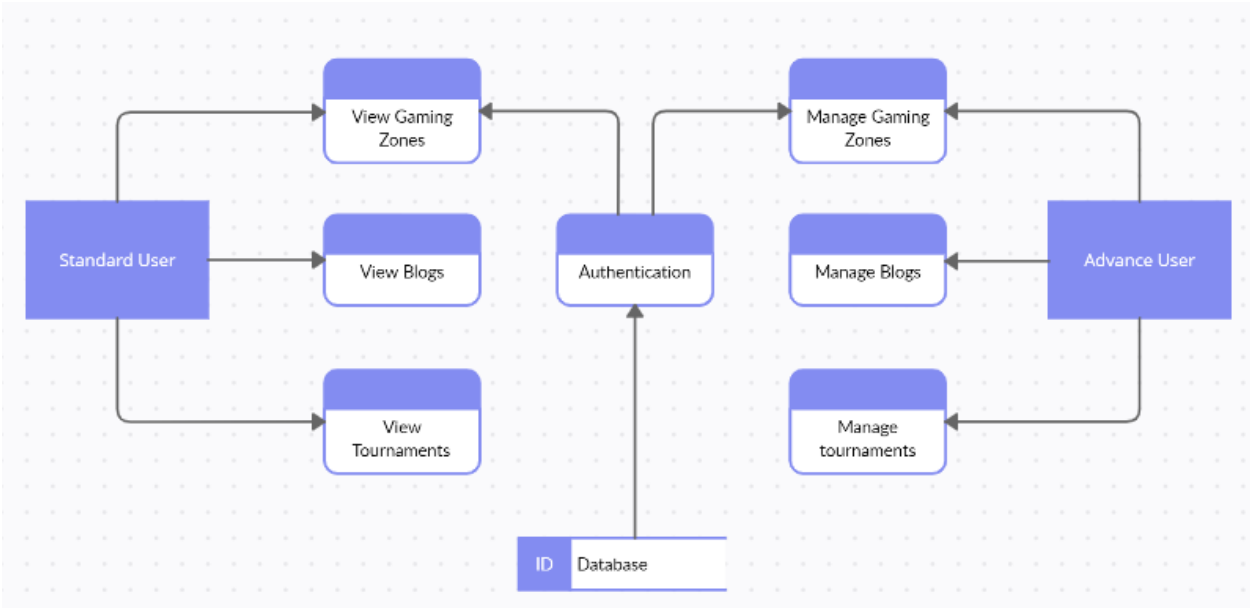


Figure 4.9 Level 1 DFD

Chapter 5

Implementation

Chapter 5: Implementation

5.1. Components, Libraries, Web Services and stubs

Libraries which would be used are Material.io, Picaso. And web services which would be used are AWS.

5.2. Deployment Environment

User needs to download the app using Playstore or AppStore after that the user needs to signup.

5.3. Tools and Techniques

The procedure and devices are as follows, Tools we used

- VSCode
- Figma

5.4. Best Practices / Coding Standards

The standard we'll use are as follows

- OOAD
- Neat and well maintained
- Easily understandable

5.5. Version Control

Table 5.1 Version Control

Version	Date	Developed By	Rationale
0.1	06/01/2022	Team GGEZ	First Draft
0.2	14/07/2022	Team GGEZ	Final Draft

Chapter 6

Testing and Evaluation

Chapter 6: Testing and Evaluation

6.1. Use Case Testing

Table 6.1 Testing of use case

	Steps	Description
Main Success Scenario A. Actor	1	Post Blog
	2	Share Blog
	3	Edit Blog
	4	Delete Blog
	5	Comment Blog
	6	Save Blog
	7	Text Editor
	8	Manage Photo
Extension	8a	Edit Photo
	8b	Upload Photo
	8c	Delete Photo

6.2. Data flow testing

It is important to understand before doing the data flow testing that every app has a flow and testing is done on each flow. Here we have two users' hence two main flows which are standard and advance user. We tested using the technique called dynamic data flow testing.

The flow of data was tested along with the variable created in our application for getting the results of bug present in each flow / state of the application which contains the user profile, login, signup, blogs, tournaments, gaming zones screen. Here each variable was tested along with the code execution.

The flow of User: The user has to have an account on our application then he needs to have an active internet connection to use the application. The app is using google console which needs to be available only when the user has an active internet connection.

6.3. Unit testing

Working of each module is tested if it's working fine or not.

Wi-Fi: User needs to check his Wi-Fi connection, if it's working perfectly if not the user need to check his modem and mobile settings for troubleshooting.

Login: The user logs in using his account.

Gaming Zones: The user needs to click on gaming zones to check if they are displaying list wise and are interact-able.

Maps: Check maps API key is working and map is showing everything at the current moment, and is not lagging.

Explore: User needs to explore in blogs of the gaming world which are divided by using filters and are showing blogs which are readable.

Tournaments: Tournaments section needs to have tournament with their active registration links and user must be able to participate in them so he can have the better app experience.

6.4. Integration testing

We tested the project by merging all the modules of project and checked if they are working properly every screen is showing and is working like it should. We also used different techniques to test our integration such as bottom up, top down and sandwich.

Bottom up: In this we tested the modules which are low level, such as displaying the gaming zones information, we tested if there are any bugs in displaying the information of low level modules.

Top down: Here we tested the modules which are higher in level such as profile of user, login and signup. We tested if there are any bugs in updating the information and we found that our app is not giving the error on missing field. We fixed it.

Sandwich: Here we tested by merging top down and bottom up to have a combine power of both and tested the app from low modules to high.

6.5. Performance testing

The scalability, speed and response of the project was tested. The gamers tend to see fast speed and they are always intrigued by faster response times as well.

We tested the performance by using different mobiles with having different specification and hardware and made changes based on the results. The modules are working faster, response time was great.

6.6. Stress Testing

The testing was done by registering many users and checked the application working if it gets slower. We tested by adding many test gaming zones and check the feasibility of users and it was working as good as it was developed. We also tested by using Monkey which is used for Key Bash stress testing, Key bashes can result in app crashes and we were very much looking for that so can we make improvements and make our app error free. We tested and made changes for the better experience of the customer.

Chapter 7

Summary, Conclusion and Future Enhancements

Chapter 7: Summary, Conclusion & Future Enhancements

7.1. Project Summary

This documentation remains about our FYP which is related to gaming industry, the gaming industry is at rise in Pakistan and there is no such app where gamers can get all the information regarding gaming. GGEZ will provide detailed information about gaming zones, gaming news and tournaments which can help gamers excel in their careers and also this can help in their entertainment. There is no such application as of now which collectively focuses on all three aspects of gaming. The project has ability of scalability as new things gets introduced in the gaming world. Which can contain the platforms divisions.

7.2. Achievements and Improvements

This application is one of its kind, as there is no such application in the market which makes us stand apart from the rest of market, we made improvements based on the data collected from gamers and we continued to make iterations over time. We can scale, improve and make the UX even friendlier for easy understanding so that more gamers can interact and grow their career, when one of the gamer make an achievement and make Pakistan proud using our application this will be our biggest achievement.

7.3. Critical Review

The application is lacking many major features which can introduce gamers totally to a new dimension of their career but due to no funding we were unable to buy paid APIs so those features are missing as of now, but in the future with the seed funding we can definitely integrate those features and make the gamers secure in their career and provide them growth options which can contain player personal career profile containing his past achievements upcoming tournaments and new opportunities.

7.4. Lessons Learnt

Human nature has a part which is making mistakes, we have also made several mistakes doing this project and we will surely keep those in our mind for our future projects, some of the major mistakes we made and learned from them are as follows:

Time management: We badly failed at time management due to university, job and project all merged and we couldn't keep up but a TO-DO list helped us getting out from this.

Project backup: Living in a developing country can have its cons such as sudden power outage, when writing code auto save is a must have but if the software doesn't support it we must have to save it after few minutes interval.

Cleanliness of code: Cleanliness of code can help in team working so the other team member can efficiently start from where the previous member left and all the group can save time and complete the project timely.

7.5. Future Enhancements/Recommendations

We have many interesting things in mind regarding this project considering the environment gamer love. When we get funding we can integrate new APIs which can help us in Maps filters, game filters, data collection and further more international tournaments connectivity and their LAN procedures. This project has surely a lot of potential and scalability options.

Appendices

Appendix A: Assumptions

ESports

ESports play the most important role in gaming industry but due to less number of tournaments happening in Pakistan assumptions of data had been made such as the prize pools, dates, charts and participants for initial proposal but after that interviews and surveys had been conducted and iterations were made according to the data collected.

Appendix B: Manual Installation

B.1. GGEZ Android Manual Installation

- Download the APK from GDrive
- Then click on install, if promoted click on YES it should start installing itself
- If an error occurs, go to mobile setting and enable the option with the name install unknown apps.
- Now go back to installation and click on Yes, it should install now.

B.2. GGEZ iOS Manual Installation

- Go to App Store and download TestFlight.
- Now go the GDrive and click on the iOS
- It'll give a pop up to open TestFlight, click on open
- After the opening of TestFlight and install option will be present
- Click on install and your app will be installed.

Appendix C: Information / Promotional Material

C.1. Standee



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Reference and Bibliography

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