DESIGN AND DEVELOPMENT OF AN ANDROID APP CRICKETER FAIR

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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DHAKA, BANGLADESH

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APPROVAL

This Project titled " **Design and development of an android app Cricketer Fair"** submitted by Farhana Zaman Urmi , ID No: 171-15-9463, Md Mominur Islam Asad, ID No: 163-15-8523, Md. Wasim Akrum, ID No: 171-15-9457 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 01-06-2021.

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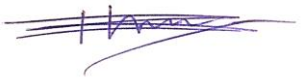

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We hereby declare that this project has been done by us under the supervision of **Ms. Subhenur Latif, Assistant Professor, and Department of CSE** Daffodil Internatio nal University. I likewise proclaim that neither this undertaking nor any aspect of this project has been submitted somewhere else for grant of any degree or confirmation.

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At last, we should recognize with due regard the steady help and patients of my parents.

ABSTRACT

We are trying something new for cricket lovers. Basically we have developed an android application name Cricketer Fair. Cricket is one of the most popular games in the world, especially in Asia. At the same time local cricket tournaments are also popular in Bangladesh. We like to watch cricket more than we love to play cricket. In the local area some young guys arrange cricket tenement with exciting prize money or gifts. And most of the time the team of this tournament is village based so that is why the tournament will be more exciting and people will enjoy those cricket matches so much. People from one village go to another village to watch all these tournaments. So we have created an app that will make all these tournaments more attractive. In this app, you can see the live score update of this tournament, so if anyone wants, you can watch the update of this tournament from home. We see many apps for such cricket score updates in the Google Play Store but all of them are for national or international matches. We wanted to create an app like this for local cricket. We also have this feature of our app called Cricketer Profile. Here is the performance details of the cricketers and below is his contact information. Anyone can contact the player and hire him for the next tournament. We think this app will make our local cricket easier and more glamorous.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

Cricket is a popular sport worldwide. It is more popular in Bangladesh also like other countries. Cricket is a very popular sport among the people of every region of Bangladesh. Like national and international cricket tournaments, different kinds of cricket tournaments are organized regionally in every part of Bangladesh for entertainment. Village cricket players participated there. The popularity of these tournaments is no less. People need to go to the field to enjoy this game. There is no way to watch the scores of these tournaments live online. Many people who live in cities also love to enjoy such cricket tournaments in the villages but it is not possible as there is no way to watch live scores online. Besides, there are many people in the villages of Bangladesh, in different parts of the country who play good cricket and want to take cricket as a profession. But despite the qualificatio ns, their wishes are not fulfilled due to lack of opportunities. They do not get a chance to play in any big field from the village level. When more and more people know about their playing skills, they will be able to hire these players for cricket tournaments from differe nt parts of the country. Through our app, cricket lovers' can see the live scores of the cricket tournaments organized in different parts of Bangladesh and also the profile of each player. By looking at the profile, you can hire the player of your choice for the next tournament.

1.2 Motivation

Cricket is the most familiar game in Bangladesh. Boys from all regions love to play cricket. It is said that the boys of this country grow up playing cricket. There are many good cricket players in the villages of our country. They just can't play in good places for lack of opportunities. If they get enough chances, they can go to a much better place and even hope to get a place in the national team. In addition to enjoying the game of cricket through our app, people will be able to know about cricket players from different parts of the country. Through this the player will get more exposure. As a result, they will have the opportunity

to play in different places. By playing different places they will be more familiar. We are hopeful that those who want to take up cricket as a profession, our application will be most helpful for them.

1.3 Objective

To enjoy a rural cricket match we need to go to the place. There is no scope for us to enjoy rural cricket online. Moreover, the rural cricket players always stay out of the network and there is no easy scope for them to become familiar. Through our app both people will enjoy rural cricket and at the same time the rural cricket player's will also be benefited.

Features:

- Create Account
- User sign in
- Player login
- Phone authentication by Firebase OTP
- Cricket live score
- Player Profile
- Communicate with Players / Hire Players

1.4 Expected Outcome

Our main target is to introduce the rural cricket players not only in a specific area but also in the worldwide. People will be able to enjoy live rural cricket competition through our app and will also know about different players through cricketer's profile. Those who arrange cricket competition will be able to hire a player of their choice to play cricket for their team from any part of the country by contacting the player through cricketer's profile.

1.5 Report Layout

This report contains total six chapter i.e. "Introduction", "Background", "Require ment Specification", "Design Specification", "Implementation and Testing", and "Conclus ion and Future Scope". In chapter one, we mostly talked about why we're doing this, what

problem we're going to fix, and what we hope to come out of it. In chapter two, here mainly focused about the background study and related works related to this project and challenges. In chapter three, different types of models of our project have been shown. In chapter four, here mainly discuss the design implementation like front-end design, back- end design. In chapter five, we have shown implementation of our works and the testing result. In the last chapter, we conclude this project by giving an overview of this project and the future scope for this project.

CHAPTER 2
BACKGROUND

2.1 Introduction

'Cricketer Fair' is an android application. It's developed within the Android Studio IDE which is such a heavy platform and confirms the developers' pc features a good configuration of RAM, hard disc or SSD. They depreciate some inbuilt functions and add new factions instead of the previous functions in the upgrade edition of IDE. That is why I have to keep up with code writing. If a mistake occurs in code due to the use of the depreciate feature, I have to check the Google Android developer documentation site as well as the Stack Overflow website to resolve the issue. I also need to know Java programming language for app development, and PHP programming language for Rest api, SQL Quarry and Firebase for database link, data insert, extract, and manipulation.

2.2 Related Work

As our project is based on an android application, we do a lot of research about it while doing this project. We have searched in Google play store to ensure whether similar apps are available or not. We have found many apps related to cricket but there are no apps like ours. Our app is mainly for area based cricket. There are no available apps where we can see the live score of an area based cricket tournament. Generally, we can see the live scores of IPL, BPL, and PSL etc in the available apps. So our work is totally different from the rest. We hope it will be more attractive and people will love this.

2.3 Comparative Studies

We have to think about how to bring rural cricket tournaments in front of everyone. If we can do this then more people will enjoy these tournaments. The players will be more encouraged to play cricket well. We've learned about Android Studio IDE, such as how to install it and what are the minimum device requirements for it to work properly. We've also learned about Java Home, which is a system advance environment variable that supports java programs or compiles java code. We looked in the Google Play Store and found a lot of apps related to cricket, but none of them were close to our app's features [5].

2.4 Scope of problems

Because of the legislation about cloud storage and bandwidth, we will not accept large amounts of user traffic in our application at first. If more than 5000 people use this app at the same time, the server will go down and an application not responding (ANR) will occur. The java null pointer exception is a common programmatically problem in applicatio n development. A Runtime Exception may be a Null Pointer Exception. Popular null data is frequently assigned to an object reference in Java. When a program tries to use an object reference with null data, a Null Pointer Exception is thrown [4]. This problem often occurs after we run the program, but it's difficult to figure out why the compiler displays this error. However, we were able to resolve those issues by conducting a code review.

2.5 Challenges

When a developer creates an app, he or she faces many obstacles. The main challenge in my project is that I was a novice in android production, so I didn't start with a lot of the features because I didn't know what they were. Then I went to YouTube, Google, and Stack overflow to see what I could find. After gaining the skills that I have used in this app. Even, there are many problems ahead, such as app server maintenance, the appearance of a new bug inside the app that must be fixed as soon as possible, and keeping up with the latest Android version and SDK. Google revealed last week that their user interface permissio n access policy for Android 10 and Android 11 had been modified. As a consequence, a few don't have the previous procedure, so I changed the code to reflect the new user permissio n [1].

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1.1 Business Process Model

Business process modeling is usually used to map a workflow in order to better understand, analyze, and improve the workflow or process. Through use of a diagram help in visualizing the process and making informed choices.

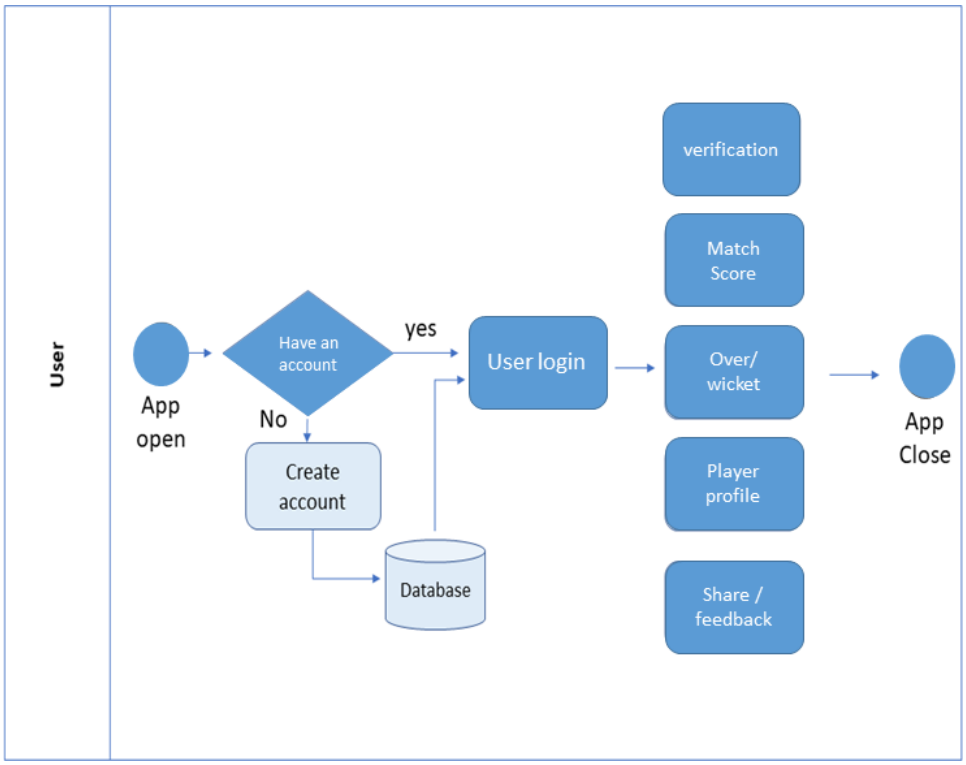

Figure 3.1: Business Process Model

3.1.2 Block Diagram

A Block Diagram is a representation of a structure in which the key components or functions are represented by blocks linked by lines that represent the blocks' relationships. Hardware design, electronic design, software design, and process flow diagrams are all descriptions of what they're used in engineering.

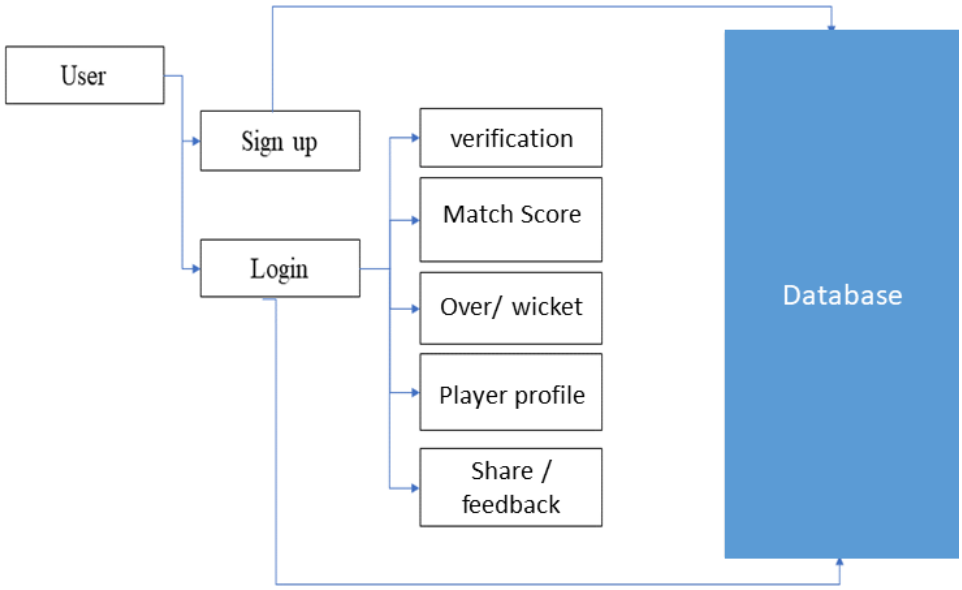

Figure 3.2: Block Diagram of the System

3.2 Requirement Collection and Analysis

Requirement Engineering, also known as requirement analysis, is the method of determining user requirements for new or updated applications. It is often referred to as requirements gathering or requirements capturing in the sense of software engineering. The tasks that go into determining the needs or conditions to meet for a new or altered product or project, taking into account the potentially conflicting requirements of various stakeholders, analyzing, documenting, validating, and managing software or system requirements are all included in requirements analysis. We have also collect requireme nt from our own village rural area and discuss our group members and also compare with existing application in Google play store [5].

3.2.1 Feasibility Study

A feasibility analysis is an independent review of an App design to see if it is feasible and worth pursuing. The key advantage of a feasibility study is that it takes the guesswork (to some extent) out of the app launch. As a result, there will be no surprises during the production and launch of the app. We did feasibility study about my idea and implementation. For the 1st, I searched in Google play store and I noticed that there are many applications but exactly our features or same concept. Because of their portability and useful applications, mobile apps are becoming increasingly popular. Portable computers are now used by not only people but also businesses for both small and large tasks. The rapid adoption of mobile technology, on the other hand, is increasing the viability of mobile users and programmers. When developing a mobile applicatio n, developers seek to create a platform that can be used on a variety of devices, includ ing smartphones, tablets, laptops, and computers. This is the most essential analysis for creating an app. After you've chosen an idea, you'll need to do a feasibility analysis on our idea or project concept. That is, is your idea special, is it suitable for the target audience, is the app stable and usable, and does it solve a problem for the user with this idea, etc., and is your service feasible for the user?

3.3 Use Case Modeling and Description

A use-case model is a simplified representation of how specific types of users interact with a device in order to solve a problem. Usage cases, actors, and their relationships are the most important model components. To make communication easier, a use-case diagram is used to help visualize a subset of the model.

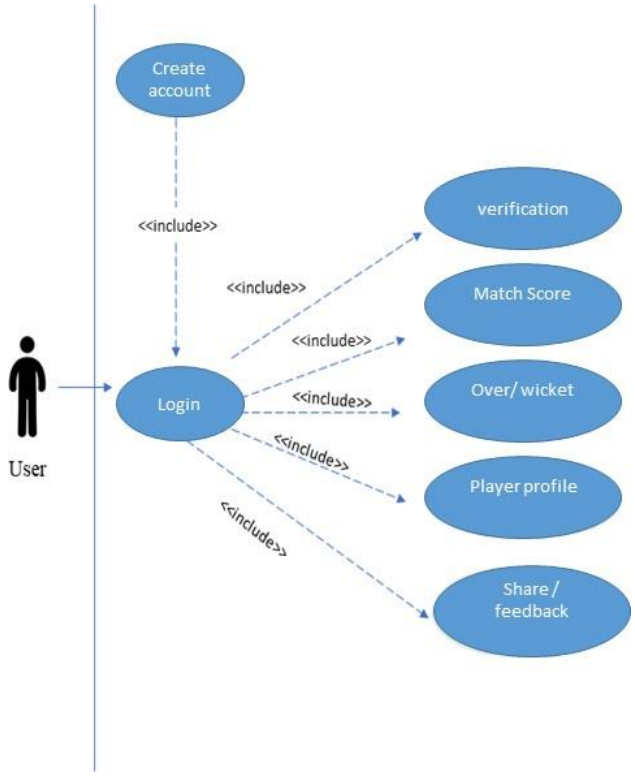

Figure 3.3: Use Case Diagram

3.4 Logical Data Model

Logical data modeling is the method of data visualization of data design and organization, information about the physical implementation of database management system technology being used to store the data. A logical data model contains all of the information about the individual entities and their relationships in a database.

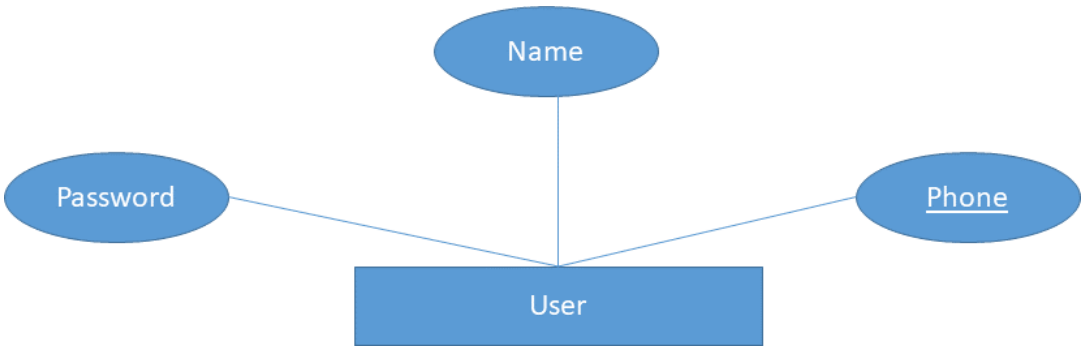

Figure 3.4: ER Diagram of the system

3.5 Design Requirements

The specification of requirements is the first step in designing an application. Since all processes are dependent on the design of the requirements. The following are some relevant requirements:

- Create Account
- User sign in
- Player login
- Cricket live score
- Player Profile
- Communicated / Hire with players

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

This is the most crucial part of the mobile app. It is based on the presentation layer, and users can communicate with other users or people directly. People nowadays are drawn to fast and simple solutions. As a result, we attempted to make the app's user interface user- friendly and simple to work with. For a strong user interface and simple interaction, we sometimes use Google Material Design. Figure 4.1 shows the user interface of user login by entering their phone number and secret password. Before login.

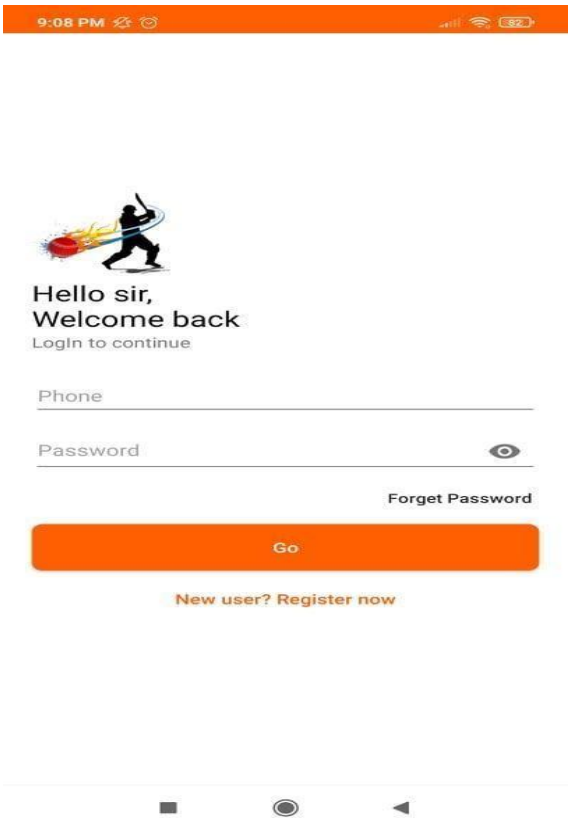

Fig 4.1: User Login

Figure 4.2 shows the user registration page. By entering the user full name, phone number, password and confirm password an account will be created into the firebase database. And after that users get access to use the system. Here before creating an account the system verifies the user phone by sending an OTP corresponding phone number.

Fig 4.2: User Registration

In figure 4.3, is the Actual home page of our application. When a user successfully created an account or login in credentials then this home appears. Here this is the total summary of a match. So users can easily understand the whole match.

Fig 4.3: Home Page

Here is the navigation bar of our app in figure 4.4

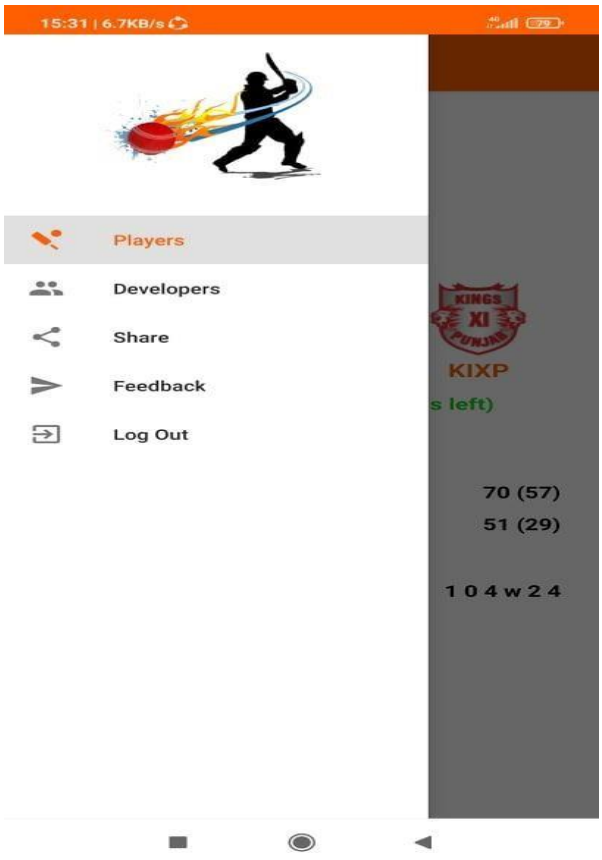

Fig 4.4: Navigation Bar

This is the user interface of the player's profile in figure 4.5. For every player a player profile is created with their own performance like player name, player type, number of matches, best score etc.

Fig 4.5: Player's Profile

Figure 4.6 shows the feature of contacting with player via mobile call.

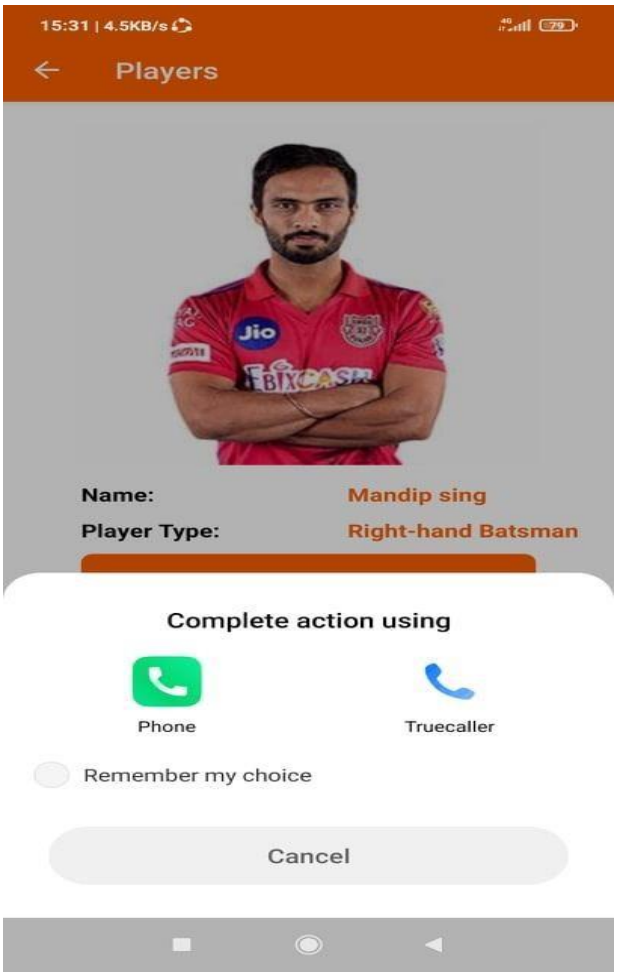

Fig 4.6: Contact with Player

4.2 Back-end Design

This is the Java code for Main Activity that means the home of this application where total match summary, score is visible.

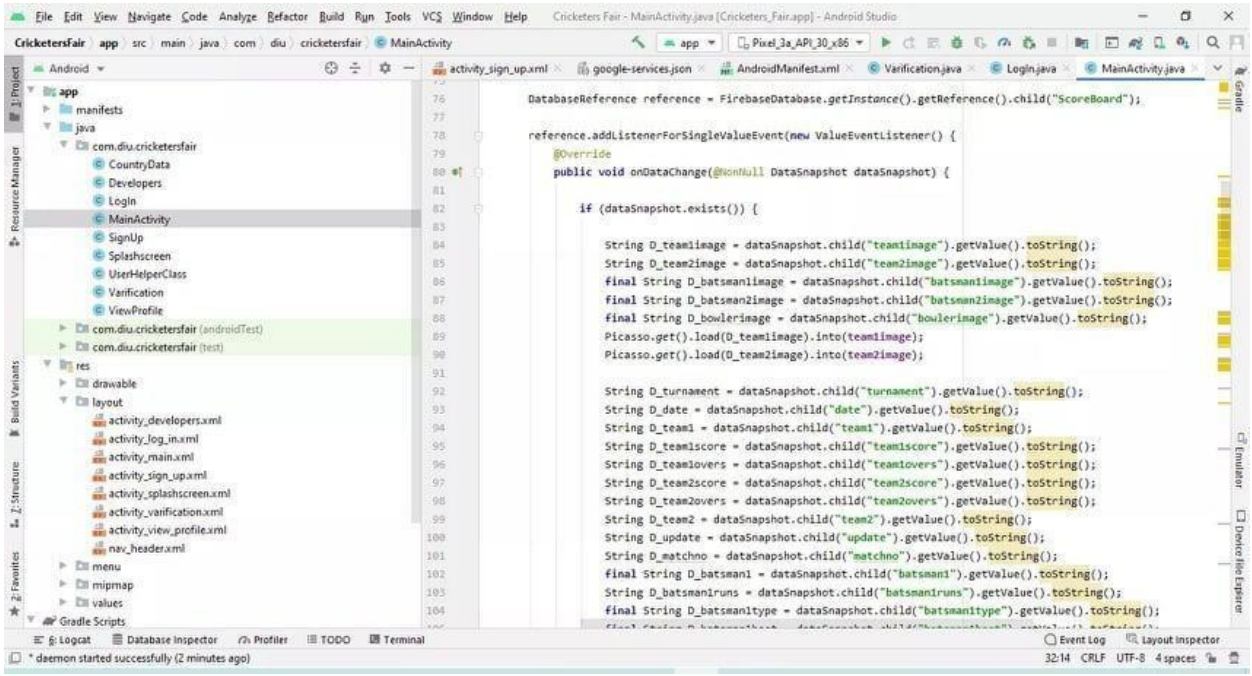

Fig 4.7: Home Page (Java Code)

In Fig 4.6: is the java code back-end for user login, here user can login by their own phone number and password and take the access to enter the system.

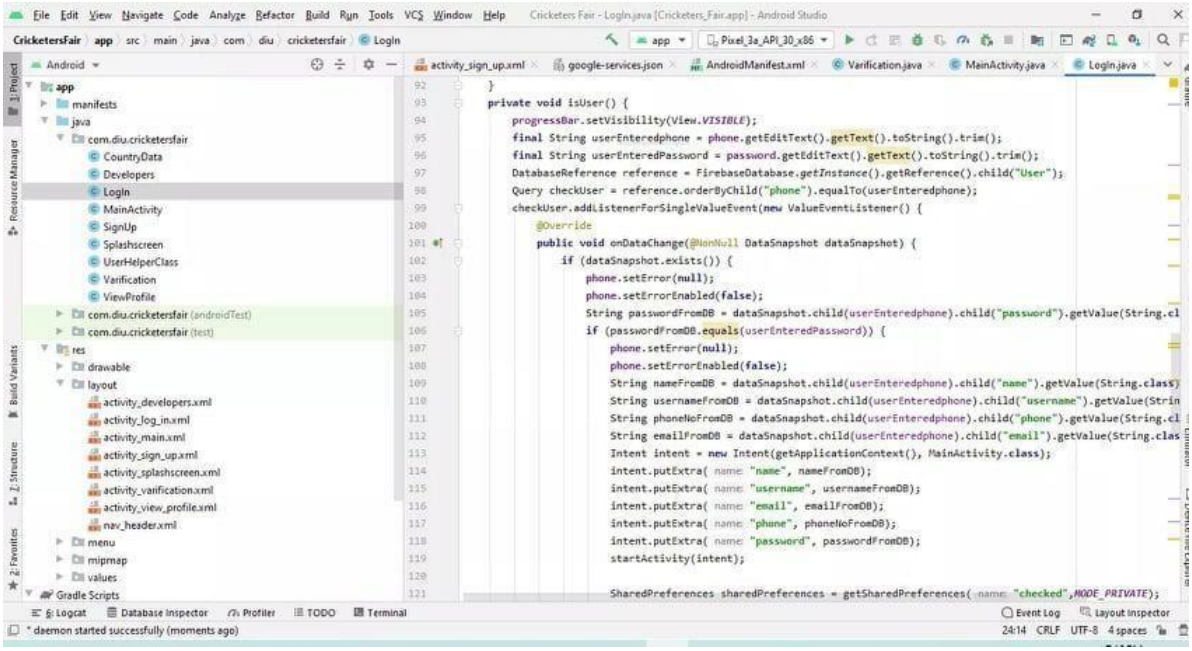

Fig 4.8: Login Java Code

In Fig 4.7: back-end implementation java code for player view profile

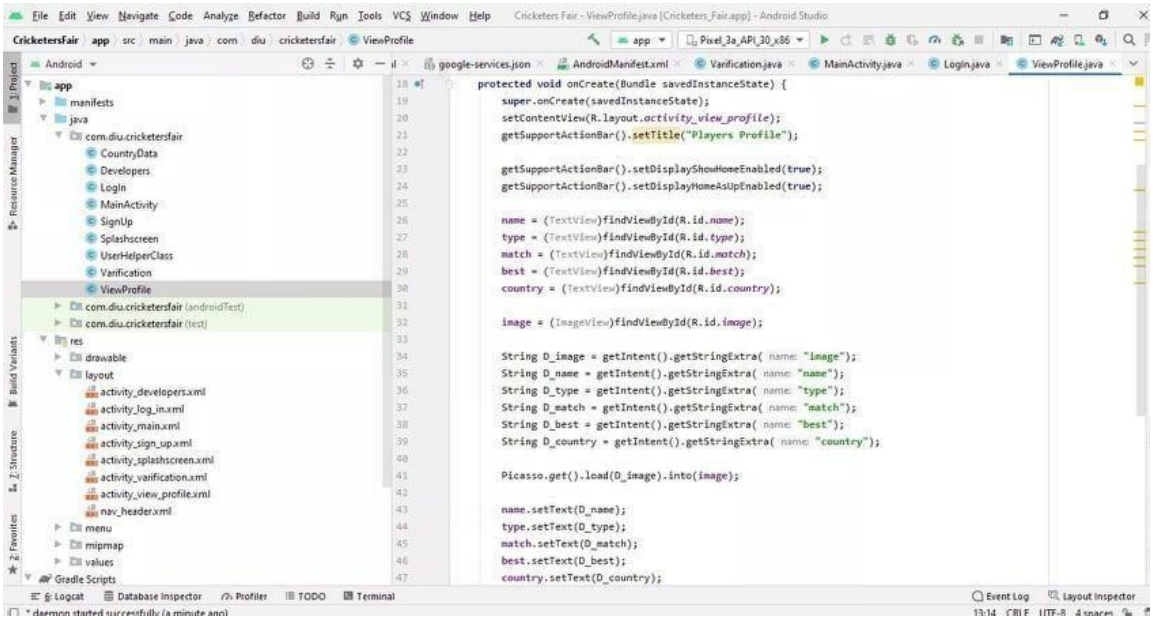

Fig 4.9: View Profile

4.3 Interaction Design and UX

Interaction design is something essential, it is the arrangement of the correspondence between customer and substance. Routinely when people consider a collaboration plan, the things will all in all program things like applications or site. Communication configura t ion is the cycle which can understand customer issue, measure the issue, and find the typical result, perform the movement by the with respect to results and tackle the issue for good. The target of the instinctive arrangement is to make things that enable the customer to achieve their objectives in the best and short way possible.

4.4 Implementation Requirements

To execute this application need one additional programming language like Java, PHP, SQL and as an IDE need Android studio which is an open-source stage by Google. And furthermore some outsider API or library to execution all necessity.

4.4.1 Java

For a native application most the engineer builds up their application in a java programming language. Also, applications can be created by numerous dialects like Kotlin, Flutter, and Dart. In my application, I have utilized java. Java is an object-arranged programming language. The convenient arrival of Java is called Java ME. Java ME relies upon Java SE and is maintained by most phones and tablets [1]. The Java Platform Micro Edition (Java ME) gives a versatile, secure atmosphere for building and executing applications that are engaged at introduced and mobile phones.

4.4.2 Google Material Design

Material design is a Google-created plan language that, at its core, is an extremely complex and well-defined set of rules to help both creators and end-users mimic Google's work as well as explain why things in Google look and respond the way they do. [two] However, in terms of content spacing, text size, text color, margin, grids, scale active icon, app color, and so on, I've used Google Material Design in my app. That is to say, the material design gives the app a total gaudiness [2].

4.4.3 Constrain layout design: Constraint Layout, which is currently the default format in Android Studio, gives you numerous places to put objects. You can compel them to their compartment, to one another, or to rules. This permits you to make enormous, perplexing, dynamic, and responsive perspectives in a level chain of command. It even backings activities!

4.4.4 Restful API

Retrofit is a REST Client library used in Android and Java to make a HTTP solicita t ion and moreover to deal with the HTTP response from a RESTful API. It was made by Square, you can in like manner use retrofit to get data structures other than JSON, for occurrence Simple XML and Jackson. Before continue, what about rapidly describe REST Client and REST API in our special, circumstance. A REST API implies a bunch of capacities which developer can asks for and get reactions by means of HTTP convention, for example, GET and POST. For our situation, it can likewise basically say that a RESTful API is an application program interface (API) that utilizes HTTP solicitations to GET, UDATE, POST and DELETE information [3] [6].

CHAPTER 5

IMPLEMENTATION

5.1 Implementation of Database

This database is provide by Google. It is more secure, fast and easy to handle and it's real time database. By the Google Gmail account one can create project then make a database. Firebase is not only for database it has also many services like cloud storage , Firebase Machine learning , Cloud functions , User authentication , Hoisting , Cloud messing , Push notification , Test lab etc. [3] This is one of the best platform for any project back-end services. But those services are not free at all. After a crossing the limitation that you have to pay Google according to their payment policy. Meanwhile the firebase database is a parent-child tree type database

In this app we have been using two services such as User authentication using phone number by sending one time password (OTP) to login or phone verifying purpose. In phone authentication Google send 10k OTP for free but after uses of limit then you have to pay for OTP. [3] However there are also some authentication like authentication by Facebook, Email, GitHub, Google account and so on. For app push notification we have also enrolled Firebase cloud messing service. It has also a uses limitation after that you have to pay. By using this service easily send a push notification to all user for any announcement, awareness SMS or others [3].

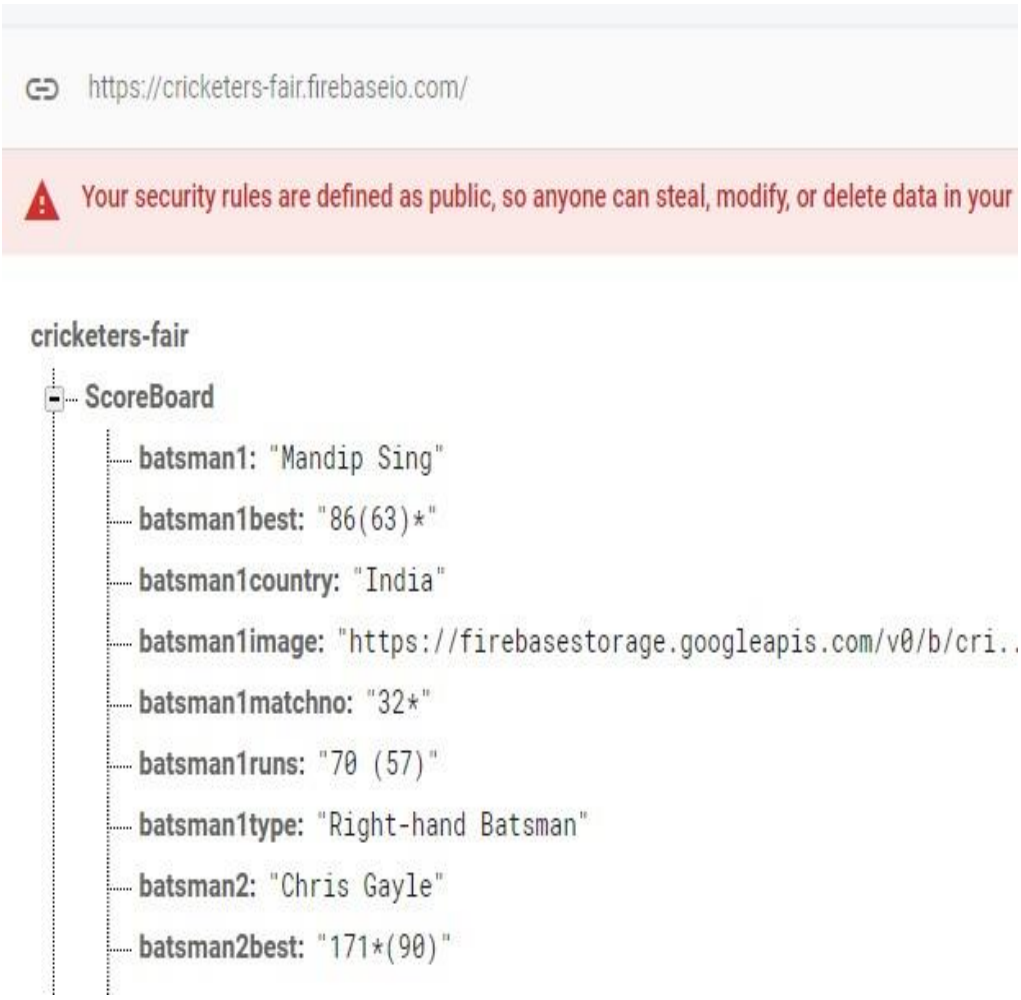

Fig 5.1: Database Design

5.2 Implementation of Front-end Design

Front-end design is significant for mobile applications since the client consistent ly connects here. They won't ready to see the back-end code. So regardless of how great your code is, if the plan isn't acceptable, individuals won't utilize this application. In the front - end plan, there is the best side is a responsive plan that implies for the very showcase size of the telephone the plan will look the same. In my application in greatest time I client compel design. This format configuration is responsive for all size of show. Now and then I additionally utilize linear format with weight whole, it likewise make the plan responsive.

5.3 Testing Implementation

Based on user activity, the test Case table of Cricketer Fair user app features

Test Case	Test input	Expected output	Actual Output	Result	Tested On
Database Connection	Test in API	Successfully connected	Connection Successful	Passed	22-04-2021
Create account	Test in edit test filled, and Insert API	Successfully Created	Created Successful	passed	22-04-2021
Login	Test in edit test filled, and login API	Successfully login	Login Successful	passed	22-04-2021
Match Score	Data retrieve	Will show invalid information	Showed warning massage	passed	22-04-2021
Player profile	Profile data	Will show invalid information	Showed warning massage	passed	22-04-2021

Table 5.2: Test Case Table for user of Cricketers fair app

5.4 Test Results and Reports

The test report is mandatory to reflect testing achieves a traditional way, which gives an event to evaluate testing result speedy. To get the connection and alerted results with an item, necessities to depict the characteristic or operational condition. The outcome will store in a record. This called is the test result report.

Chapter 6
Conclusion and Future Scope

6.1 Conclusion

'Cricketer Fair' is an android app for cricket lovers. Its main target is to make rural cricket tournaments' more popular and make it enjoyable to everyone. Bringing talented rural cricketers to the forefront is one of our main targets also. Both the cricket players and tournament organizers will be helpful through our app. The cricket lovers will enjoy rural cricket tournaments from home.

6.2 Future Scope

- Will be able to watch multiple tournaments' live score at a time.
- Area based players' list and their verified profile.
- Players' ranking in different forms.
- Team profile
- Notification system for reminder about next tournaments.
- National, international and area based all types of cricket tournaments' live score will be made available in future.

6.3 Limitations

- It can't show multiple tournaments' live score at a time.
- It doesn't notify about tournaments.

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[6] W3school, available at <<https://www.w3schools.com///>>, last accessed on 28-12-2020 at 3:00 PM.

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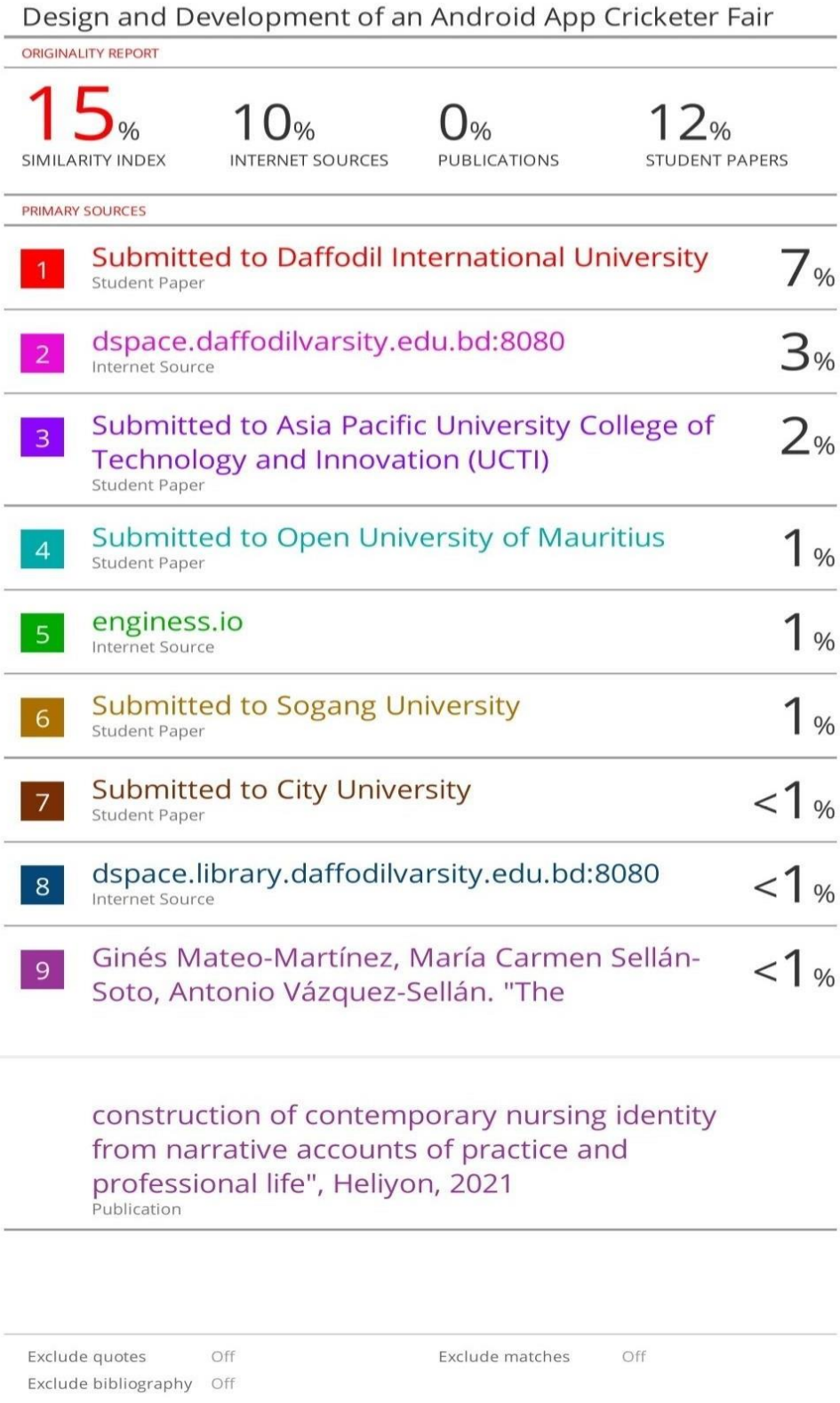

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