A Platform for Creating Private Pools or Contests
for Fantasy Sports

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Abstract - *Fantasy sports is a multi-billion dollars industry with millions of fans playing the games. It is one of the sources of audience engagement and also a source of money for the winners. There are wide range of such applications available solely in the country (India). Generally, in these games, some user creates a contest for a particular match by mentioning entry fee, contest winning prize amount and number of participants. Other users join one of such contests and put up their playing XI for that match. At the end of the match, points are given to the XI based on predefined points -scheme and winners are declared. Many fantasy applications are using this formula right now and they are also proven successful in many countries. But its gameplay suits an audience with low-level knowledge of the game. This paper aims to explore a simpler approach to bring other audiences closer to the game who might not have a minute understanding of the game by making gameplay straightforward.*

*Key Words***: fantasy-sport, game, mobile-application, fantasy-cricket, pools, contests, flutter**

1. INTRODUCTION

Fantasy sports were already a big thing in foreign countries, but since India has entered the global market with Dream11 and Fantasy IPL, the sector has grown exponentially. At the beginning, when fantasy sports applications entered the market, they targeted and rightly so, the most popular sport in the country, Cricket. The main idea in the app is to select the best possible XI with players from the two teams that will be playing the actual cricket match. The XI that performs the best among the XIs put up by the participants wins the contest. The final score is added up by summing up the points earned by the player during that fixture. These points are fixed already and there is a chance to earn multiple of these points by choosing marquee players for that match. This adds more twist to the already exciting game.

But the problem is that the game is exciting for a knowledgeable audience only. For a country as big as India, that number is very high but there's room to bring more people to the fantasy game. As stated earlier, almost whole country knows the Game of ricket. but it does not imply that everyone knows everything about each and every player in the game. They may know only the stars of the game but are familiar enough so that they can select the player that could perform well. We classify the audience in the country based on the knowledge of the cricket game and related current affairs. Tier-I audience has low level knowledge of the game and/ or passionate about the game. Tier-II audience knows the game, likes the game. They enjoy watching or playing cricket with family and friends but do not spend much time on the News and details of the game. This research aims to target this Tier-II audience who like the game enough to play it but are not obsessed with the statistics and previous results [1].

2. LITERATURE SURVEY

In India, a sport like cricket is treated like a religion, Dream11 like app has brought the fans even closer to the game. Previously, sports were meant to be a passive entertainment for the people just sitting on the couch and enjoying the game. Today fantasy sports have converted this passive nature of the people into active participation and keeping them engage. In this cricket loving country everybody considers himself/herself an expert and fantasy sports is like catalyst which can bring all the fans closer to the game in real-time [2].

Even though India is cricketing loving country and no other sport can replace its popularity; sports like football, kabaddi, basketball have their own fan followings too and these fans are enjoying the fantasy leagues of their favorite sports. From just 2 million users in 2016, the fantasy sports users in India are estimated to reach 100 million in 2019 [3]. Dream11 was the first app to circumvent the e-sports gaming law by proving itself to be a game of skill rather than a game of chance [4] [5] [6]. Mobile Premier League, Fan-Mojo are some of the freemium apps similar to dream11 [7].

2.1 GAMEPLAY OF DREAM11

When the user registers, the 100rs are deposited in his/her wallet by the company. Core idea of Dream11 is to put up the best XI which is going to perform in the match. There are upcoming fixtures on the home screen. After you select the match, you are taken to the screen of the squads of both the teams from which you have to select the XI players. But there are conditions.

Create your Dream11 team by picking 11 players as per the following combinations (C1, C2, C3…) within a budget of 100 credits [8].

Player type	Minimum	Maximum
WK	1	4
BAT	3	6
AR	1	4
BWL	3	6

Tab. 1: player combinations

Select players for your Dream11 team from all 4 of the categories mentioned below:
WK – Wicket-keeper
BAT – Batsmen
BWL – Bowlers
AR – All-rounders
Check player info by clicking on the player image. Sort players as per their teams, credits or points [8].

Keep an eye on: Number of players added to your team, Available credits, The deadline for team submission. After creating your Dream11 team, choose a Captain & Vice Captain for the team. Captain – Gets 2x points scored by him in the actual game Vice Captain – Gets 1.5x points scored by him in the actual game [8].
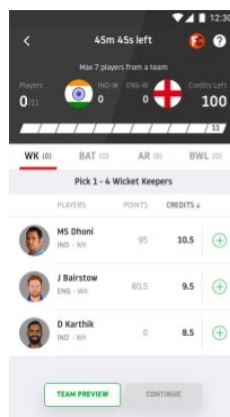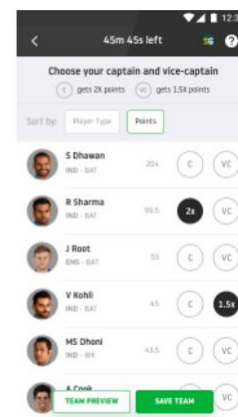

Fig. 2: Choose XI in Dream 11

Fig. 1: Choose Captain & VIce-captain

2.2 POINTS SYSTEM OF DREAM11

Here's how the Dream11 team earns Fantasy Points.

Type of Points	T20	ODI	Test	T10
Being a part of the starting XI	4	4	4	4
Every run scored	1	1	1	1
Every wicket taken (excluding run out)	25	25	16	25
Catch taken	8	8	8	8
Caught & Bowled	33	33	24	33
Stumping/ Run Out (direct)	12	12	12	12
Run Out (Thrower/Catcher)	8/4	8/4	8/4	8/4
Dismissal for a Duck (except bowlers)	-2	-3	-4	-2

Tab. 2: fantasy points

There are public contests available where users can join and put their XI to compete with other participants. The prize money will be distributed among the winners as per the contest policy. Users can also create their very own contest and invite other users to take part in it. But, to put up XI, there are many parameters to be considered and winning the contest will require many of these variables to be in the right place. This is a treat for the game lovers, but this increases complexity tremendously for the users who want to play the game but have no in-depth knowledge about the game [9]. We call it Tier 2 and Tier 3 users.

Fantasy league games are very popular and are dominating the major market share. But, the complexities and intricacies in the gameplay have prevented many users from enjoying the digital contest which is very close to the real sport they love. As a

result, Tier-II users don't get accustomed to the gameplay and leave the game. So, we present a simpler and user-friendly gaming-model.

Most of the apps available today want you to create a team with players who are going to play the match not directly related to choosing the winning team. But in the CricPlay app there is another section where you are given 3 questions with 2 choices. You have to make the right decision and answer any one to win a particular amount. This type of contest will be there on the weekly basis. If you get anything wrong you lose the winning streak and you are out of that contest. But for some price you can again join the contest [10].

3. PROPOSED METHODOLOGY

Cricket comes at a second place among the sports with the most viewership and number of countries it is being played across. This shows the great potential the digital games like Sport Pools have while covering this game [11]. In India alone, there are more than 500 million users on the internet in 2020. And almost every Indian takes up a bat in hand at least once in a lifetime. There's always a direct or indirect connection with the game. Dream11 had more than 65 million registered users in 2019 and no. is growing tremendously but what about the remaining almost 80% market. There are over 850 million cricket fans in the country but not everyone is playing fantasy games [12]. Obviously, there may be many reasons for cricket viewers not playing the corresponding game. One could be that not everyone is tech-savvy and likes to explore the app-store for this kind of fun activity. Another reason could be that they do not possess the handset which meets the minimum requirements to play the game. But there are also number of users who think the fantasy game is complicated. There are a lot of factors to take into account so instead of being entertainment, it becomes rather a complicated assignment which not many can complete. These users know the game's fundamentals and glamorous players. They do follow some of the star players on social media and in the game but have no understanding of the game basics like what is the impact a green top under clouds will have compared to dry wicket in the afternoon. But they should not even require to have the lower level knowledge of the game, they are just playing for fun. Instead of dealing with the complex interface and gameplay, they would rather not play the game [13].

The cases and the reasons discussed above are subjective and mainly take Tier-II users in consideration. To analyse the internet userbase and form a conclusion with the statement we hypothesized above, we took a survey and interview approach. Three separate sets of population were interviewed. First, college students. People in this group are the most active users on the internet. They are the most up-to-date with the launch of new applications and entertainment. In effect, this group contributes heavily to the active and potential users of fantasy game. We, the researchers also being the students in the university can see the clusters among this large group. There will be a group playing Dream11 but there are many more people who know the game, but are not playing the game with the larger group. Even if cricket has been male dominant game since its introduction, there is a huge female fan following for the game [14]. Most of these fans do not play fantasy games because of the reasons such as complications as discussed before. There is the second set of people employed. They have money to invest and play the fantasy game, but what they lack is the time. They mostly miss the live cricket matches and sometimes follow just match scorecards. And then deciding XI for the game can have some challenges. It is not stated that they cannot form a team to join the contest; but to win the contest, they would need more knowledge about the game than just the stats. Because, nobody likes losing and one will not keep playing if he/she never wins [15]. Final set of population is of the elder people. They have time and possibly money, but the question is why would they invest their time in understanding fantasy game's gameplay and UI [16]. There is also a newly formed and exponentially growing group at the other end of the age-line: Kids. Children these days have become one of the huge consumers of games and online-content, but we are not considering this age group now because of monetary aspect of the game.

4. SCOPE

This paper proposes the solution which includes building mobile application platform that allows sports fans to play virtual games among themselves. The result of a virtual game will be based on the result of the corresponding live match. App has virtual points as the digital currency on the app. On the Home Page of the application, upcoming fixtures are listed. By choosing one of those fixtures, registered users can create contests on the platform using virtual points. Here, we call the contest creator as 'Contest-admin'.

Contest-admin can invite other users using Join-code unique to each contest. Participants pay virtual points (already mentioned by the Contest-admin) as an entry-fee. They submit their entries and join the contest. Entries are about Top Performers in the Match and the Result of the Match. These entries should be relatively easy to answers for Tier-II users. Match data is fetched using the sports data API after the commencement of the match. The result is calculated using the fetched data in the percentile, then the entries are compared with it and ranked accordingly. Participant/s with the highest score are declared winners of the contest.

Features:
- Allow Google Sign-in
- Provide upcoming fixtures
- Provide match details
- Create a contest
- Invite users to participate in a contest using join-code
- Join a contest using join-code
- Calculate the result of the contest
- Distribute points among the winners

5. IMPLEMENTATION

The aim of this research paper is to design and implement a bit simpler gameplay that would not feel overwhelming to Tier-II users. Newly registered users get Rs.100 in their wallet as a starting amount. The app should inform users about New Cricket Matches.

The user can make a contest for a match where participants compete to get the highest number of predictions right or closest to the actual match result. The predictions will include who will be the Most Valuable Player (MVP), who will score the Most Runs, who will take the Highest number of Wickets and which team will Win the game or the game will be drawn. The prize money will be given to the winner/winners after the result is declared.

Here is something for contest creators to take a note of while creating the contest. The prize money will be deducted from the wallet of the creator at first. To join the contest, there will be an entry fee set by the creator, which will be added to the contest creator's wallet when the user participates. This sequence of events prevents users from creating contest with unfeasible prize money. It also deals with the difficult situation like how the prize money would be given to the winner/s, if there was not enough participation or if the entry fee

was not optimal to conduct a contest with unreasonable prize money. This constraint guarantees the sustainability of the business model.

From mobile, tablets to desktops, there are many devices with different screen-sizes each running a different OS. To efficiently deal with this range of variety, we chose Flutter as the framework to develop this application on. Application with same codebase can be run on Android, iOS, MacOS, Windows and Web [17]. Firebase is the backend cloud solution we have chosen to manage Authentication and NoSQL database services. The important reason being the ease of integration with Flutter applications and Quality of Service [18]. Sequence diagram given further in this paper shows the turn of events at the back while using the application.
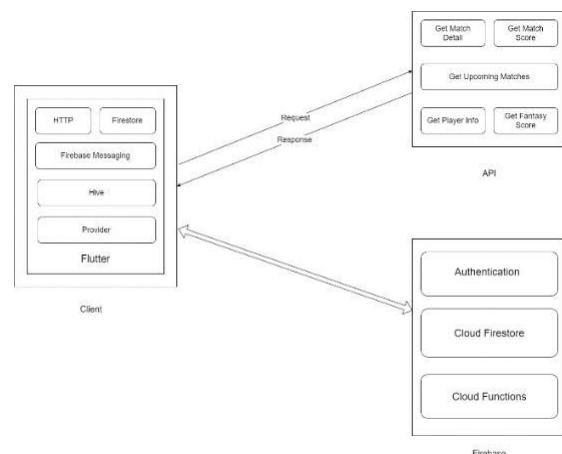
5.1 ARCHITECTURE

Fig. 3: architecture

Microservice architecture should divide this application into three basic components:
1. API
2. Firebase
3. Client

API: The application is based on sports data like upcoming fixtures, match score, players stats, etc. CricApi is a free to use API which provides cricket scores, player statistics and fantasy scorecard JSON data [19].

Firebase: Firebase is Google's mobile platform that helps you quickly develop high-quality apps. Firebase provides services like Cloud Firestore, Authentication and Cloud Functions. Cloud Firestore is a NoSQL

document database to store, sync and query data for apps. Firebase Authentication provides backend services, easy-to-use SDKs, and ready-made UI libraries to authenticate users to the app. Cloud Functions for Firebase is a serverless framework that lets you automatically run backend code in response to events triggered by Firebase features and HTTPS requests [18].

Client: Interface for users to interact with. The client application must be accessible and available for almost all the time. Flutter is an application framework that provides an efficient way to publish an application on multiple platforms [17].
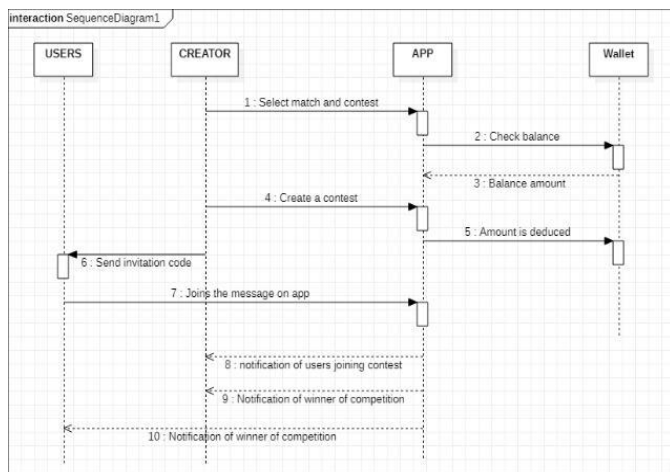
5.2 SEQUENCE DIAGRAM

Fig. 4: sequence diagram

Fig. 2 demonstrates the order of events users have to go through from creating a contest to notifying the result. To create a contest, a user chooses a match of his choice, then creates a contest by mentioning the entry-fee, the prize money and number of participants allowed to enter the contest. Before the contest is created, a wallet must contain more than or equal number of points to the prize amount as this amount will be deducted while creating a contest to ensure sustainable points flow within the game. Users can be invited to participate using a unique join-code that is generated after the contest is created. If the user has not already participated, the user is allowed to input his predictions: A player who will score the highest number of runs, a player who will take the highest number wickets, MVP, match result. Entry fee is deducted and credited to the contest-creator's wallet, when the user joins the contest. When the match gets

over, the creator has to press the Calculate Result button to calculate the result and notify all the participants and transfer the prize amount to the winner/s.
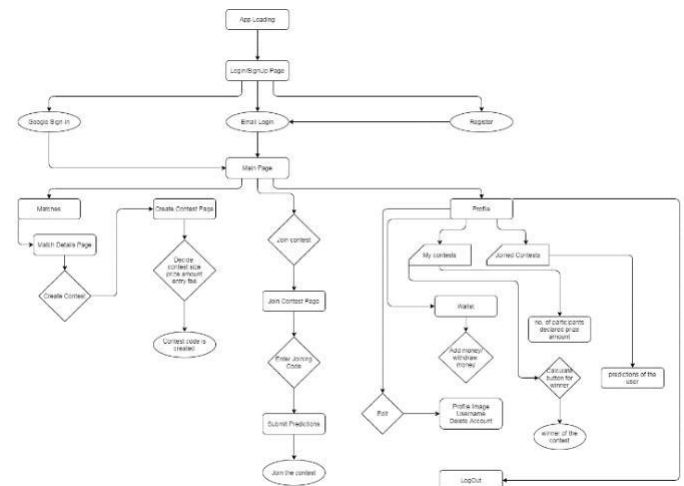
5.3 INFORMATION ARCHITECTURE

Fig. 5: information architecture

WINNING LOGIC

Participant has to answer these four questions:
1. Who will win?
    a. Team 1
    b. Team 2
    c. Tie (stands a chance to win 50 bonus points)
2. MVP
3. Player who will score the highest number of runs
4. Player who will take the highest number of wickets.

Each category will have 100 (percentile) points, thus making the maximum as 400 points but in special cases (predicted Tie, and the match result was tie) it can be 450 also.

The calculation of each category points will be as follows:
1. Correct prediction of Match Result – participant will get either min or max points, i.e. 0 or 100 points.

2. Correct prediction of MVP - participant will get percentile points in comparison with the actual MVP of the match, i.e. ((performance of predicted player) / (performance of MVP)) * 100.

3. Correct prediction of Player with the highest number of runs in the match - participant will get the percentile points in comparison with the actual player with maximum no of runs in the match, i.e. ((Runs of the predicted player) / Runs of the player with maximum runs)) * 100.

4. Correct prediction of Player with highest number of wickets – participant will get percentile points in comparison with the actual player with maximum no of wickets in the match, i.e. ((wickets taken by the predicted player) / (wickets taken by the player with maximum wickets)) * 100.

Note: If a user correctly predicts a tie then he will be given extra 50 points, thus increasing maximum attainable points to 450.

6. CONCLUSION

The main objective of the project is to let Tier-II users also create their private pool in a jiff and enjoy the contest among friends. Thus, expanding already growing fantasy sports market to Tier-II users as well. UI/UX should be simple and intuitive. There is still a large room to work on and think about. UI can be enhanced to make user experience even better [20] [21]. Transferring money safely and swiftly back and forth between the app and popular e-wallets will make creating and joining the contest hassle free. But one definite thing we can conclude from this is that this app provides simpler and easy to join gameplay than Dream11 for the users who follow the sport distantly. There we have a potential userbase of another 200-300 million and would be a hefty increase in the already bigger user base of Dream11. [22].

7. FUTURE SCOPE

Game is simple and easy to play but limits users to play one type of contest for a match. Other types of contests can be added like second innings in Gamezy where users predict the events which will happen between overs. For example, powerplay score for a team, death-overs score. Second innings games are easy and swift, which adhere to our approach towards the fantasy games [22].

Cricket was chosen as the sport for this fantasy game, because of the awareness, popularity and craze of the same in the country (India). This should not limit this game for only one sport but can provide a template to refer to for other sports like football, kabaddi, etc.

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