

A project report

On

TOURNAMENT HOSTING AND ADVANCE SCORING

SYSTEM WITH DYNAMIC TEXT TO SPEECH

COMMENTARY GENERATION

Submitted by

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CERTIFICATE

This is to certify that the project entitled "**Tournament Hosting and advance scoring system with dynamic text to speech commentary generation**" is a bonafied report of the work carried out by Mr./Miss **(1) Dhrumil Panchal (120050131117) (2) Mohit Mulchandani (120050131553)** for User Defined Project in Semester VII for the academic year 2015-2016 under the guidance and supervision of **Prof. Ashish Prajapati** for the partial fulfillment of award of the Degree of Bachelor of Computer Science and Engineering at Babaria Institute of Technology, BITS edu campus. Varnama, Vadodara, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidate himself/herself/themselves, has/have duly completed, fulfills the requirement of the ordinance relating to the Bachelor Degree awarded by Gujarat Technological University and is up to the standard in respect of content, presentation and language for being referred to the Examiner.

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CANDIDATE'S DECLARATION

I/We declare that final semester report entitled “Tournament Hosting and advanced scoring system with dynamic text to speech commentary generation” is/are my/our own work conducted under the supervision of the guide Prof. Ashish Prajapati.

I/We further declare that to the best of my knowledge the report for B.E. final year does not contain part of the work which has been submitted for the award of B.E. Degree either in this or any other university without proper citation.

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CHAPTER 1

INTRODUCTION

1.1 PROBLEM SUMMARY

The agenda behind this project is to develop a web and mobile application for tournament hosting and live match scoring. The actors in this project shall be the administrator, the tournament organizer, the team manager, scorer and the end user. The project shall entail modules for tournament creation and configuration, team registration, fixture scheduling and notification, live match scoring using tap based system on the mobile app, dynamic text commentary generation using pre-defined templates and conversion of the text commentary to speech commentary and lastly, statistical analysis. The text commentary generation shall work using pre-defined templates of commentary which shall be selected randomly based on the taps input by the scorer. The scope of this project can be public as well as private as the tournament being hosted can be made private or public.

1.2 AIM AND OBJECTIVES OF THE PROJECT

Prior to the project, we observed that any local sports tournament being organized has all its administrative work done on paper and through physical records. Looking at this, we were inspired to build a system which reduces paper usage while hosting or organizing a sports tournament and also give the tournament host a sophisticated system for record entry and maintenance. In addition to this, we also observed that the scoring process in Cricket was carried out on only laptop or physical & paper scorebooks. Following this, we thought to add a scoring module in the system we are building. Hence, the aim of this system which we are building is to create a sophisticated, systematic and efficient Cricket tournament hosting and scoring system designed for local and small-time tournaments. The following can be considered the objectives of the project:-

- To develop a mobile application that has an efficient and good-looking GUI for scoring
- To develop a system that entails efficient database querying and maintenance so as to provide efficient record keeping and good statistical analysis
- To provide a website that provides proper forms, navigation and functionality for the back-end (administrative function) of tournament hosting
- To provide a website that is good looking and has efficient navigation for the front-end (General user end) that has real-time score viewing functionality

1.3 PLAN OF THE WORK

The development of our project follows the conventional flow of developing a user application which starts by the conception of the functionalities that the system shall provide followed by the analysis of the modules and their sub-modules of the system. This step has been succeeded by object oriented design of the system through various UML diagrams like Use Case, activity, sequence, state & class and various design engineering canvases. The design of the database was the next step in the development of the project followed by design of the ER Diagram. After the design and analysis stage, we started with the project implementation stage. The implementation of the project is done using three-tier architecture with the layers being Presentation, Business Logic, and Database Access. The presentation layer will contain the website pages and mobile application GUI which basically interacts with the user. The business logic layer will contain the computational logic on the data entered by the user. Finally, the database access layer will contain the code for the system-database interaction. The implementation has been carried out across the two semesters with the back-end website being developed in the 7th semester and the development of the mobile application and the front-end website in the 8th semester. The implementation will be carried out using ASP.NET technology for the websites and Android application development technology for the mobile application.

1.4 MATERIALS/TOOLS REQUIRED

The materials/tools required for development of this project are different tools for software development. In addition to these tools, we required the canvases for design.

The specific tools required are:-

- Microsoft Visio
- Microsoft Visual Studio
- Eclipse IDE

CHAPTER 2

DESIGN: ANALYSIS, DESIGN METHODOLOGY AND IMPLEMENTATION STRATEGY

As a result of our interactions with the actors of the system and the research of the current business process we analysed the desired functionalities that our system should have. On the basis of these functionalities we listed the modules of our system. Our system has the following modules:-

1. Tournament configuration and management
2. Manager account generation and access
3. Team configuration and account setup
4. Member generation and team build up
5. Scheduling and fixtures by Tourney Manager
6. Fixture information delivery and notifications
7. Live match scoring and tracking
8. Live match dashboard operations
9. Template based tap conversions into Text feed
10. Match statistics and analysis
11. Tourney statistics and analyses with live statistics
12. General user portal and live audio and text generation

We have used the conventional design methodology of the software industry i.e. designing the basic UML diagrams viz. Use Case, Sequence, Activity, State & Class. In addition to these UML diagrams we have also designed the Entity-Relationship diagram to describe the database of our system and the relationships between the various tables present. Along with the conventional design methodology we have also used a new concept introduced by the Gujarat Technological University, viz. the canvases of Design Engineering, to conceptualize the different aspects of our system. In the following sections and sub-sections we describe our work in designing the system briefly.

2.1 CANVASES

To visualize the system as a whole and review its participation in the real world through interactions with the different actors of the system we have used the concept of canvases introduced by the Gujarat Technological University. This provides us with a clear understanding of the system, its pros and cons, the usage of the system in the real world etc. For this purpose, we have designed the following five canvases:-

1. AEIOU Summary
2. Empathy Summary
3. Ideation Canvas
4. Product Development Canvas

In the following sub-sections, we briefly describe the work we have done with the canvases and present to you the images of the actual canvases.

2.1.1 AEIOU Summary

In the AEIOU summary canvas we have given a top level view of the system and its presence in the real world describing the **A**ctivities which are carried out in the current business process as basic activities and which need to be fulfilled by the system, the **E**nvironment in which the system shall be deployed, the **I**nteractions which take place between the users of the system and the system itself under the current business process, the **O**bjects which are used in the usage of the system in the current business process and the system which we are developing and finally, the **U**sers of the system and those present in the current business process. For our system, we went to the field where the things happen and talked to the people who are involved in tournament hosting and scoring like the scorer, host of the tournament. We observed their actions, took their views and opinions on the basic functionalities of the system, closely looked at their methodologies and recorded them for our canvas.

AEIOU Summary :		Group ID Domain name	Date	Version
Environment :	Interactions :	Objects :		
<p>SPORTS COMPLEX</p> <p>SPACIOUS</p>	<p>ADMINISTRATIVE OFFICES</p> <p>MANAGER DOWNLOADING PAPER WORK</p> <p>PLAYERS RANKING ON FIELD</p> <p>GENERAL USER FOLLOWING MATCHES</p>	<p>TEAM OWNER CONFIRMING TEAM DETAILS</p> <p>SCORER SCORING THE PICTURE</p> <p>COMPUTER</p>		
<p>NOISY</p>		<p>MOBILE</p> <p>SPORTS GEAR</p>		
Activities :		Users :		
<p>BATTING</p> <p>FIELDING</p>		<p>BOWLING</p> <p>SCORING</p> <p>UMPIRING</p> <p>FIXTURE SCHEDULING</p> <p>DOCUMENTATION</p>		
		<p>TOURNAMENT MANAGER</p> <p>TEAM OWNER</p> <p>TEAM MEMBER</p> <p>Scorer</p> <p>GENERAL USER</p>		
		<p>HOST OF THE TOURNAMENT</p> <p>OWNER/CAPTAIN OF TEAM</p> <p>PLAYER OF THE TEAM</p> <p>THE ONE WHO SCORES THE FIXTURE</p> <p>OUTSTANDING USER</p>		

Fig. 2. 1 AEIOU Summary

2.1.2 Empathy Summary

The empathy summary canvas is based on the AEIOU summary and discusses the challenges which we may face in the development of the system. The empathy summary canvas also requires us to identify the top 5 challenges which we can solve and then identify one problem out of the top 5 which we are required to solve through the system. For our system, we mentioned the input through the AEIOU canvas, shortlisted the problems which we may face like efficient GUI for scoring, perennial internet connection etc.

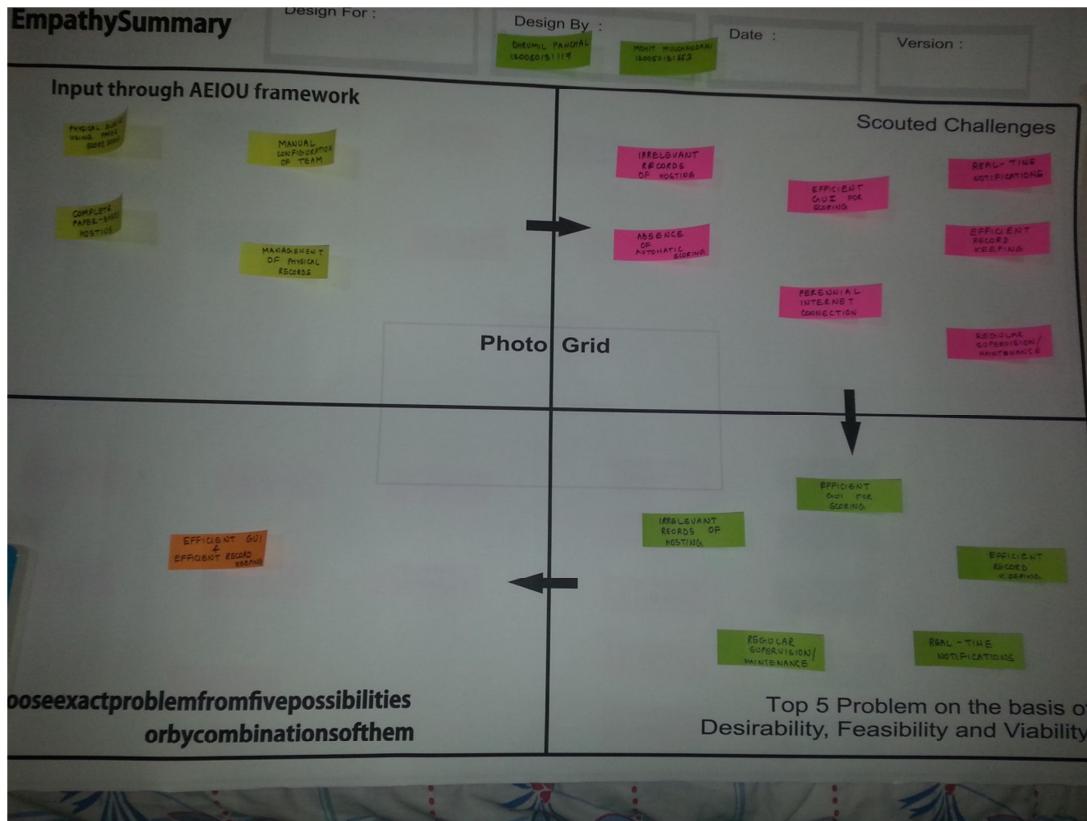


Fig. 2. 2 Empathy Summary

2.1.3 Ideation Canvas

The ideation canvas is aimed at describing the various aspects of the system like activities, people, situation/context and then think about the possible problems faced in the same and think of solutions to them. For our project, we visited a certain local tournament and interacted with its host, the people present there and gathered information. Based on that, we defined the type of people involved in the system, the activities which need to be performed by the system to achieve desirable outputs and the situation or context of the system where it works or is deployed. We also thought of the objects or props which are needed for the working of the system and some solutions to problems in the system.

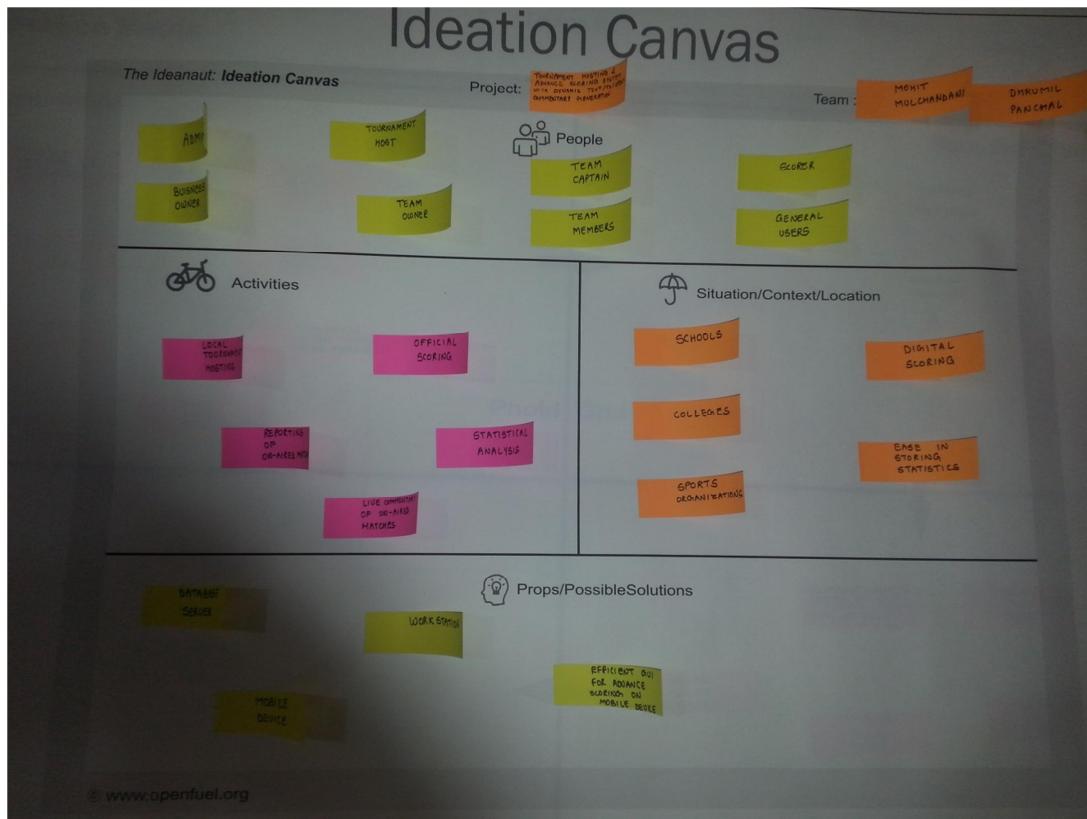


Fig. 2. 3 Ideation Canvas

2.1.4 Product development canvas

The objective of the product development canvas is to develop strategy for the proposed system, after we have successfully attempted the ideation process and incorporated inputs from all stakeholders. For our project, we have described various aspects of our system based on the modules designed and the interactions with the people of the current business process. We have defined the purpose of the system, the people who will use this system, the components used to build the system, the functionalities required of the system, the unique features of the system, the customer reviews and the features which need to be rejected.

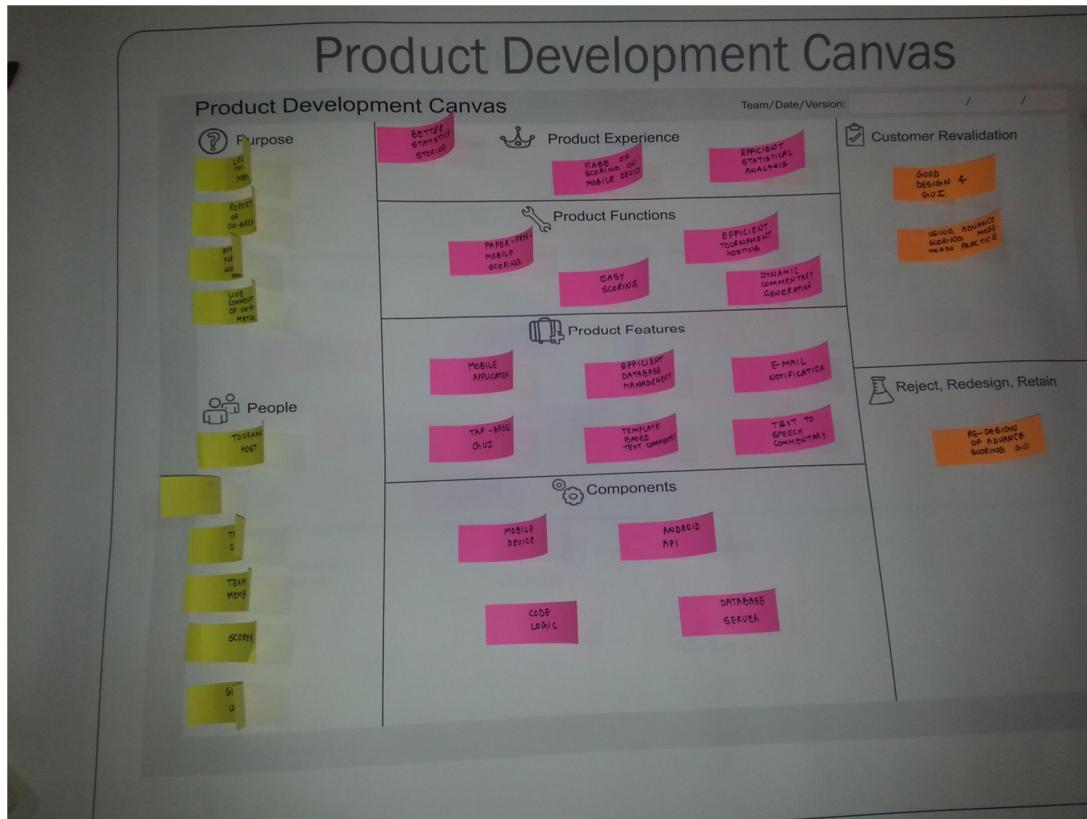


Fig. 2. 4 Product Development Canvas

2.2 UML DIAGRAMS

In the next step to designing the system, we have designed all the basic UML diagrams which describe the system and its working. We have designed the following diagrams:-

1. Use Case Diagrams
2. Activity Diagrams
3. Sequence Diagrams
4. State Diagram
5. Class Diagram

In the following sub-sections we present to you the different diagrams which we have made with concise descriptions.

2.2.1 Use Case Diagrams

The use case diagrams of our system have been designed on the base of the modules described above. The use case diagrams define the basic activities which are performed in the module with the actors which interact with the system under that module

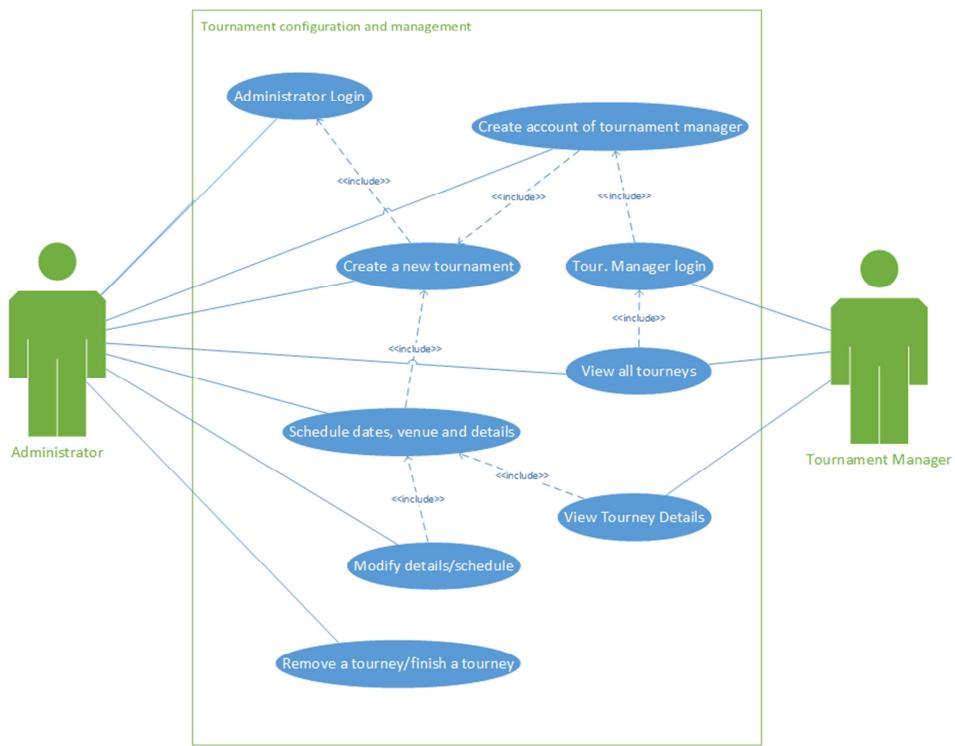


Fig. 2. 5 Tournament configuration and management

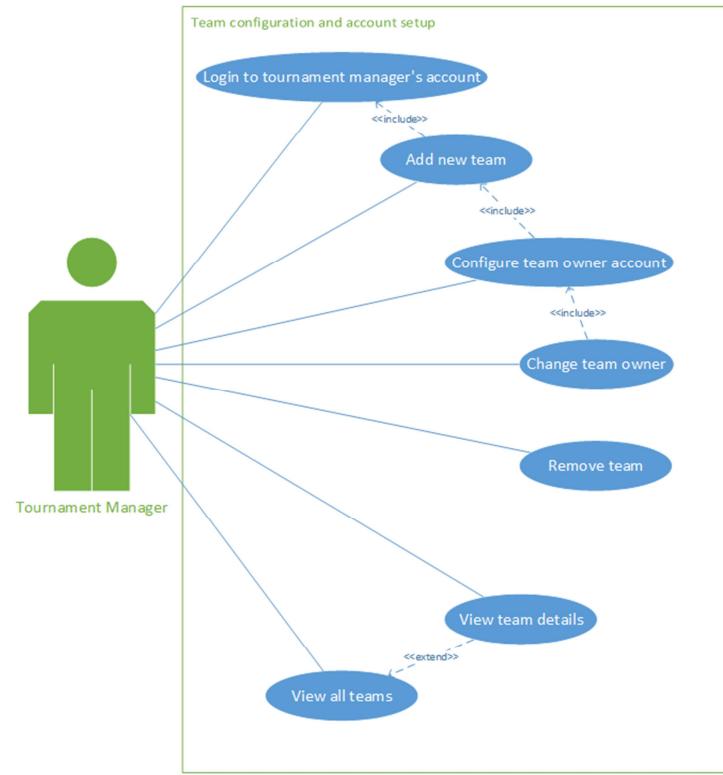


Fig. 2. 6 Team Configuration and account setup module

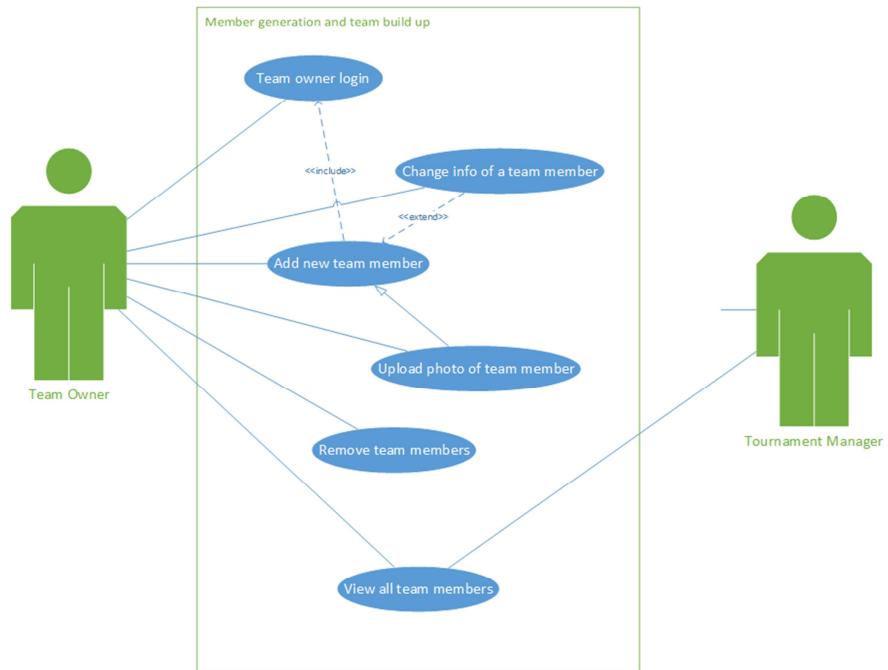


Fig. 2. 7 Member generation and team build-up

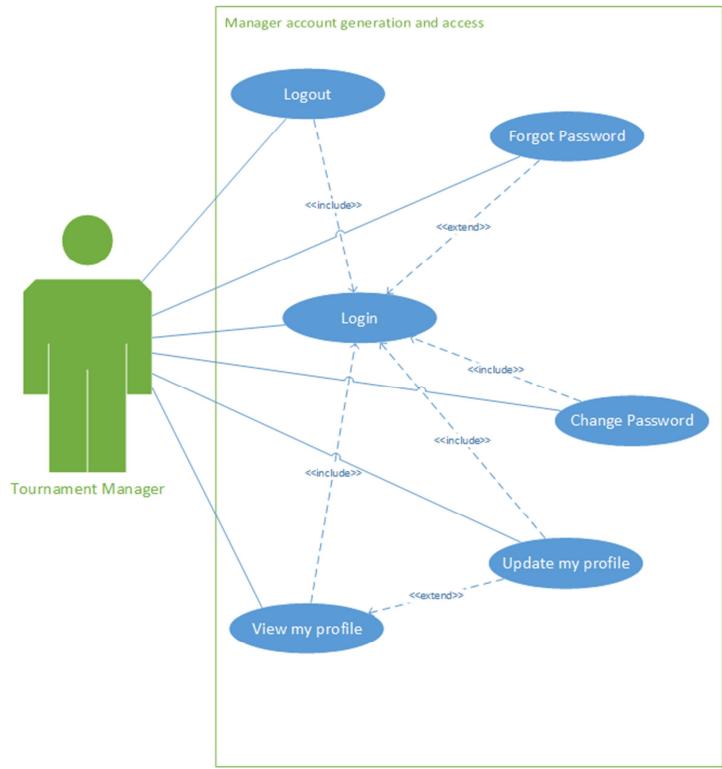


Fig. 2. 8 Manager account generation and access

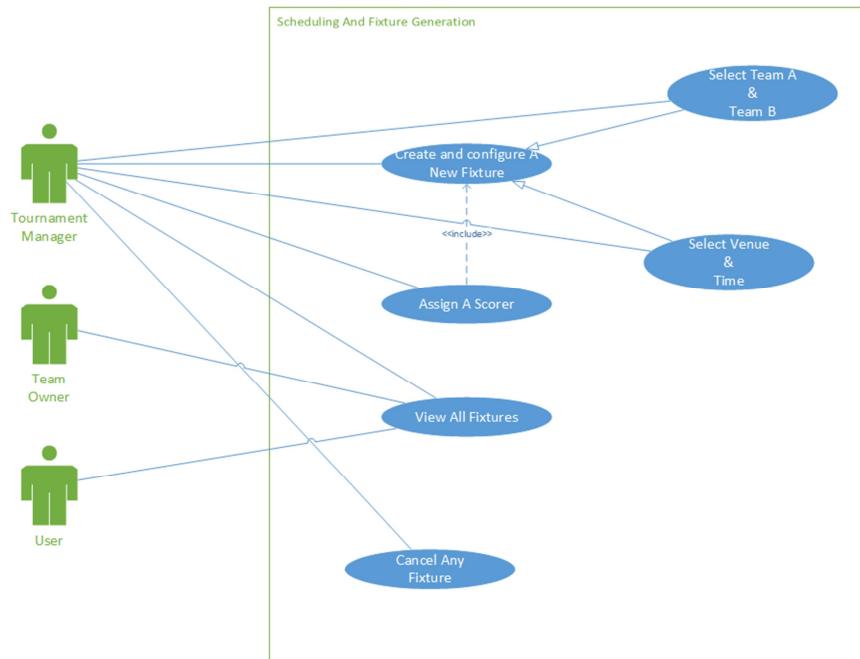


Fig. 2. 9 Scheduling and fixture generation

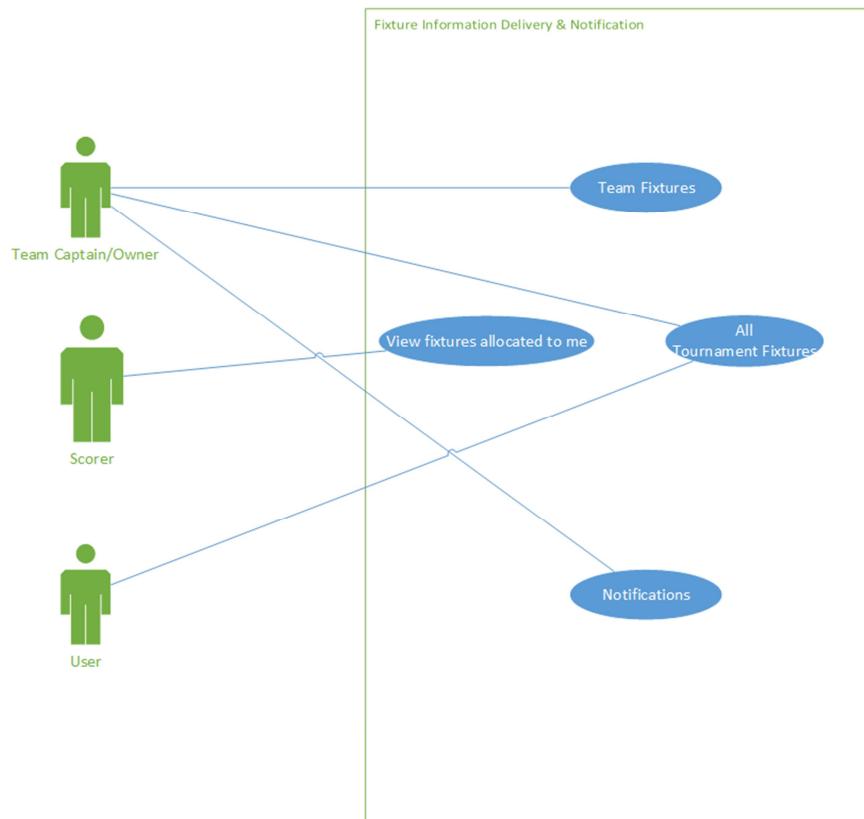


Fig. 2. 10 Fixture information delivery & notification

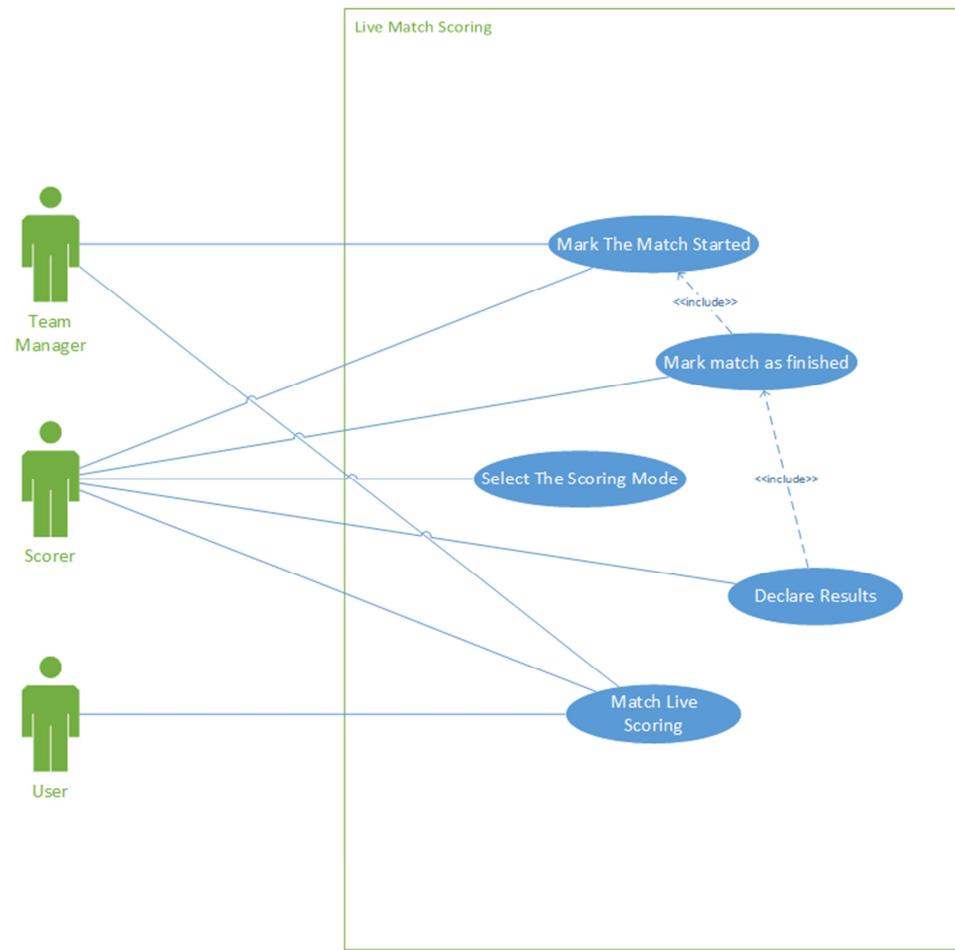


Fig. 2. 11 Live match scoring

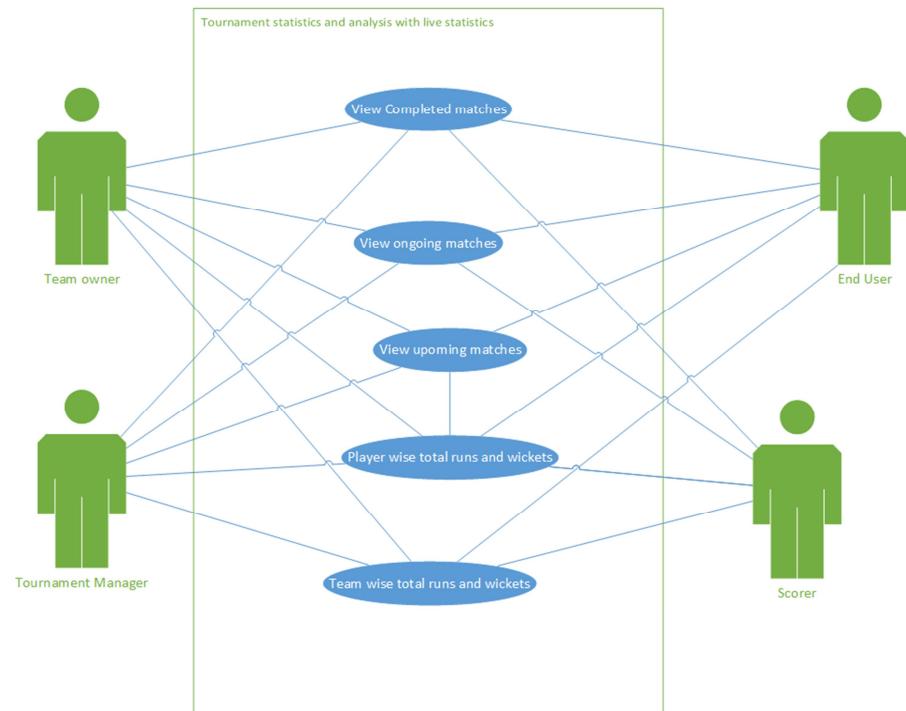


Fig. 2. 12 Tournament statistics and analysis with live statistics

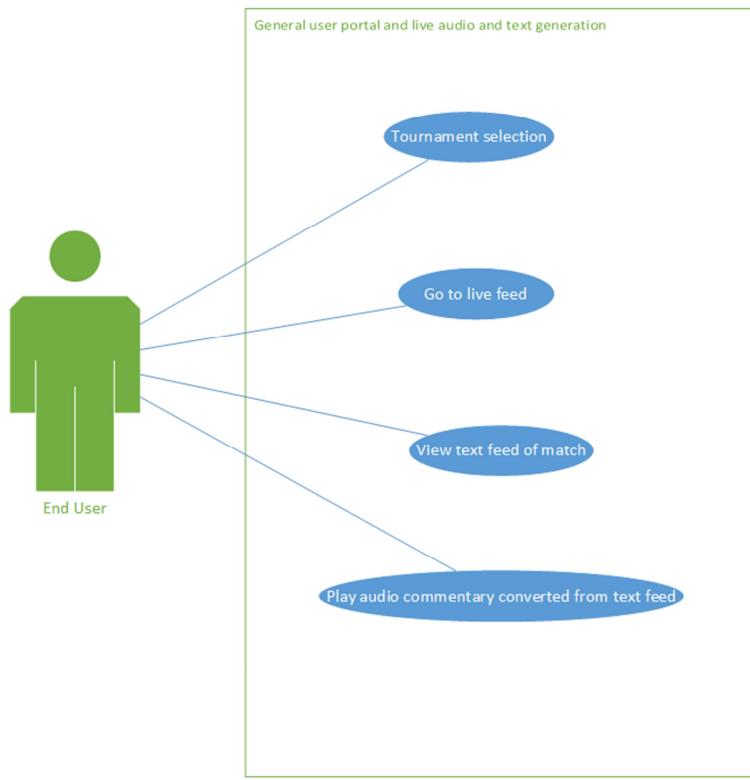


Fig. 2. 13 General user portal and live audio and text generation

2.2.2 Activity Diagrams

In the activity diagrams, we have identified five complex processes present in the system viz. Tournament management process, Team management process, Team member management process, Live match scoring process & Fixture scheduling process. The activity diagrams describe these processes in detail with the different actions being performed by the system and user to accomplish the aim of the process.

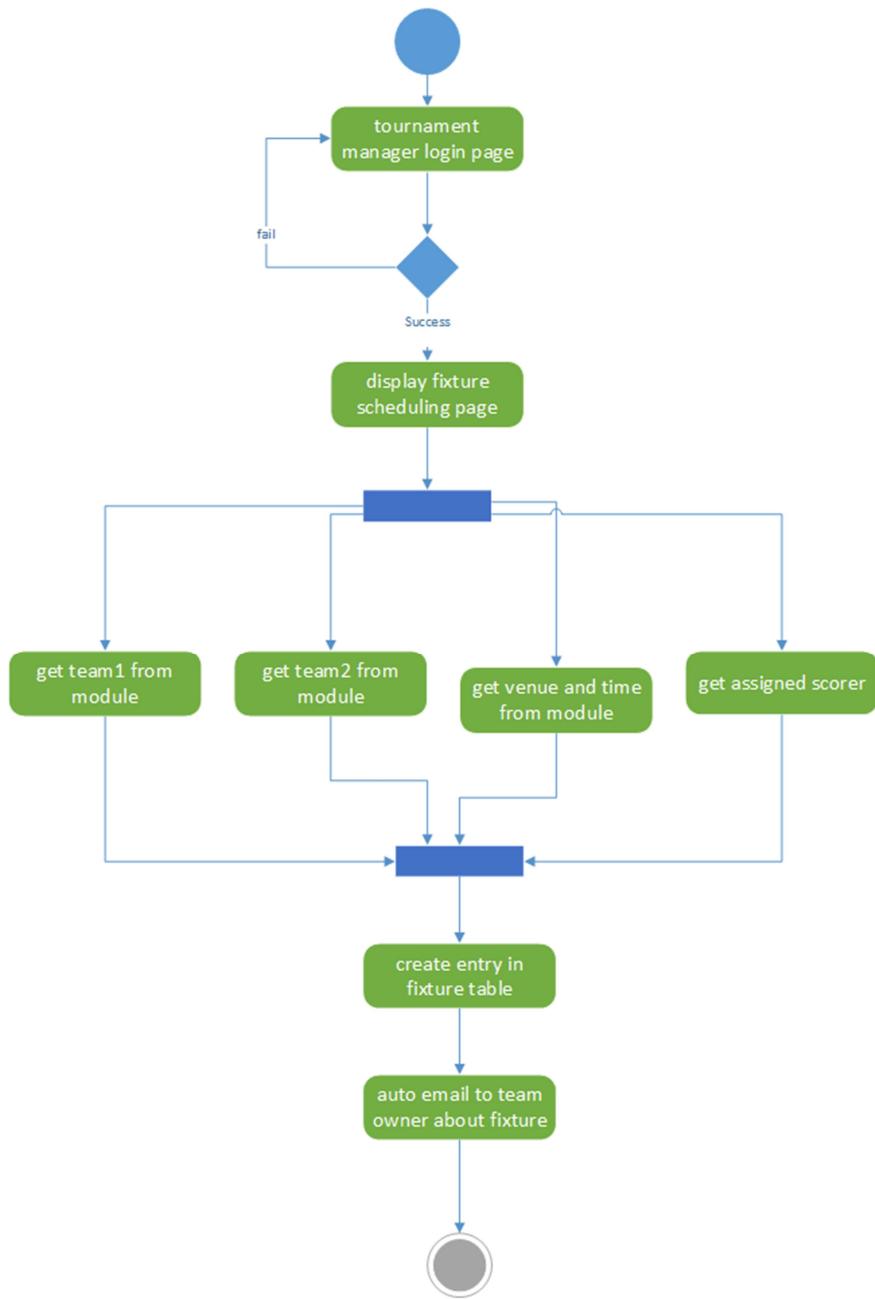


Fig. 2. 14 Fixture Scheduling Process

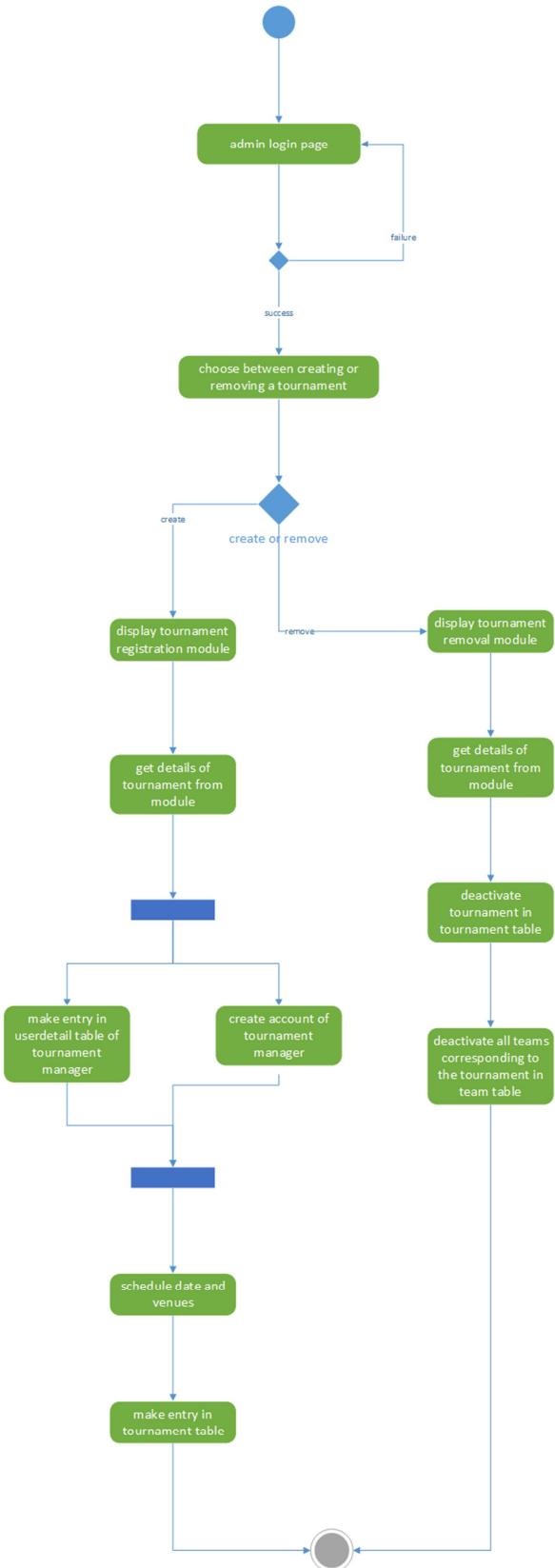


Fig. 2. 15 Tournament Management Process

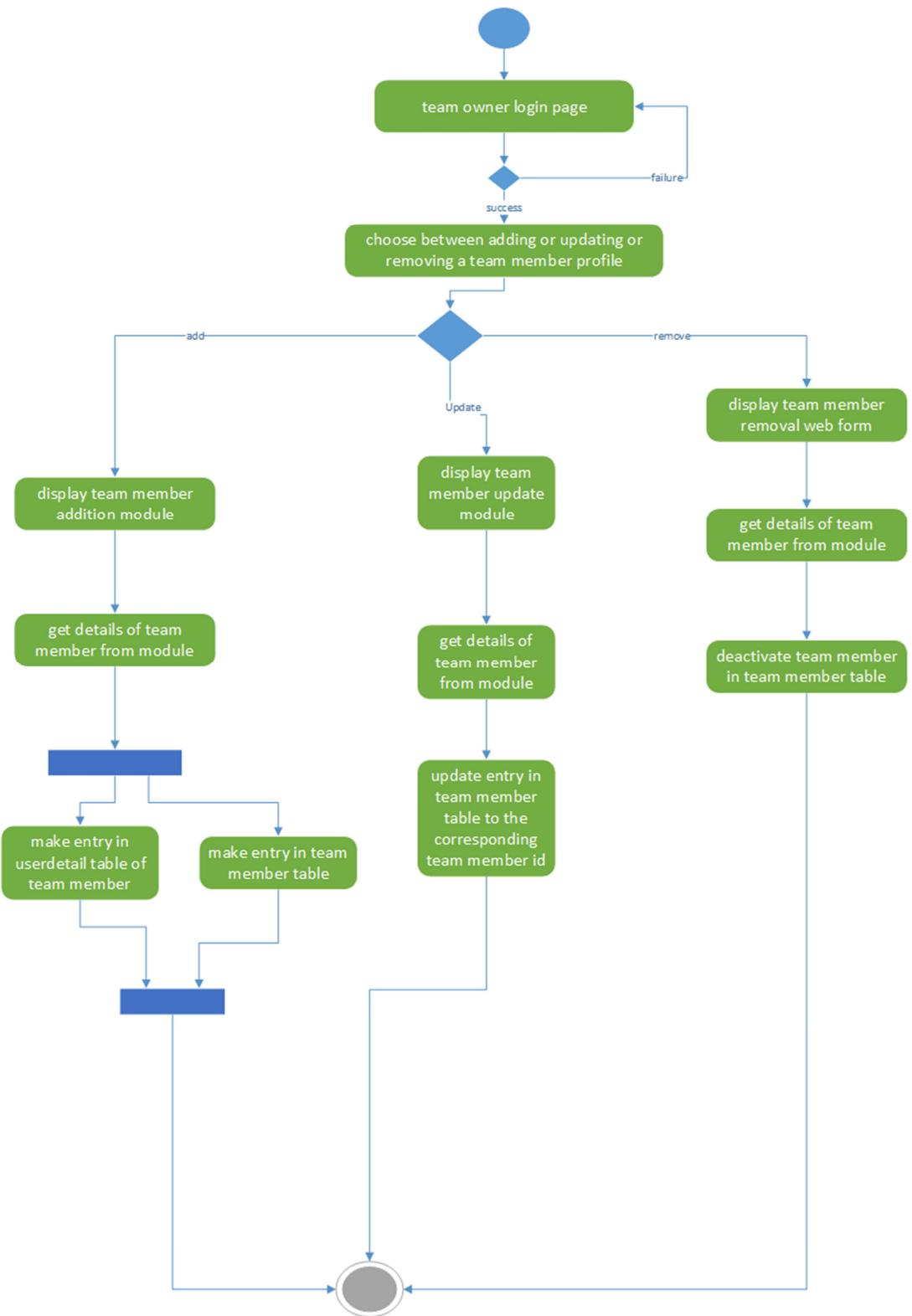


Fig. 2. 16 Team Member Management Process

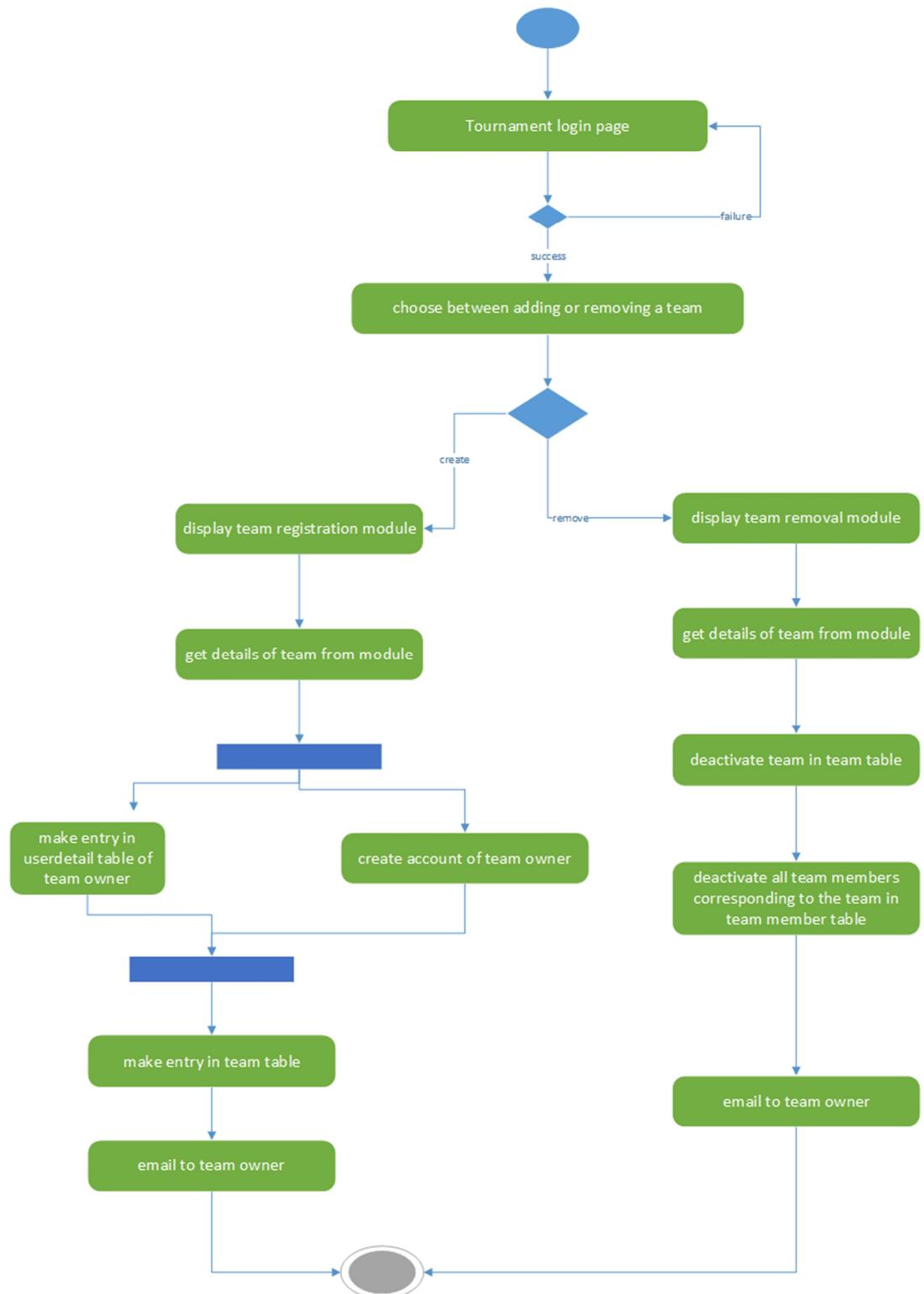


Fig. 2. 17 Team Management Process

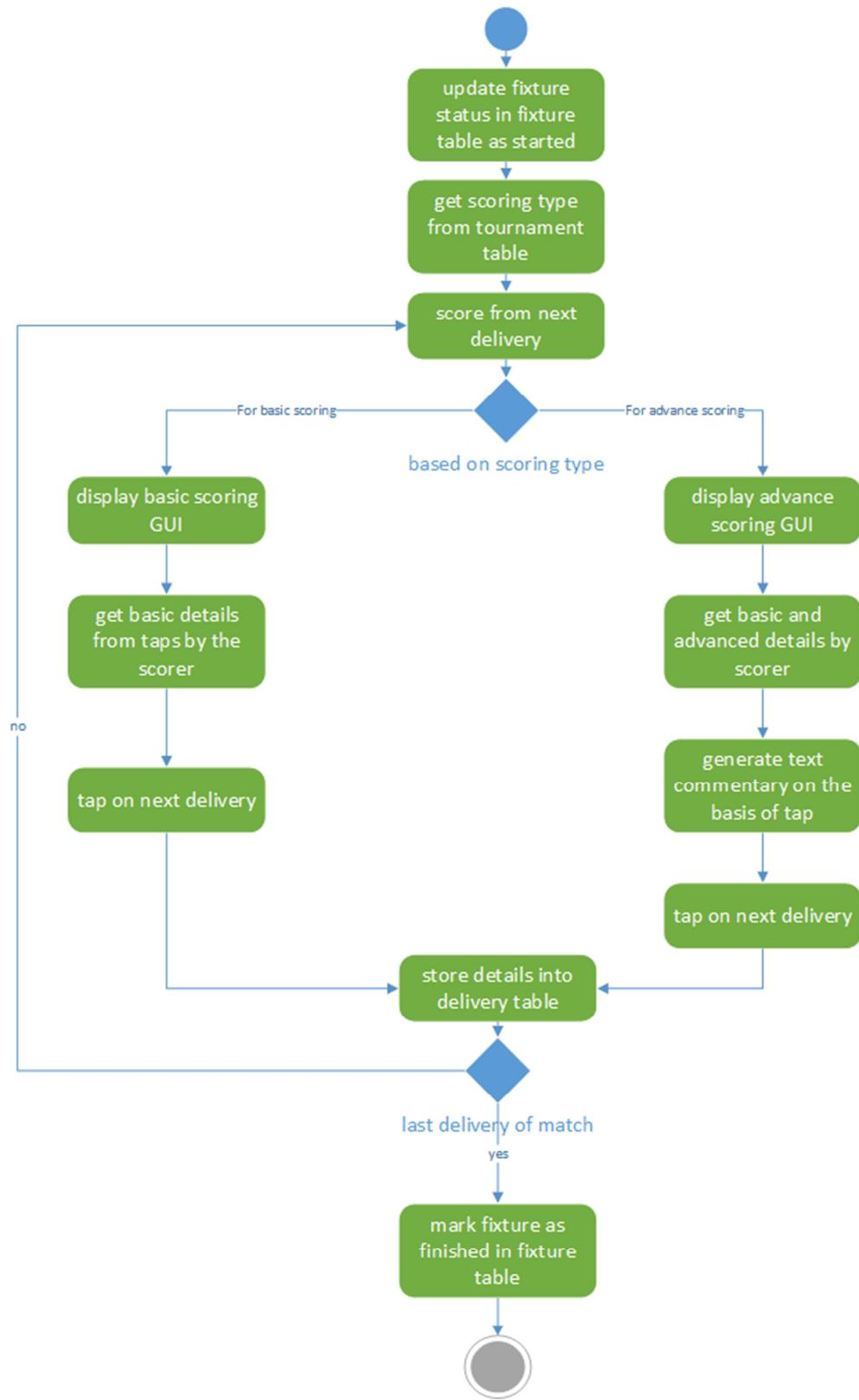


Fig. 2. 18 Live Scoring Process

2.2.3 Sequence Diagrams

In the sequence diagrams, we have described the interactions between the user, system and database in the above mentioned five processes in detail along with a timeline using the sequence diagrams. Following are the 5 sequence diagrams:-

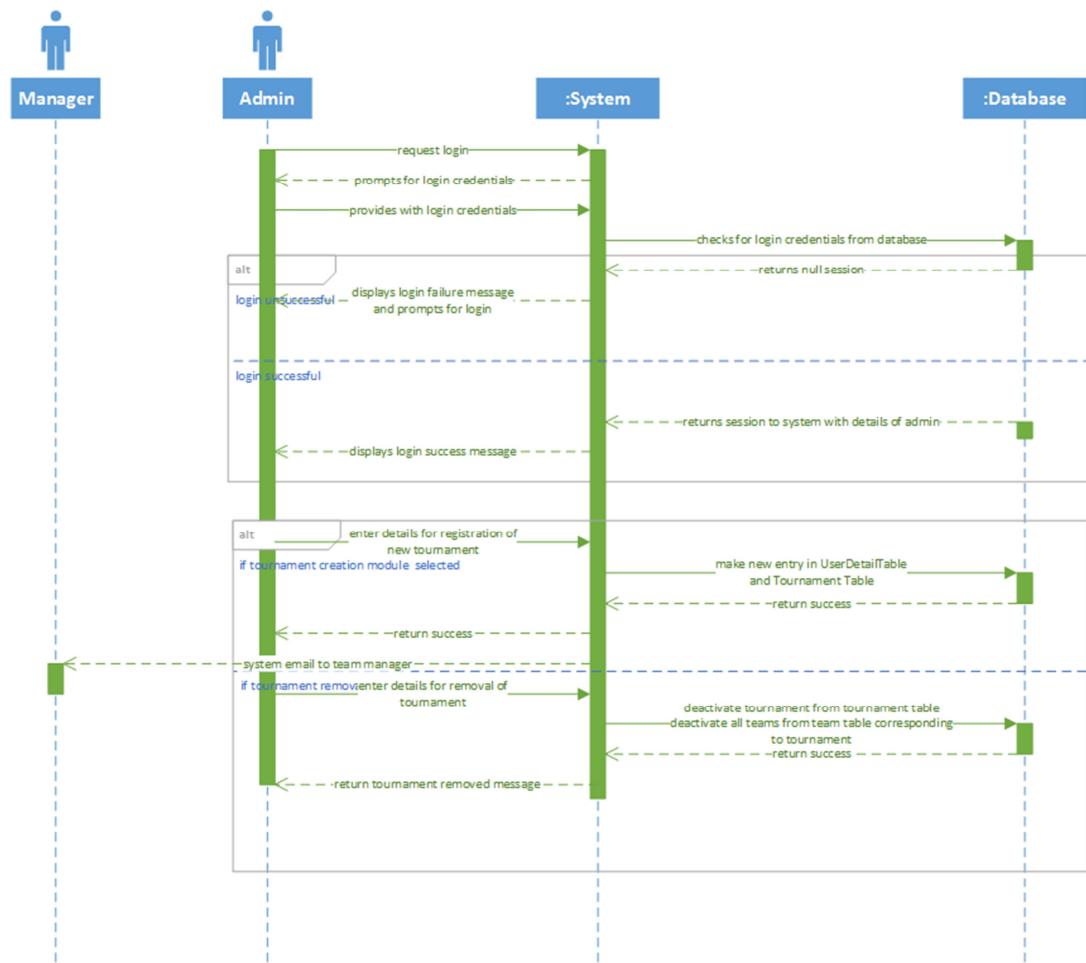


Fig. 2. 19 Tournament Management Process

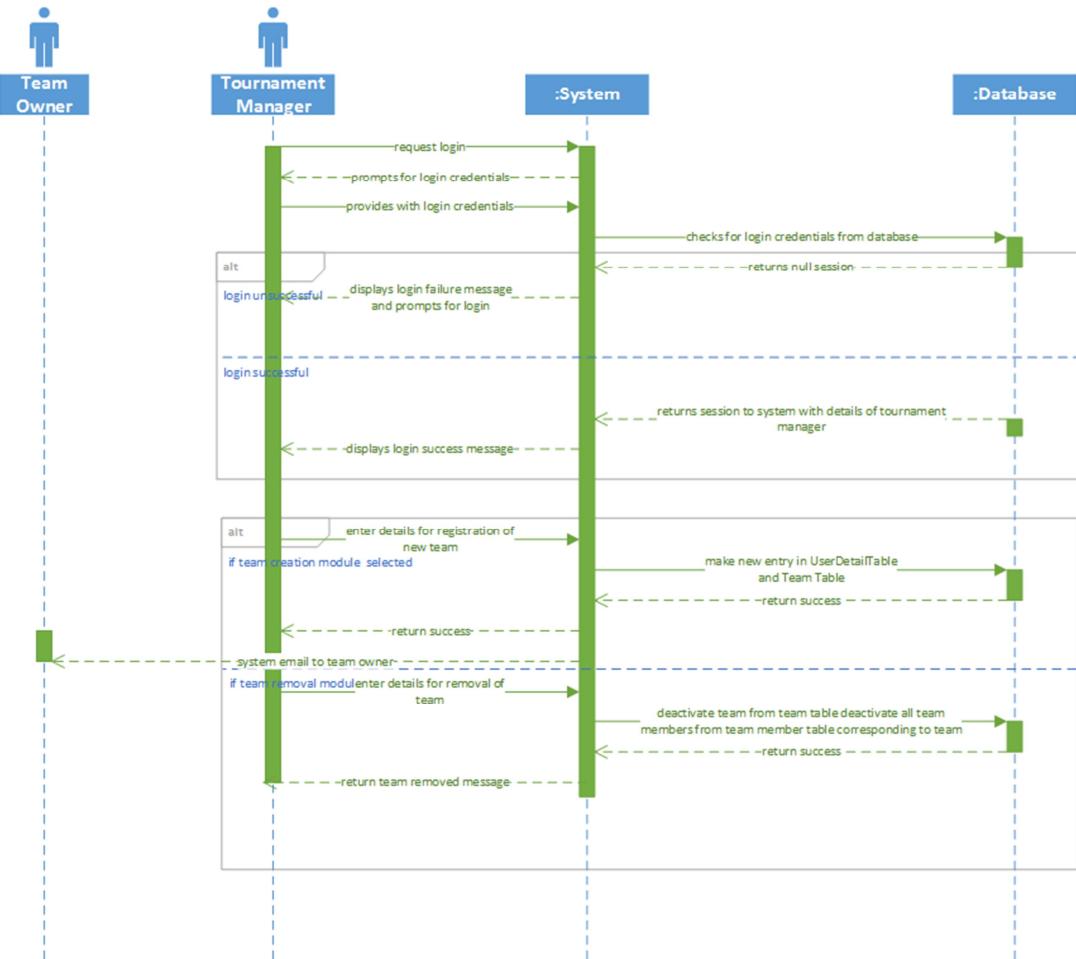


Fig. 2. 20 Team Management Process

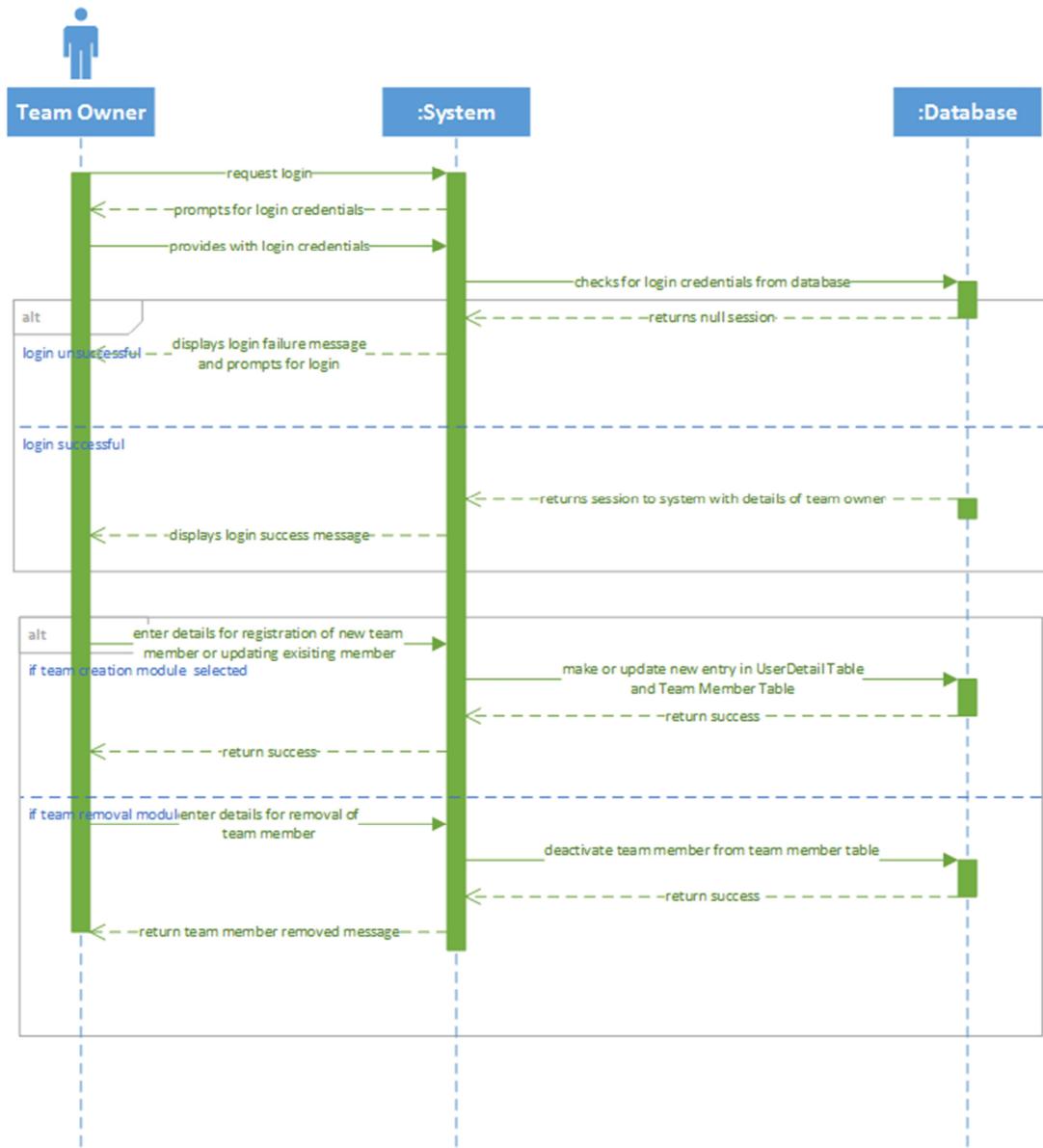


Fig. 2. 21 Team Member Management Process

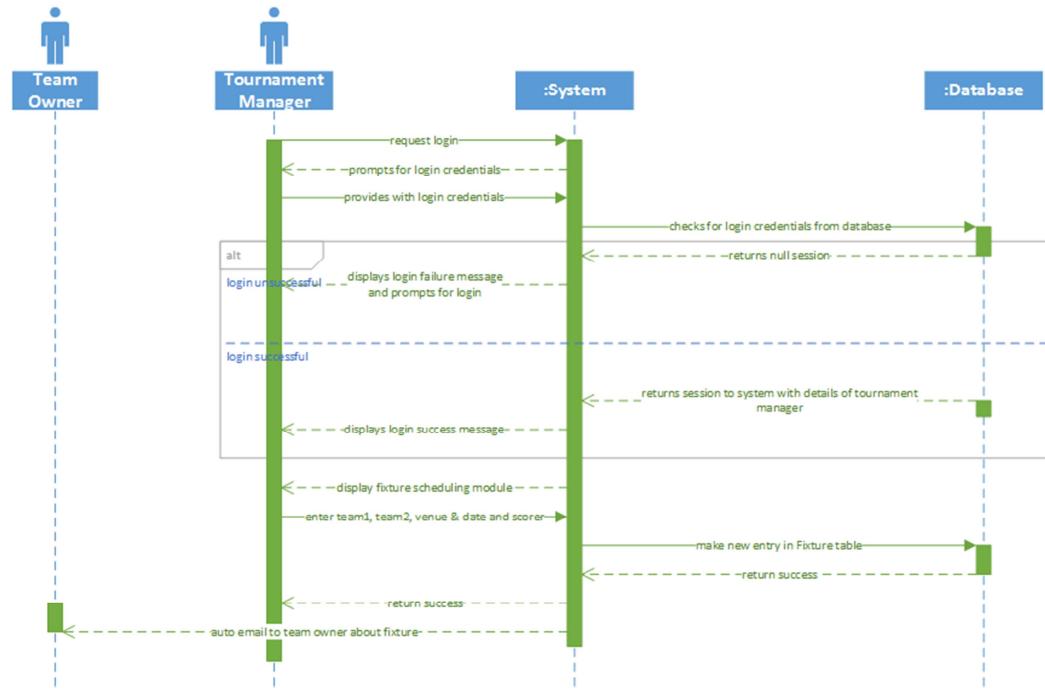


Fig. 2. 22 Fixture Scheduling Process

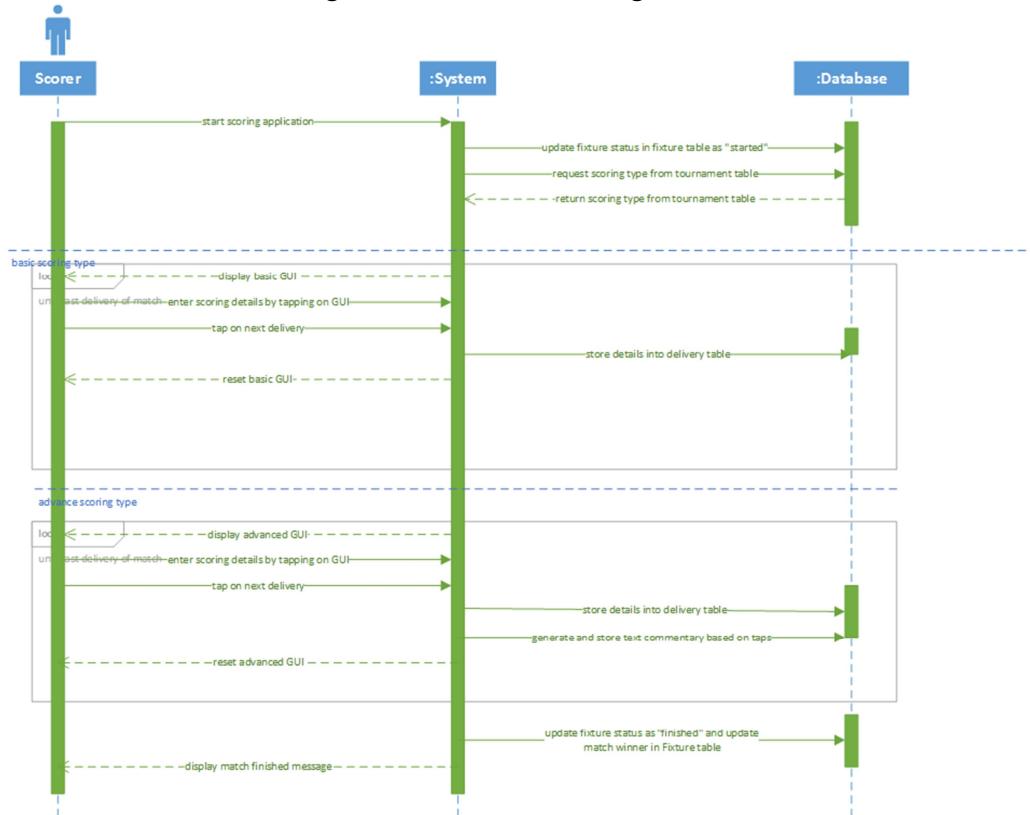


Fig. 2. 23 Live scoring process

2.2.4 State Diagrams

In the state diagrams, we have identified three such parts of the process which have the capability to change the state from one to another viz. Delivery table/part, Fixture part and Tournament part. These three have different states and the current state can change on the base of different events. These are described through the state diagrams below:-

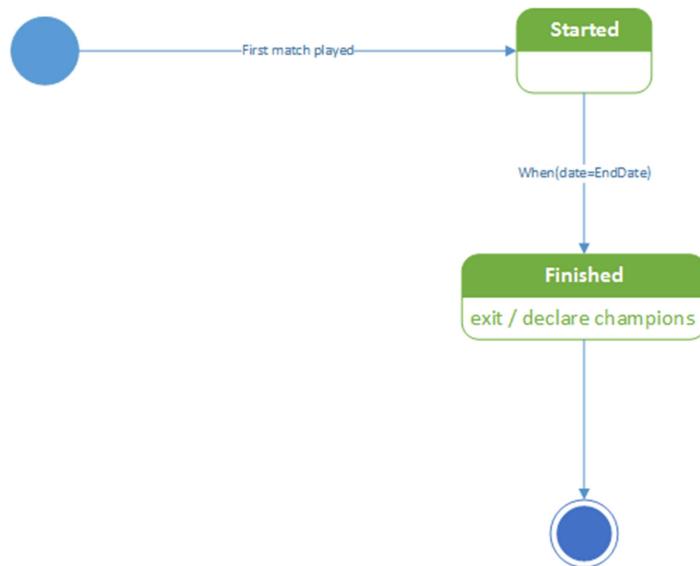


Fig. 2. 24 Tournament state diagram

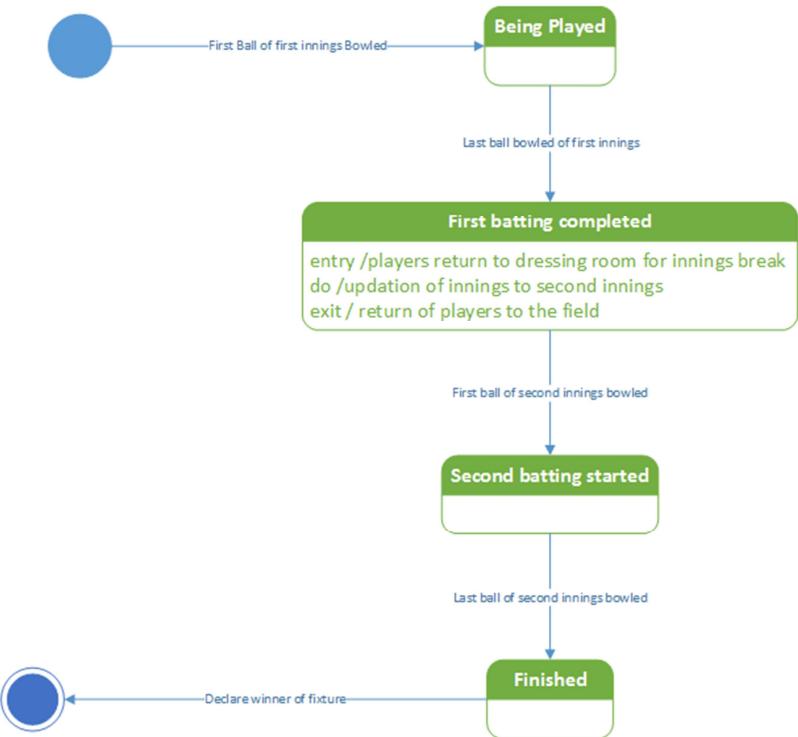


Fig. 2. 25 Fixture state diagram

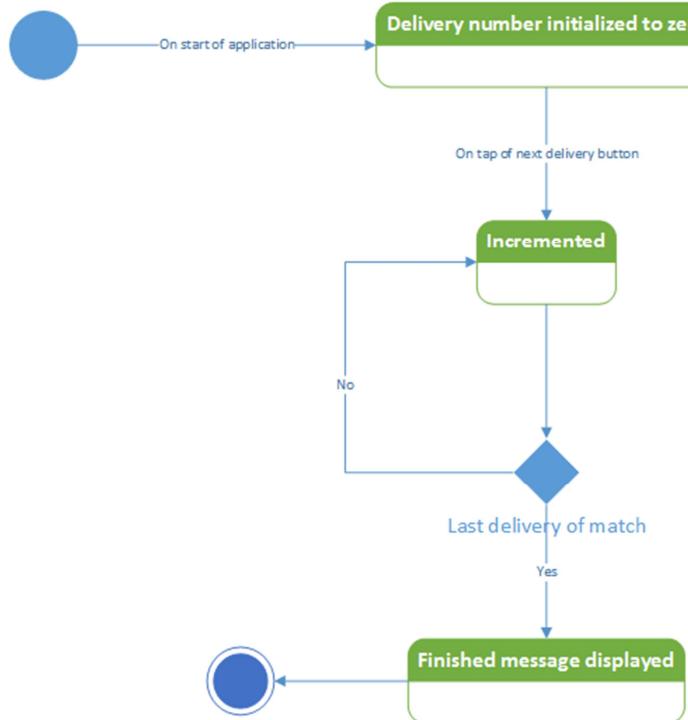


Fig. 2. 26 Delivery state diagram

2.2.5 Class Diagram

We have identified six tables in the database of our system viz. UserDetail, Tournament, Team, TeamMember, Fixture, Delivery. In our three-tier architecture, we create model and logic classes for the business layer of the system based on these tables of the database. These classes have different data members and methods to manipulate the data in these data members. The relationship between the different classes can be described by the class diagram given below.



Fig. 2. 27 Class diagram for the system

2.3 ENTITY-RELATIONSHIP DIAGRAM

As mentioned above, in the system we have described six tables in the database of the system. These tables have various data-fields and the relationships between different tables can be represented through the entity-relationship diagram. The entity relationship diagram given below describes the tables, primary key field of each table, the relationships between the different tables.

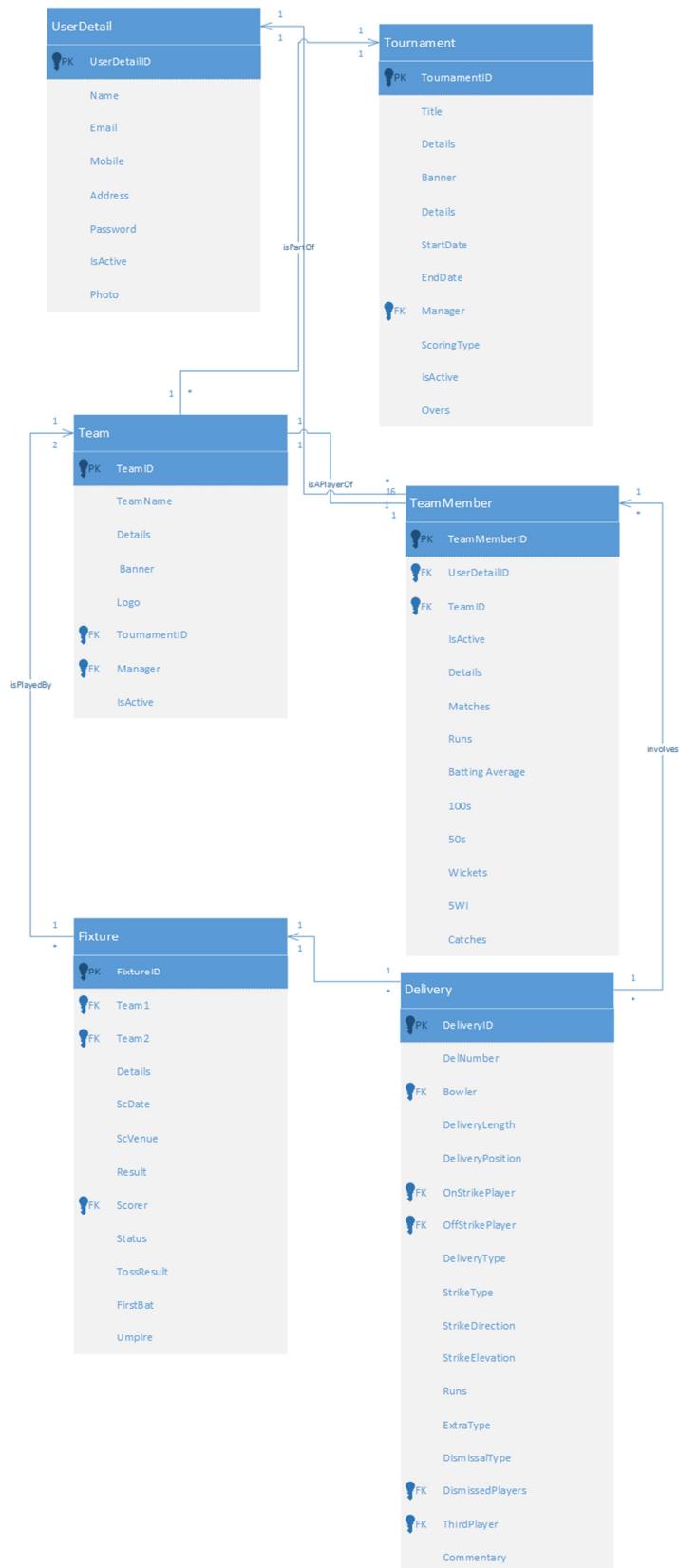


Fig. 2. 28 Entity-Relationship Diagram

CHAPTER 3

IMPLEMENTATION

3.1 METHOD OF IMPLEMENTATION

We have implemented the system using the ASP.NET technology using the Microsoft Visual Studio tool. In this semester we have created the back-end website used on the tournament administration side. This website is used for the data-entry purpose. We can configure the tournament, each and every team in the tournament, team members/player of a team. All these pages of the website are accessible through correct login of the actor. Initially, there is one administrator type user in the system. The administrator creates a tournament and creates the account of the tournament manager. The tournament manager then adds a team and configures the owner of the team while adding a new team. The system automatically creates the team owner's account and assigns the owner's id to the team. The team owner then adds a team member/player to each and every team. The system automatically adds the team member's details to the database and assigns each team member's id to the team. On login, the system checks & validates the email id and password of the user and upon successful authentication the user's details are stored on to the session and the web page is shown accordingly.

The system has been developed with a three-tier architecture with separate layers present for the connection with a database, computation and internal logic and the front-end or presentation.

The layer for connection with a database is called the DatabaseConnectivity. It has the code for connection to the database through a C# class file with the class name being DatabaseAccess. This class has two methods called modifyData and selectData. These methods accept the SQL query and List of SQL Parameters which are used in the query. The modifyData method executes the type of queries which modify or alter data of the table whereas the selectData method executes the type of queries which select or extract

data from the table. These two methods are invoked through different methods of the logic classes of the logic layer described in the following paragraph.

The layer which has the computational logic for the system is called the BackendLogic layer. This layer has C# class files which are model and logic classes for the six database tables of the system. The model classes contain only the variables which correspond to the data-fields of the table. The logic classes contain methods to manipulate the data of the model classes. The data input in the system is processed by assigning the data to the object of the respective model class and then by using the methods of the logic class. We have the following model and corresponding logic classes in the backend layer of the system.

1. UserDetail.cs	UserDetailLogic.cs
2. Tournament.cs	TournamentLogic.cs
3. Team.cs	TeamLogic.cs
4. TeamMember.cs	TeamMemberLogic.cs
5. Fixture.cs	FixtureLogic.cs
6. Delivery.cs	DeliveryLogic.cs

The layer which is used to interact with the user of the system through the website pages is called the FrontEnd. We have developed a website for the administrative work of tournament hosting using an administrative web template for the design of the website. We have developed web pages in the ASP.NET technology wherein the design of the web page can be done using the components used in HTML web pages and the code for the web page is written in corresponding C# files. The design of the template has been used to create a single Master Page which is used by each and every other web page of the website thus making the design uniform across all the web pages of the website. We have developed the following web pages:-

1. LoginPage
2. TournamentRegistration
3. ViewTournaments
4. EditTournament
5. TeamRegistration
6. ViewTeams
9. ViewTeamMembers
10. EditTeamMember
11. ChangePassword
12. UserRegistration
13. EditProfile

7. EditTeam
8. AddTeamMember

The website which we have developed using the web pages given above is working and has been tested well. The navigation is proper and the forms of the website are working well with database access. In the next section, we present you with some snapshots of the website which we have made till now.

3.2 SNAPSHTOS

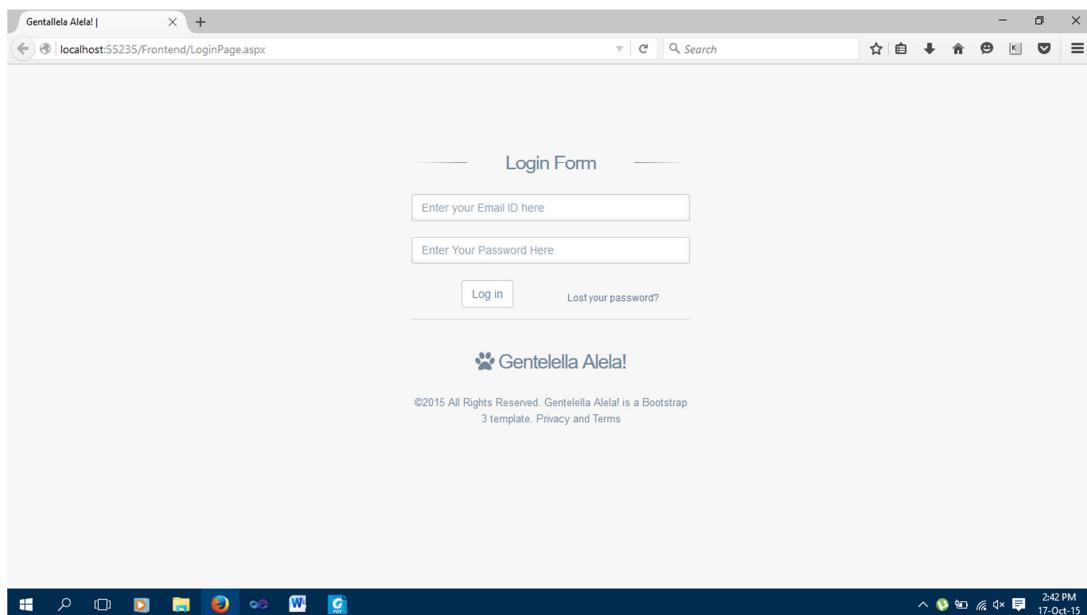


Fig. 3. 1 LoginPage

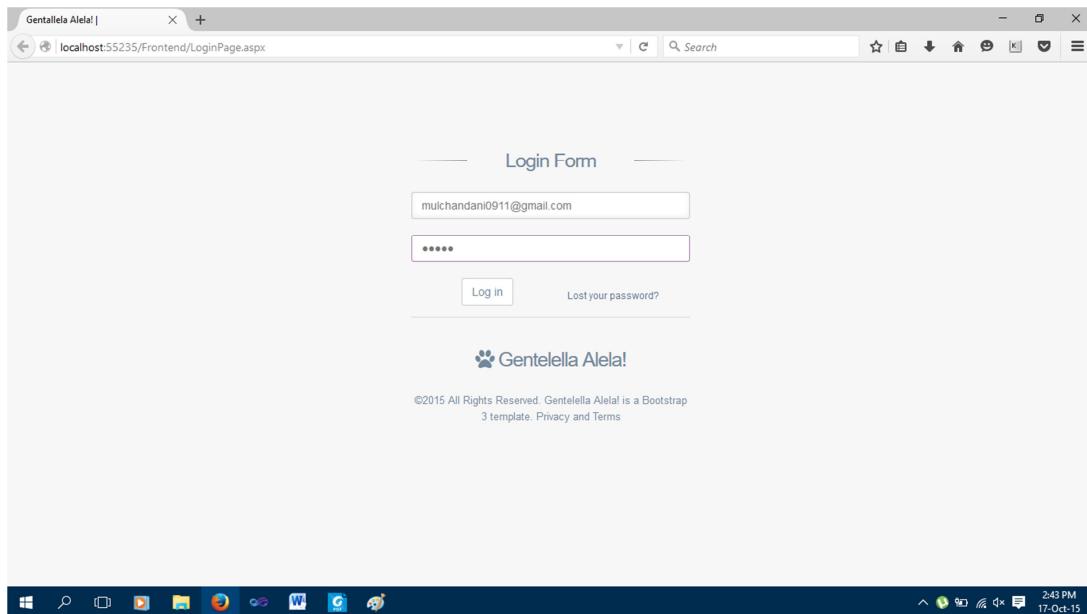


Fig. 3. 2 LoginPage with details

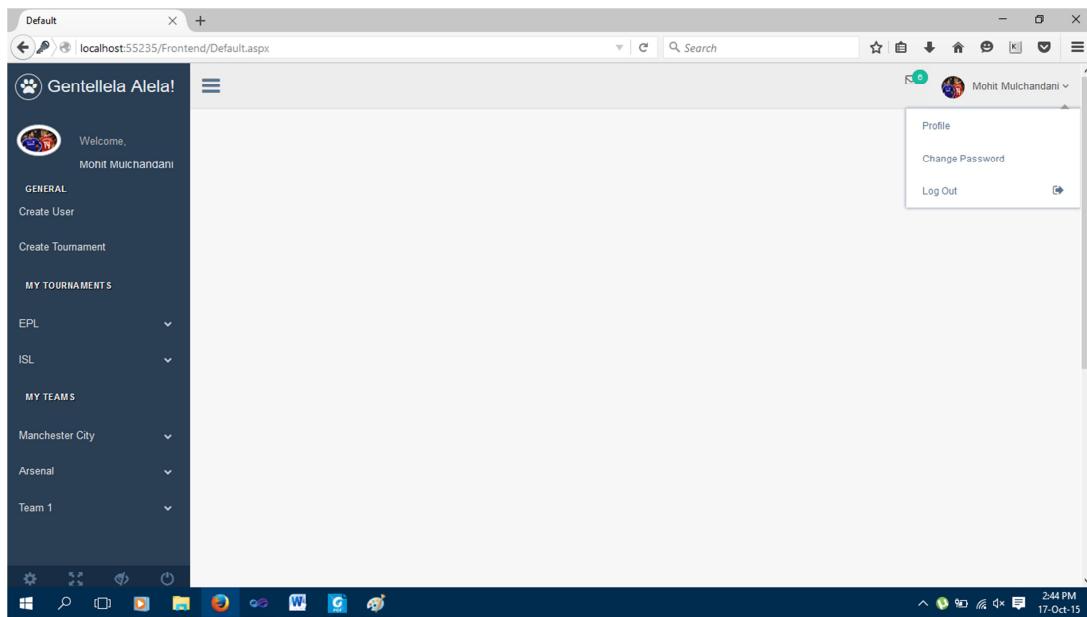


Fig. 3. 3 Default home page

User Registration

Welcome, Mohit Mulchandani

GENERAL

Create User

Create Tournament

MY TOURNAMENTS

EPL

ISL

MY TEAMS

Manchester City

Arsenal

Team 1

User Registration

Name *

User Type * Select

Email *

Mobile *

Address *

Photo * Browse... No file selected.

Cancel Submit

2:45 PM
17-Oct-15

Fig. 3. 4 UserRegistration

Tournament Registration

Welcome, Mohit Mulchandani

GENERAL

Create User

Create Tournament

MY TOURNAMENTS

EPL

ISL

MY TEAMS

Manchester City

Arsenal

Team 1

Tournament Registration

Title *

Details

Sponsor

Banner

Start Date *

End Date *

Scoring Type * Basic Advanced

Tournament Type * League

Number of teams *

Tournament Manager Registration

Name *

2:45 PM
17-Oct-15

Fig. 3. 5 TournamentRegistration

The screenshot shows a web browser window with the URL <http://localhost:55235/Frontend/TeamRegistration.aspx?ID=8>. The page title is "Team Registration". On the left, there is a sidebar with a logo and navigation links: Welcome, Mohit Mulchandani; GENERAL, Create User, Create Tournament; MY TOURNAMENTS, EPL (Add Team, View Teams); ISL; MY TEAMS, Manchester City, Arsenal. The main content area has fields for Team Name, Team Details, Team Banner, and Team Logo, with a "Browse..." button and a message "No file selected.". The status bar at the bottom shows the time as 2:46 PM and the date as 17-Oct-15.

Fig. 3. 6 TeamRegistration

The screenshot shows a web browser window with the URL <http://localhost:55235/Frontend/ViewTeams.aspx?ID=8>. The page title is "View Teams". The sidebar is identical to Fig. 3.6. The main content area is titled "Teams" and displays a table of teams that have participated in a tournament. The table has columns: Team Logo, Team Name, Details, Manager ID, and Tournament ID. The data is as follows:

Team Logo	Team Name	Details	Manager ID	Tournament ID	Action
[Placeholder]	Manchester Uniteddd	GGMU	12	8	Edit Delete
[Placeholder]	Liverpool	YNWA	12	8	Edit Delete
[Placeholder]	Manchester City	Manchester City	9	8	Edit Delete
[Placeholder]	Arsenal	COYG	9	8	Edit Delete

The status bar at the bottom shows the time as 2:47 PM and the date as 17-Oct-15.

Fig. 3. 7 ViewTeams

Team Member Registration

Welcome, Mohit Mulchandani

GENERAL

Create User

Create Tournament

MY TOURNAMENTS

EPL

ISL

MY TEAMS

Manchester City

- Add Team Member
- View Team Members

Arsenal

Name *

Email *

Mobile *

Details *

Address *

Photo *

Browse... No file selected.

Cancel Submit

Fig. 3. 8 TeamMemberRegistration

Team Members

Welcome, Mohit Mulchandani

GENERAL

Create User

Create Tournament

MY TOURNAMENTS

EPL

ISL

MY TEAMS

Manchester City

Arsenal

Team 1

Add Team Member

Team Players

You have the following players in your roster

Photo	Name	Email	Mobile	
	Luis Nani	iamnani@gmail.com	1234567890	Edit Delete
	Player1	player1@gmail.com	1234567890	Edit Delete
	Player2	player2@gmail.com	1234567890	Edit Delete

Fig. 3. 9 ViewTeamMembers

CHAPTER 4

CONCLUSION

In this chapter we shall provide a brief summary about the system and discuss about the advantages of our work and methodologies and usefulness to the existing solutions. We shall also discuss briefly about the scope of our work and compare and contrast our solution to existing solution

4.1 SUMMARY

As described above, we have completed about two-fifth of the work of the whole system. We intend to develop a system to host a cricket tournament along with scoring each match live and providing text commentary to each match along with conversion of that text commentary to audio. This system consists of three components viz. a host end website, a client end website and a mobile application. The host end website is used to do the administrative work of the tournament, the client end website is used to view the scores of each match and is deployed on the general user end and the mobile application is used primarily for scoring.

The advantages of our system are that there is no mobile application available in the current market for scoring of live cricket matches which we provide, we save a lot of tedious work that is done behind hosting a tournament on paper, we save paper in that process and we also provide better management of records for the long term by eliminating physical records and replacing them with digital records. We also provide a way to host local tournaments and broadcast them through a public medium viz. the internet which otherwise would not be broadcasted in a cost effective way. These advantages are all with respect to the on-going business process in the tournament hosting field.

4.2 SCOPE OF OUR WORK

The scope of the system we are developing is very wide. We can extend our tournament hosting system to more than one sport. We can incorporate much other functionality like live streaming, on-field videos etc.

4.3 UNIQUE FEATURES OF OUR SYSTEM

The unique features of our system in comparison to the existing business process are:-

1. Mobile application for scoring
2. Automatic fixture scheduling
3. Dynamic text-to-speech commentary
4. Auto email to user on account generation