

“Let’s Cricket” Web Application System

Project report to be submitted in partial fulfillment of the requirements for the degree

of

Bachelor of Science in Computer Science and Engineering

by

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COMPUTER SCIENCE AND ENGINEERING

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CERTIFICATE OF APPROVAL

This is to certify that the project report entitled **Let's Cricket Web Application System**, submitted by **Fayezur Rahman** (Student ID: 163014015) is undergraduate student of the **Department of Computer Science and Engineering** has been examined. Upon recommendation by the examination committee, we hereby accord our approval of it as the presented work and submitted report fulfill the requirements for its acceptance in partial fulfillment for the degree of Bachelor of Science in Computer Science and Engineering.

Dated: October 2021

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DECLARATION

Project Title Let's Cricket Web Application System

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I declare that this project report entitled “Let's Cricket Web Application System” is the result of my own work except as cited in the references. The project report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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Date: October 10, 2021

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University of Liberal Arts Bangladesh

Date: October 10, 2021

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Chapter 1: Introductions

1.1 Introductions

The idea of this project is to use a cricket web application system that will give the cricket players to view their club activities and tournament information. This web applications will provide players to observe the meeting schedule from the club, tournament fixtures and scorecard. This web application can be log in as user according based on role restriction. Usage of Internet increased rapidly day by day. With the help of internet, users can log into web application to look for the meeting schedule and tournaments fixture. Instead of going to club office every day and waiting for the admin to publish notice and schedule, player can use this view the meeting given on the web application.

1.2 Motivations

In our country, I did not find this kind of application system related to Cricket. It is main aim to help the players to get adapt to the use of the digital management product to cope with ongoing technology management software used professionally. They will able to track their practice schedule, tournament schedule. They will also learn to use of this web application and its importance on their career which is also another target. With these targets, I want to see rise in professional development of Cricket industry in order to compete with International.

1.3 Objectives

The web application mainly will be used by the players and coaches. It will provide the players meeting schedule. The coaches can post the schedule timing, practice time and meeting for upcoming matches. The administration member will able to arrange the match fixture and tournaments results. It can be operated under a club and possible to manage a division (group of clubs) which will some restrictions on the player's role.

1.4 Expected Outcome

The outcome expectation is to get them adapt to use of the application and utilize it their career progress and match schedule preparations. The player will become active in checking the updates, pre-match meeting, tournament status update, etc. It will save the valuable time and can take preparation according to the appointed schedule with ease.

1.5 Project Management and Finances

For this project, I did not need funds and all software tools and database were available online. To run the application, internet connection and standard computer will be needed to operate the system. To improve the database quality and storage, I will need some funds to provide the data storage of meeting and tournament schedule.

Chapter 2: Background

2.1 Preliminaries/Terminologies

Player- user that will use this software to interact with it

Coach- person will give guidance to the Players

Admin- person who will manage the club and players

Tournament fixture- a contest event between two clubs

Club- a set of players participating in activities

Meeting Schedule- A form where the Coach post news and practice time

Tournament schedule- A form where tournament matches will be announced

Web application- a program that will run on the web browser

Node JS- a JavaScript that used in back-end to connect database

React JS- a JavaScript content used to design the front-end components

Mongo DB- an online NoSQL database connection with the web browser

Web Application- an application software that interacts with users

2.2 Related Works

There are a number of sports management software are available through premium payment package and they are highly sophisticated and some new users may find it hard to navigate through the software. This project focuses on the Cricket and almost all sports managements that are available were football related.[4]

2.3 Comparative Analysis

Most of the management software have highly detailed user interface and some attractive graphical image design. My project focuses on the meeting schedule and tournament schedule features. They are role playing restrictions based on whether it is Player or Admin staff. The user interface is based on graphical user interface and make easier for the user to operate and understand each of its feature. It does not have payment system, attendance recorder, scorecard

system. It does not have sophisticated functions where users could confuse with others functions.

Case	Acadware.com	Sportlyzer.com	Let's Cricket Web Application
Login Process	Possible through free trial registration	Only manager can add athletes	By using email ID and password
Payment	After trial version you have to pay	After trial version you have to pay by manager	No
Features	Highly Sophisticated and high computer literacy needed	Highly Sophisticated and high computer literacy needed	Simplified and user friendly
Security	Yes	Yes	Yes
Updated Information	Yes	Yes	Yes

Table 1.1: Comparison between related works

2.4 Scope of the Problem

In our country, the professionals do not know about this management properly, which is lack of development in the sports industry. It is paper-based administration work and they have to notify the players through phone calls and text messages bearing more expenditure on the club finances. Also, they had to make contact with coach staff members for meeting schedule arrangements which add more workload on the club. Most of the club works were managed by paperwork and lots files were used everyday to arrange the player's meeting, recording tournament's fixture and progress. Internet connection is required which could be problem. If the application is not responsive then might be problem internet or devices that are being used. Checking the schedule in web application will save time and make easy for them to use.

2.5 Challenges

- To provide schedule on the web application and be able to update schedule on time.
- Make this application user friendly and responsive.
- All information to connected into the database
- Maintenance of the application and database
- Gather Schedule data and tournament fixture

Chapter 3: Requirement Specification

3.1 Business Process Modeling

The main purpose is to adapt the web application into each local club and allow players and admin staffs to use this application to utilize the time and match schedule planning. It allows them to adapt the digitalization of the club and to comfortable for the users to interact with it. They can use it as research analysis to find out whether the tournament was proceeded or not and meeting schedules were carried out or not. Waterfall Model will used as it is a linear-sequential model life cycle model. It is software life cycle model that progress through steadily downwards into phases: Requirement analysis, Design, Implementation, Testing and Maintenance.

3.2 Requirement Collection and Analysis

It is one of the primary phases of development as I have developed web application. There are two types: Functional Requirements and Non-functional Requirements.

3.2.1 For Functional Requirements,

- a. The applications will verify the player's account
- b. It should able to submit the inputted data within 1-2 seconds
- c. It should upload the schedule after input within 1-2 seconds
- d. It will allow coaches to post the meetings
- e. It will allow players to view Match schedule, Tournament schedule.
- f. It will allow the admins to make changes to match schedules, Tournament schedule.
- g. It will allow the admins to manage to assign a coach for each group of players

3.2.2 For Non-Functional Requirements

- a. The application is compatible with web browsers
- b. It will display dashboard to the players
- c. It should be able display the meeting schedule after requests
- d. The application should be able to verify the email ID and load the pages in 1-2 seconds
- e. The application should be able to log in and log out properly
- f. The application should be able to provide information for the players, coaches, and staff.

3.3 Use Case Modeling and Description

The use case will show how the players, coaches and Admin staffs will interact the system given in the diagram Fig 1.1 below.

The players will be able access the application through the email ID, view meeting schedule, view Tournaments schedule.

The coach will be able to use Add meeting schedule and add tournament schedule including the view options.

Admin have overall advantage on the system to manage both players and coaches. Admin will be verifying the accounts and modify the meeting schedule, tournaments schedule if needed.

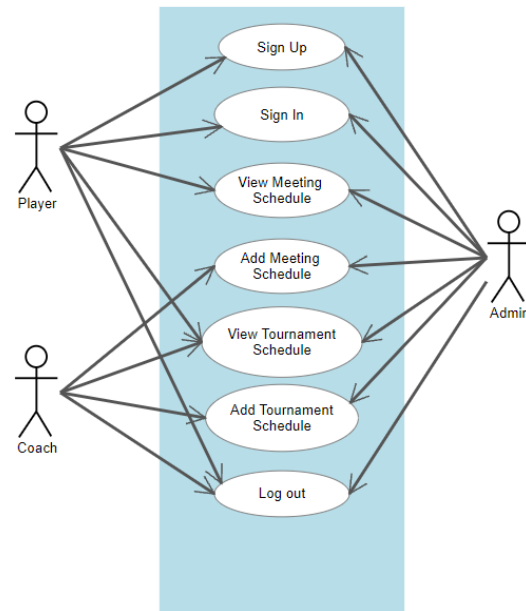


Fig 1.1: Use-case diagram of the Let's Cricket Web Application

3.4 Logical Data Model

A logical data model shows how the data will physically implemented into the system. It is similar to flowchart and represent the workflow of each entity.

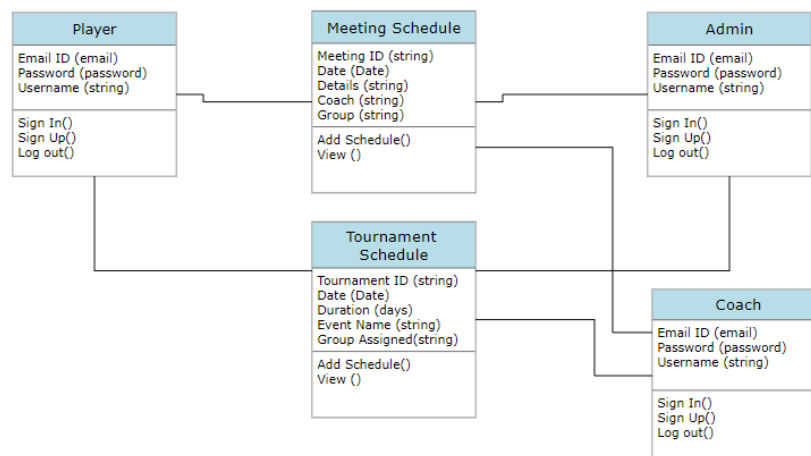


Fig 1.2: Class Diagram of Let's Cricket Web Application

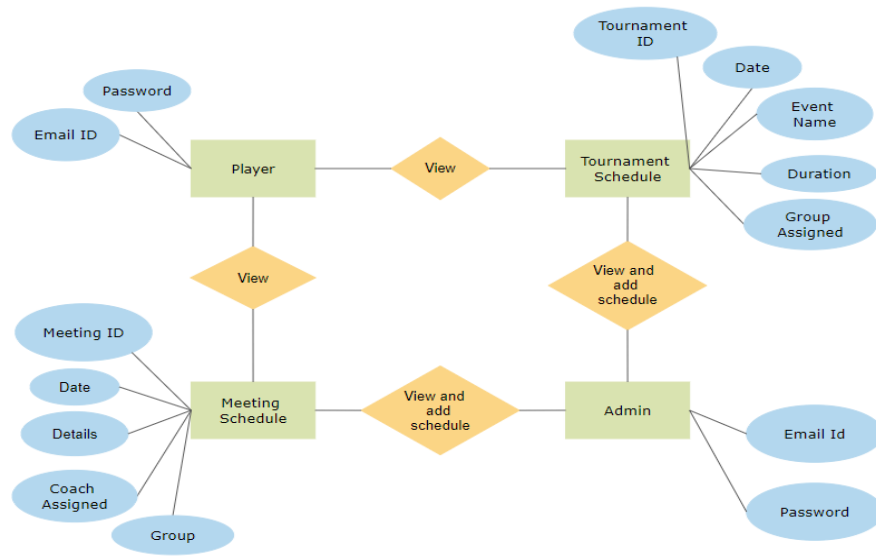


Fig 1.3: Entity Relationship Diagram of Let's Cricket Web Application

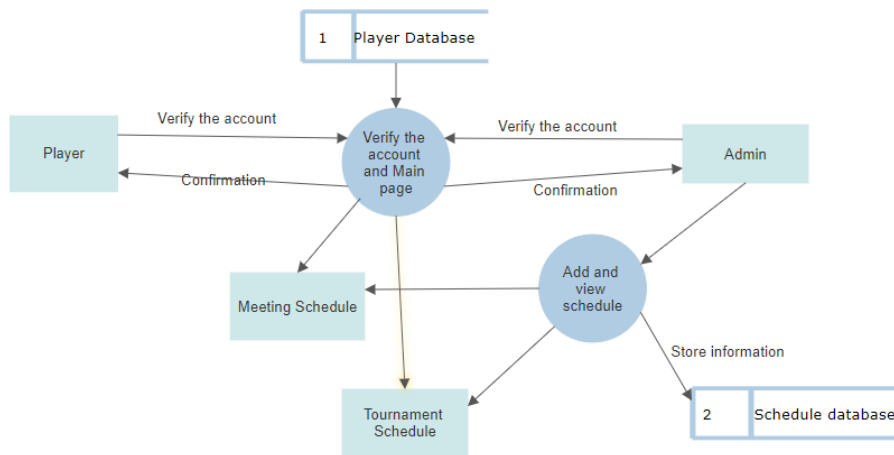


Fig 1.4: Data Flow Diagram of Let's Cricket Web Application

3.5 Design Requirement

Design is the essential part of the web application which is make user friendly and efficient.

For Admin design requirement,

- Login page with verifications
- View and change the schedule
- Access to the players database store
- Update player's information
- Update meeting schedule, tournament schedule
- Log out

For user design requirement,

- Log in with email id
- Create new account
- View the schedule
- Log out

Chapter 4: Design Specification

4.1 Front-end Design

It is a visual presentation of the web application which is visible to the user and operate it.

React JavaScript is front-end library originated for JavaScript. It is dynamic and open-source, responsible to design the applications' view layer. I have used React JavaScript mainly to develop the framework.

Bootstrap 5.0 is React UI component library used to layout the front-end layer that has dynamic framework layout design. It contains HTML, CSS and JavaScript extensions. I had also used some bootstrap template and fonts from the google text templates to add on the framework and visual presentation.

4.2 Back-end Design

Back-end is the part of the website that manipulate and store the database. It is the server side of the application operation and cannot be access directly by users. Admins will use it edit, delete and verify the schedule if needed.

Mongo Database is a NoSQL database system. It has store availability and by index method it can access easily. The loading process is faster than the other relational database. With help of this database, it can provide large amount storage and has a feature that add any of fields to existing database.

Firebase is cited as “comprehensive system for the developer that includes modules for authentication, cloud-hosted databases, file storage, server-side processing, content delivery, messaging, Google search integration” [2]. It is convenient and useful as allows build database

from client-side in real time.

Node JavaScript is back-end server JavaScript that can run without depending on the web browser. It is an open-source and be able execute the commands outside the browser. This is useful as this project-based data intensive applications.

4.3 Interaction Design and User Experience (UX)

Visual look is important for a web application as it is interaction between the players and application. For instance, the button labels were simple and meaningful. The graphical layout and images components used to visualize the web page. The use of physical object like the user's finger to interact the application. The loading process and visual animation changes with interacting the object users requested. So, I have designed the necessary buttons, data input field and visual components in a meaningful according the objectives to make a proper web application.

4.4 Implementation Requirements

I have used different software tools and templates to combine them to make my work progression easier to develop the web application.

- React JavaScript
- Visual Studio Editor
- Bootstrap
- Firebase Database
- Mongo Database
- Node Javascript
- CSS

Chapter 5: Implementation and Testing

5.1 Implementation of Database

I have used Mongo Database connection as back-end server where it will keep record of meeting schedule and tournament schedule in the database.

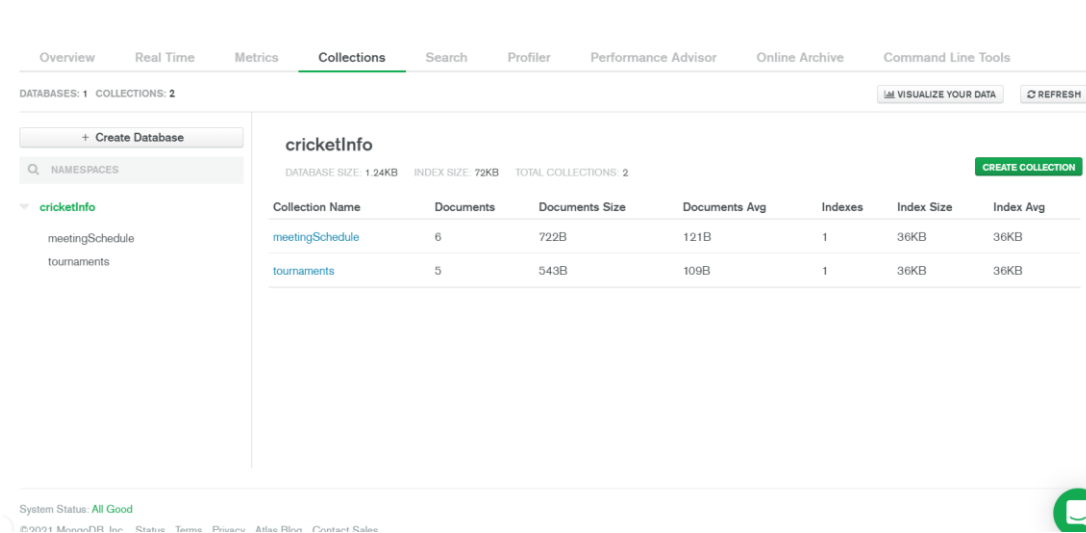


Fig 1.5: Mongo Database connection



Fig 1.6: Database of Meeting Schedule

<pre> _id: ObjectId("615dbfe6763df002d8ae69e9") event: "Inter U19 club Tournament" duration: "10" date: "2021-09-27" group: "A,B,C" </pre>
<pre> _id: ObjectId("615eacc28bf444bdf616dcd1") event: "Inter-club U15 and U17 Tournament" duration: "5" date: "2021-10-14" group: "F,C,G,H" </pre>
<pre> _id: ObjectId("615eaff18bf444bdf616dcd3") event: "Inter-club Knockout Tournament" duration: "2" date: "2021-10-27" group: "A,B,C" </pre>

Fig 1.7: Database of Tournament Schedule

5.2 Implementation of Front-end Design

To run this project, Chrome Browser was used to run the web application. It is lightweight and it can adjust the screen large and small automatically.

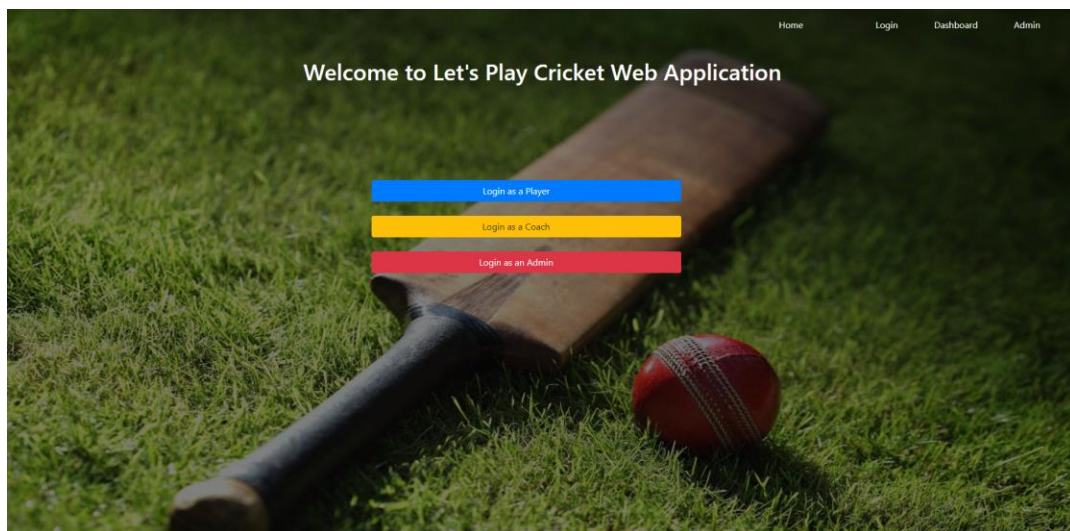
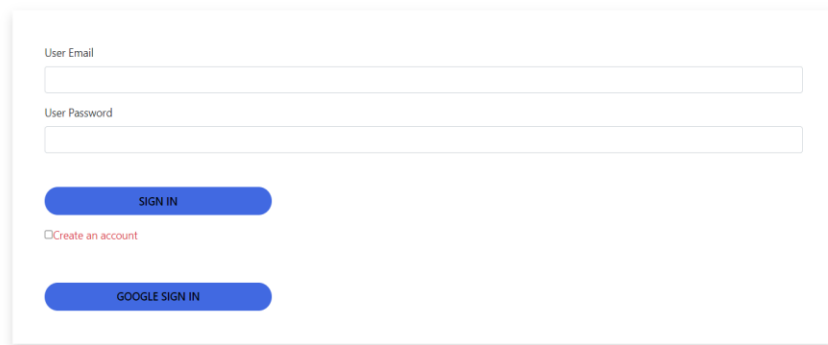
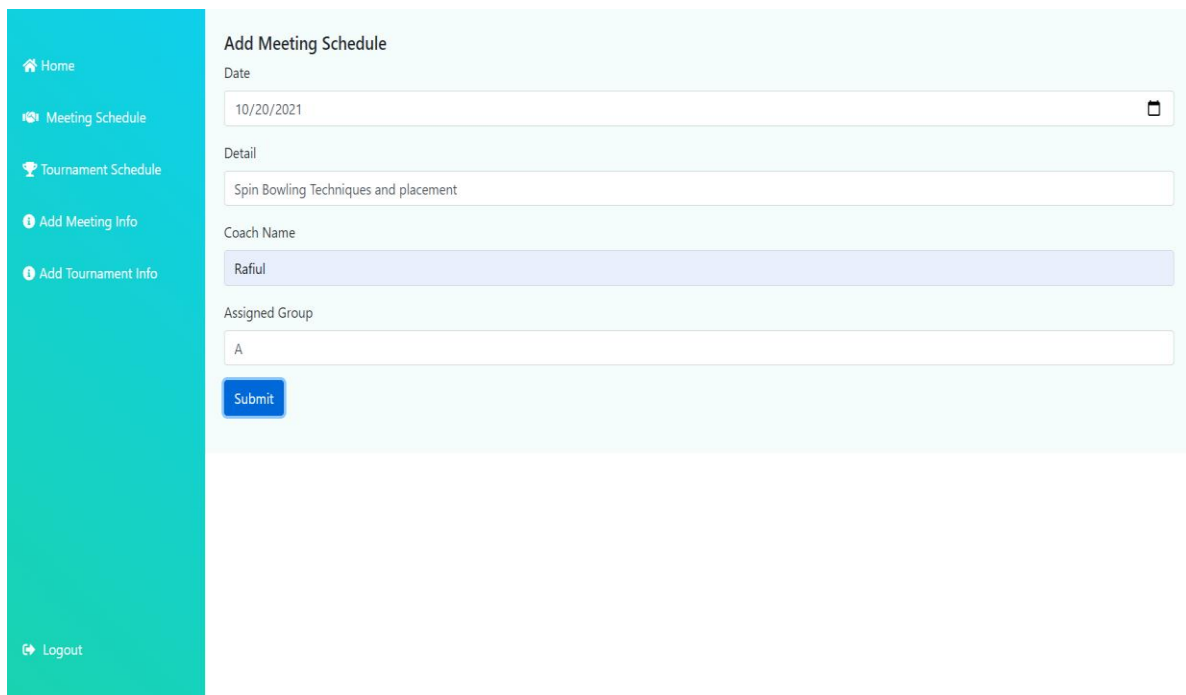


Fig 1.8: Main page of the Web Application



A login form with two input fields: "User Email" and "User Password". Below the password field is a blue "SIGN IN" button. Underneath the button is a link that says "Create an account" with a small square icon to its left. At the bottom of the form is a blue "GOOGLE SIGN IN" button.

Fig 1.9: Login Page



The "Add Meeting Schedule" page features a teal sidebar on the left with navigation links: "Home", "Meeting Schedule", "Tournament Schedule", "Add Meeting Info", "Add Tournament Info", and "Logout". The main content area is light blue and contains the following fields: "Date" (with value "10/20/2021" and a calendar icon), "Detail" (with value "Spin Bowling Techniques and placement"), "Coach Name" (with value "Rafiul"), and "Assigned Group" (with value "A"). A blue "Submit" button is located at the bottom of the form.

Fig 1.10: Add Meeting Schedule Page

Home	Meeting ID	Date	Detail	Coach	Assigned Group
Meeting Schedule	61596fdbabdfcdd754b688bf	2021-09-21	Batting Practice	Ashad	C
Tournament Schedule	615d9b88c09156c0a9751a60	2021-10-09	Fielding practice	Rafiq	H
Add Meeting Info	615dc032763df002d8ae69ea	2021-09-08	Pace Bowling Practice	Shofiq	C
Add Tournament Info	615eab398bf444bdf616dccf	2021-09-18	Batting Practice and tackling against spin bowler	Shahadat	B
	615eac088bf444bdf616dcd0	2021-09-12	Fielding throwing at the wicket and wicket keeping training	Kawsar	A
	615eaf238bf444bdf616dcd2	2021-10-20	Spin Bowling Techniques and placement	Rafiul	A
Logout					

Fig 1.11: Shows the Meeting Schedule Page

Home	Add Tournament Schedule	
Meeting Schedule	Event Name	
Tournament Schedule	Inter-club Knockout Tournament	
Add Meeting Info	Duration	
Add Tournament Info	2	
	Date	
	10/27/2021	
	Assigned Group	
	A,B,C	
	Submit	
Logout		

Fig 1.12: Adding Tournament Schedule Page

Home	Tournament ID	Event Name	Duration	Date	Assigned Group
Meeting Schedule	615997c5c3bceb8230289316	Into Club	23	2021-10-06	A
Tournament Schedule	615c969955180ceb9f667264	Into Club	27	2021-10-30	B
Add Meeting Info	615dbfe6763df002d8ae69e9	Inter U19 club Tournament	10	2021-09-27	A,B,C
Add Tournament Info	615eacc28bf444bdf616dcd1	Inter-club U15 and U17 Tournament	5	2021-10-14	F,C,G,H
	615eaff18bf444bdf616dcd3	Inter-club Knockout Tournament	2	2021-10-27	A,B,C
Logout					

Fig 1.13: Shows Tournament Schedule Page

5.3 Testing Implementation

I took chrome web browser to do the testing and making sure that loads the contents. I did run on the Mozilla Firefox browser for this project. It did load the application on time and the web application initiated successfully. The test reports are given in the 5.4 section.

Test case-01: To login into the account and access to dashboard.

Date: 07/10/2021

First it is conducted on Chrome Browser, the user logged in as “Fayezur Rahman” and it was possible to view the dashboard. The result is success given Fig 1.13, Fig 1.14.



Fig 1.14: Here shows logged in user as “Fayezur Rahman”

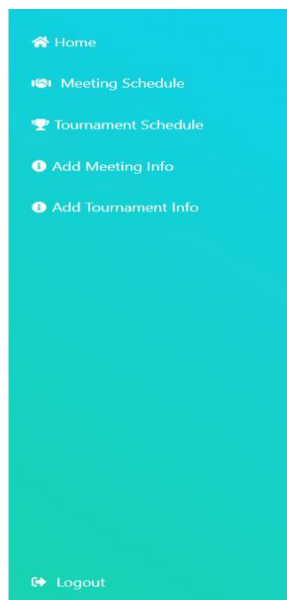
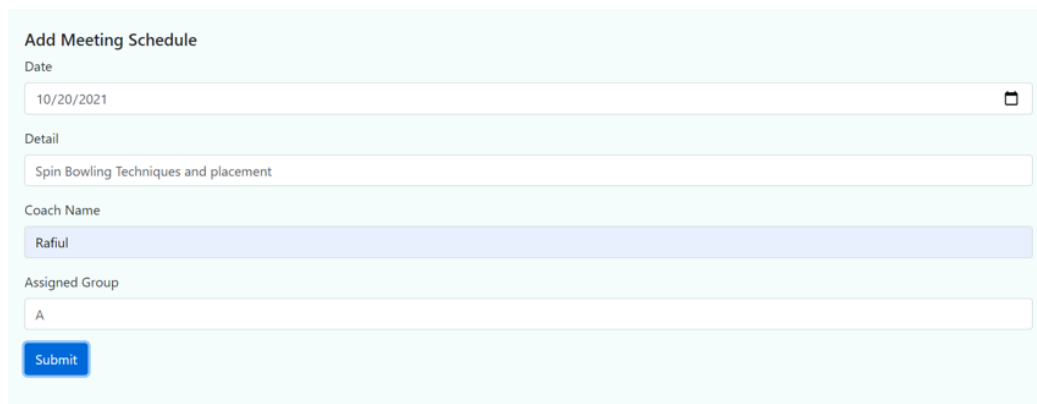


Fig 1.15: Here it shows the dashboard

Test Case-02: To add meeting schedule and view the schedule

Date: 07/10/2021

The user will input the meeting schedule information and click the submit button to proceed it. The schedule is updated into database and it shows the updated schedule. The result is success given in Fig 1.16,1.17,1.18.



Add Meeting Schedule

Date: 10/20/2021

Detail: Spin Bowling Techniques and placement

Coach Name: Rafiul

Assigned Group: A

Submit

Fig 1.16: Meeting Schedule is added on web application

Meeting ID	Date	Detail	Coach	Assigned Group
61596fdbabdfcd754b688bf	2021-09-21	Batting Practice	Ashad	C
615d9b88c09156c0a9751a60	2021-10-09	Fielding practice	Rafiq	H
615dc032763df002d8ae69ea	2021-09-08	Pace Bowling Practice	Shofiq	C
615eab398bf444bdf616dccb	2021-09-18	Batting Practice and tackling against spin bowler	Shahadat	B
615eac088bf444bdf616dcd0	2021-09-12	Fielding throwing at the wicket and wicket keeping training	Kawsar	A
615eaf238bf444bdf616dcd2	2021-10-20	Spin Bowling Techniques and placement	Rafiul	A

Fig 1.17: Meeting Schedule is uploaded

```
_id: ObjectId("615eaf238bf444bdf616dcd2")
date: "2021-10-20"
detail: "Spin Bowling Techniques and placement"
coach: "Rafiul"
group: "A"
```

Fig 1.18: Shows the data is stored on server-side by Mongo database

Test case-03: To add Tournament Schedule and view the Schedule

Date: 07/10/2021

The user will input the tournament schedule information and click the submit button to proceed it. The schedule is updated into database and it shows the updated schedule. The result is success given in Fig 1.19,1.20,1.21.

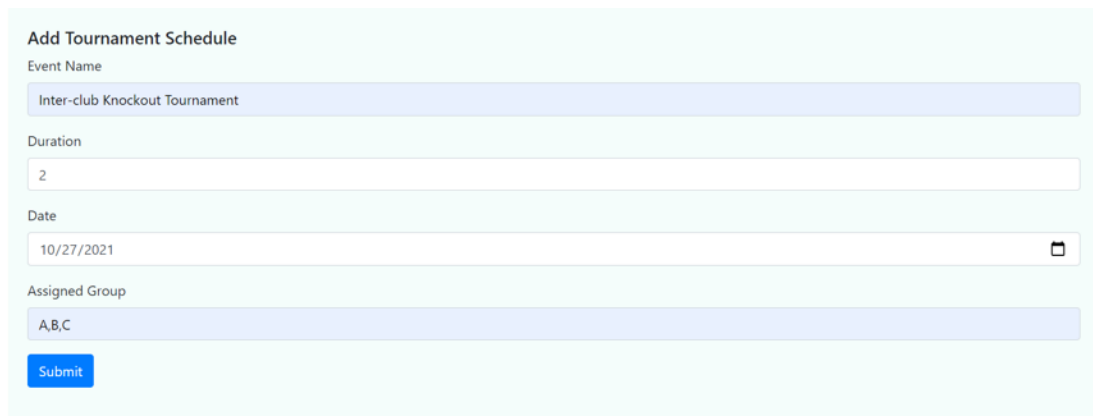


Fig 1.19: Adding Tournament Schedule on Web application

Tournament ID	Event Name	Duration	Date	Assigned Group
615997c5c3bceb8230289316	Into Club	23	2021-10-06	A
615c969955180ceb9f667264	Into Club	27	2021-10-30	B
615dbfe6763df002d8ae69e9	Inter U19 club Tournament	10	2021-09-27	A,B,C
615eacc28bf444bdf616dcd1	Inter-club U15 and U17 Tournament	5	2021-10-14	F,C,G,H
615eaff18bf444bdf616dcd3	Inter-club Knockout Tournament	2	2021-10-27	A,B,C

Fig 1.20: Tournament Schedule is uploaded

```
_id: ObjectId("615eaff18bf444bdf616dcd3")
event: "Inter-club Knockout Tournament"
duration: "2"
date: "2021-10-27"
group: "A,B,C"
```

Fig 1.21: Shows the data is stored on server-side by Mongo database

5.4 Test Results and Reports

It is mandatory to document the test report that were obtained for the test cases. The application worked properly and test results were successful. From the application, I have confirmed the application secured and user friendly. It could perform the tasks given the user and deliver in time. The user interface was simple and easy to interact. It reduces the workload burden and time consume on the Admin staff. The overall result is a success.

Chapter 6: Impact on Society, Environment and Sustainability

6.1 Impact on Society

The usage new digital products and technology has incremented exponentially due to popularity of the social media platforms. The idea of this project is to get used to the management software that will some education on the topic. It is used as a cautionary measure to ensure the tournament proceeding. It will not bring contribution to Society directly. However, according to the statement “No matter how small the effort is, social impact impacts everyone in many ways we may not realize.” [5]. It means that it will show positive or negative impact depending on the society interactions.

6.2 Impact on Environment

The usage of materials to make computer, smartphone devices had brought waste of materials and being exposed to heat pollution. Although, it is not related to the environment directly. It is conduct survey on Users application usage, energy and data consumption on the application usage [8]. With these surveys, it is possible to make conclusion on environmental impact on the applications.

6.3 Ethical Aspects

A set of rules protocols were applied to ensure the fair usage of the applications and to follow the code of ethics for engineers. It is necessary to understand the ethical dimension of sustainable development. [7]

Chapter 7: Conclusion and Future Scope

7.1 Discussion and Conclusion

An Exciting web application that is simple to utilize and Admin can do lot of works through this web application. As examined, we do lack the digital platform usage in cricket industry. It is the over a situation that over us to procedures of creating this web application system to utilize the Players and admin to enable them to handle points of interest on approaches proficiently and successfully. Player can get in touch with all schedule updated of a single we Web application. The Project has actualized most of the targets stipulated in a prior chapter. Mostly the players will be more benefited on this application. Hence, the making of such a system will demonstrate to be very exceptionally supportive to those who are exceptionally active in their life.

7.2 Scope for Further Developments

In future, Scorecard and results feature will be added to give the players to view on the web application. It will also keep record on the back-end server and admin will be able edit, add and the delete any information. The player profile is another feature where he will able to keep attendance record and statistics record. He will able to able to personal information if requested to the admin staff. Also add the graphical detail like color composition, attractive images of cricket, etc. I will try add feedback form to the web application to understand players. Coaches opinion.

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