

# **ASHESI PREMIER LEAGUE APPLICATION**

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**APRIL 2013**

**APPLIED PROJECT**

**ASHESI UNIVERSITY COLLEGE**

**ASHESI PREMIER LEAGUE APPLICATION  
BY  
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Applied Project Report submitted to the Department of Computer Science,

Ashesi University College

In partial fulfillment of Bachelor of Science Degree in Management

Information Systems

**APRIL 2013**

## **DECLARATION**

I hereby declare that this dissertation is as a result of my own work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:.....

Candidate's Name:.....

Date:.....

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by Ashesi University College.

Supervisor's Signature:.....

Supervisor's Name:.....

Date:.....

## **ACKNOWLEDGEMENT**

I would like to express my sincerest gratitude to God Almighty for seeing me through my years in Ashesi University and the project. I was able to come this far by His grace and favor.

Secondly, I would like to thank my supervisor, Dr. Nathan Amanquah, for his help and guidance throughout the project.

I will also like to thank my family for their support, love and prayers throughout my stay in school especially during this project.

Finally, I would like to thank my friends who supported me in various ways to enable me complete my project successfully.

## **ABSTRACT**

The growth of technology has seen most institution developing ways to reach a wider range of people. The soccer industry is not left out in this race. Most leagues and clubs have come up with different ways to reach their supporters and enhance engagement. One of such ways is the development of applications. The development of these applications does not only enhance user engagement but provides a convenient way to reach soccer fans. The Ashesi Premier League (APL), an upcoming league for the ashesi community can also benefit from this technological growth in the soccer industry. This application will help disseminate information about the league to the community. It will also promote student engagement through predictions and allow students express their views on various issues. This is therefore necessary for the application to be easy to use by the students and serve the different classes of students in the community.

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## **1.0 INTRODUCTION**

### **1.1 BACKGROUND**

Soccer has been an activity that has brought people together since its inception. The sport is so popular that almost every country has leagues besides the international ones like the World Cup. Some of the leagues include, Serie A for Italy, the Spanish La Liga, English Premier League (EPL) and the Glo Premier League in Ghana. Considering the fact that soccer is a universal sport, supporters follow leagues both home and abroad. It is not surprising that a Ghanaian who has never travelled knows every bit of information concerning the EPL or La Liga. The media makes it possible for information to reach these hungry fans. Also, there are many platforms and applications that are solely dedicated to Soccer to ensure that fans are not left out of the loop. Besides these recognized leagues, institutions also hold mini leagues as a form of recreation. One of such institutions is Ashesi University College.

The Ashesi Premier League (APL) has been the craze of students, especially the male population. Since its inception, the league has brought students together by bridging the gap between classes. Like any other league, it has a regulatory body that manages affairs. The league has eight contesting teams made up of players from all classes. Each semester, these teams

battle it out for a trophy and the bragging right as Soccer champions. Like all the other international leagues, a transfer is opened for a while to allow teams sign new players and also trade players among themselves.

One difference between the APL and other leagues is the popularity. The popularity of these other leagues has contributed to the creation of many platforms that keeps fans up to date with events. Unfortunately, there is no such platform for the APL. Some students have come up with a writers group whose aim is to serve the school with APL news. Teams also have people who provide students with team news. The only medium available for these news and updates to reach students is webmail. The aim of this project is therefore to provide a platform that will not only allow news to reach students and the world but will also encourage student participation. Students' participation will include the ability to predict the outcome of games and also leave their comments on news articles.

## **1.2 DESCRIPTION**

The project involves the development of a web and mobile application. This application will make available news, team updates, and game fixtures and also allow users to predict scores before games are played. Also, users will be given the platform to leave comments and make suggestions concerning

issues that might come up. It will give users opportunity to make predictions before games are played.

### **1.3 MOTIVATION**

Currently, there is no platform that is solely dedicated to the Ashesi Premier League. Most updates and news are sent via webmail. This limits the extent to which the league can be popularized. This is because it is limited to Ashesi students and other people who do not have access may never get to know about it. Also, some people depend on social networks like twitter to be updated with news, scores and general updates. These people follow the handlers created by the AFA and the respective teams. They are then updated by the information the account owners post as tweets. This limits information to only twitter users.

A growth in technology has made people move from using personal computers to mobile phone. This is what motivated the quest to create a mobile application for the APL. This will allow users to be updated no matter where they are and at anytime. The ability to comment, make predictions and leave suggestion will enhance student participation in the league. The application will allow other users to participate in the league. This will create awareness and might bring about sponsorships. Alumni who are interested in the league can also participate actively even after graduation.

Aside all the advantages of a mobile application, it is also important to create a web application. This will serve users who do not have the

opportunity to use high end phones. Also, in the event of a user working on his laptop, he can still remain actively involved in the league.

#### **1.4 OBJECTIVES**

- To create a mobile and web application for the Ashesi Premier League
- To create awareness of the Ashesi Premier League by encouraging user participation.
- To create a fun platform that will disseminate information to the Ashesi students and also allow them to air their views on the league.

#### **1.5 OUTLINE OF DISSERTATION**

Chapter One consists of the Introduction. This reveals the problem statement and the states the purpose of the project. It states the motivation behind the project and outlines the various objective that the project aims to achieve.

Chapter Two presents Existing Solutions and Literature Review. This chapter sheds light on the background of the project. Existing solution are discussed in this chapter. The gaps between the existing solution and the proposed solution are identified. The proposed solution is compared to the existing solution and then justified.

Chapter Three discusses how the project tackles the problem. It starts with a brief description of the project. Requirement specifications for the project are stated. Also, this chapter outlines the various user classes and their

characteristics. The operating environment is also discussed. Considering the specifications, user classes and operating environment, the development of the project is then discussed.

Chapter Four discusses implementation of the application. It discusses how the application is required to work. The section discusses the technologies that were implemented to ensure the development and correct implementation of the application. Various tests that are carried out are discussed and the result analyzed.

Chapter Five presents the conclusion and observations made. It also goes on to state recommendations for future work.

## **2.0 EXISTING SOLUTION AND LITERATURE**

Mobile technology started with just a device that could only make calls. Gradually, the mobile technology entered the short messaging service era. As technology continued to mature, the mobile devices were not left out. The mobile era is now characterized by the use of smartphones which functions exactly like a computer. It is relevant to know that in today's world most people are likely to browse the internet on their phone rather than find a computer. In addition to the smartphones, computers have been made portable in the form of tablets. The introduction of these devices allows users to have access to information regardless of their current location. Even though it is possible for mobile browsers to access website, it is not user friendly as these sites are mostly too wide to fit on the small screens of these devices. Users will have to deal with scrolling and moving the screens around in order to view normal sites on these devices. Aside the normal websites, it is therefore important to have a mobile presence in the form of mobile application or mobile web application (mobile website).

### **2.1 WEB APPLICATION**

This comes in two forms. The first is a normal website that can be viewed by any browser regardless of the device. It is however convenient to view such pages on devices with large screens like desktops or laptops. The second form is mobile web application. This can alternatively be called a mobile

website. A mobile web application is similar to a normal website. It is made up of HTML pages that run on browsers, in this case mobile browser. Just like any other website, these mobile websites need internet connection to run and have the ability to display all contents just like normal websites. The main feature that differentiates mobile websites from other sites is the fact that mobile sites are created to fit on small handheld devices. - Mobile web applications may have backend databases from which information is retrieved and displayed to keep the service running.

## **2.2 MOBILE APPLICATION**

The other side of mobile technology is mobile application. They are not run via web browsers but are directly downloaded to a user's device. Depending on the use of the application and how updated it needs to be, mobile application can run via the internet or can download and install all necessary libraries along with the application itself. The latter needs no internet connection and can run on its own.

## **2.3 MOBILE APPLICATION VERSUS MOBILE WEB APPLICATION**

Considering the current trend in technology, there is no doubt that the world is moving more towards mobile. Most entities owning normal websites are also including a mobile version in order to reach a wide range of people. As

mentioned above, mobile version can either be an application or a web application designed for mobile devices. The underlining question is which one is more appropriate. According to Jason Summerfield (Summerfield), the choice between a mobile application and a mobile web application is heavily guided by the goals of a developer. In the article he argued that it will be advisable to develop a mobile application if the goal is to create an interactive platform for users that does not need internet connection. On the other hand, if the goal is just to give a site mobile presence, then a mobile website with a backend database can be created. This makes it a mobile web application and it will function exactly as a regular mobile application. Even though mobile applications encourage regular usage, it is important to note that they can be deleted and update of an application will be delayed until the user downloads the latest version. A mobile web application on the other hand, can be updated easily and is free from any form of deletion as no user has that control. Also, it is possible that a user may not even visit a website.

In my opinion, it is relevant to have a web application and a mobile application. This is because it will increase usage of the application in general. A web application that has a desktop and a mobile view will serve users who are on the go and also users who are sitting behind their desktops or laptops doing work. A mobile application will also appeal to the youth and increase usage and participation.



## 2.4 SOCCER AND TECHNOLOGY

Like all other areas, sports, specifically soccer has been affected by the rapid growth of technology. This is not only evident in the equipment and other innovations like the goal-line technology but also in how fans access game information. The world has moved from an era where soccer fanatics had to be glued to their seats in order not to miss a match. Even though some people prefer to watch soccer games live on a television screen, those who do not get to watch these matches do not really miss much. One way this is made possible is through the use of mobile technology.

As the use of mobile phones increase in popularity, researchers and developers are coming up with innovative ways to make these handheld devices more useful. In relation to soccer, many of the world renowned clubs and sports channels are not limiting themselves to just mobile websites but are developing mobile applications that will keep fans and users updated with the latest news on various leagues. An article on soccer by The New York Times listed a number of applications that were preferred by soccer fans. They are MLS Match Day, Watch ESPN, Fox Soccer2Go, inSoccer, 365 Scores and Twitter. Live streaming, news update, fixtures and live scores are the main characteristics that the applications have in common (Bell, 2013) . The main aim of these applications is to increase user participation by finding alternative means to ensure that they do not miss out on anything.

Aside these applications that are developed by individuals and news channel, some Soccer clubs have an official mobile application that allows them to actively connect with their fans. Two of such teams that have been successful are Real Madrid and Everton. MyMadrid, the Real Madrid application gives fans the opportunity to follow games and receive updated news about the club. The club uses this channel to communicate with its fans. The application has been downloaded by 115,000 fans. The use of mobile has not only enhanced fan engagement but has also increased Real Madrid's income by significant margins in three years. (Duarte). This is because the application does not only disseminate Soccer news but also serves as a marketing strategy to sell game tickets and other club paraphenelia. Another team that is taking advantage of the mobile era is Everton. The club launched EvertonMobile in 2006 as a means to interact with fans no matter their location. Over the years, the application has been upgraded to serve more customers with interesting features like text alerts, animations and videos. (Smith) Unfortunately, the soccer clubs in Ghana have not taken advantage of the mobile evolution.

## **2.5 FEATURES OF EXISTING SOLUTION**

The APL has a website, The Green Grass Sport which was intended to feed fans with information. In my opinion, the official site of the league has not achieved its purpose as most people do not even know about it. Also, the

website is not complete as some features remain under construction. Other means that students have employed to disseminate news include the use of email. Match reports and news are sent through outlook to the whole student body. This serves its purpose to some extent. Unlike the website, people know about this platform, dubbed the Red Express since every student owns an email account. However, the mails containing the Red Express sometimes get lost in piles of messages in inboxes and are never read.

#### The Features of Green Grass Sport

- A website with a desktop and mobile view
- About Us : This segment is yet to be developed and displays the statement, "coming soon".
- The Teams: This segment is yet to be developed and displays the statement, "coming soon".
- Latest APL transfer gossip: This is to disseminate news on the move of players from one team to another. It is not very active and has just one post since creation.
- League Table: Displays the league table for the league.

#### The features of Red Express

- This is in a form of a newspaper that is sent by email.
- It features the league table for the league.
- It includes news articles concerning the league.

This project aims at providing a platform that is solely dedicated to the APL. This project will provide a platform that cares for both desktop and mobile views. It will ensure a regular update of the site with the latest news about the league. Unlike the available platforms, this project will give students the opportunity to view fixtures and also predict the outcome of the game. This alongside allowing students to leave comments on news article will encourage student engagement with the league. I believe it is a fun way to ensure that students play an active role in the league. Also, the prediction feature is a way to take all the arguments that go on before a game and present it in percentages in order to determine who is likely to win according to the fans of the league.

Considering the proliferation of mobile phones, it will be advisable to have a downloadable mobile application aside the desktop and mobile web application. One pitfall of the Green Grass Sport is the fact that it is not known among the student population. Hence, it is not highly patronized. In regard to this, it is important to develop a way to inform and make the application popular among the student population. To achieve this, a similar strategy to the dissemination of the Red Express shall be adopted. Information about the application and links to download its mobile component will be posted via e-mail. This method is chosen because every student has an account and it is the first means of contact to the whole community. This is the main reason why most people know the Red Express

as compared to the Green Grass Sports. However, unlike the Red Express, the application will be more interactive. The project will bridge the gap between the Green Grass Sports and the Red Express by providing an interactive application that will be popular among students.

### **3.0 SOLVING THE PROBLEM**

The project aims at bridging the gap between the two platforms that disseminates news about the league to the student population through the creation of a web application and a mobile application. This application will not only feed the student body with news but also allow some user input. This will be in the form of comments and prediction before game. As it is common to soccer, most people argue about who they think will win a game. The application will give students the platform to air their views concerning a game. This views will then be made public as a form of opinion poll to the student community before a game is played and the outcome is known. The application will keep students updated with fixtures and other news concerning the league.

#### **3.1 FUNCTIONAL REQUIREMENT**

- The user should be able to login and authenticated.
- The user should be able to view match fixtures.
- The user should be to view posted news articles.
- The user should be able to comment on news articles.
- The user should be able to view uploaded pictures
- The user should be able to predict the outcome of games
- The user should be able to view outcome of matches
- The administrator should be able to add fixtures
- The administrator should be able to edit fixtures

- The administrator should be able to delete fixtures
- The administrator should be able to add and edit news.
- The administrator should be able to add and delete a team.

### **3.2 NONFUNCTIONAL REQUIREMENT**

**Usability:** The application should be easy to use. Users should be able to navigate through the pages without any difficulty. The language used by the application should be basic and understandable to all users.

**Availability:** Users should be able to access the application no matter the platform used and their location. Users should be able to access the application at any given time.

**Performance:** The application should have a moderate to high performance rate. It should not take a long time to load or refresh. All functions should execute correctly and timely.

**Compatibility:** The application should be able to run on different platforms. The application should have a desktop view and a mobile view for handheld devices. Downloadable mobile application should be able to load on devices that run it base operating system with little error. It should be able to run amicably with other devices.

**Maintainability:** The application should easily be modified. It is important for the application to have the ability to adapt to change. The application should be able to adapt to the dynamic changes of technology and user demands.

Security: The application should be very secured and have the ability to authenticate users. The application should be able to display the right view for the appropriate user.

### **3.3 USER AND CHARACTERISTICS**

Considering the above stated requirements, two classes of users, namely, the administrator and the regular user are needed.

#### **3.3.1 The Regular User**

The regular user refers to the students who will want access to news concerning the league. The main purpose of the application to this class of users is to publish fixtures, news articles and team information. They also have the option of predicting games before they are played. This class can be sub divided into two groups:

- The desktop user
- The mobile user

The web application should have a desktop view. This will actively serve the desktop user. It is important because it will allow users stay in touch with the league while attending to other academic work.

The second sub class of the regular user is the mobile user. Most students will fall in this category. This due to the proliferation of mobile devices. The



web application will have a mobile view to serve the students who will want to access the application through their mobile browser. Also, the application will have a mobile application which can be downloaded and used by students. This application will have the same features as the web application and serve the same purpose.

To ensure security and data consistency, the regular users will have limited access to the application. They will not be allowed to make certain changes to the application. Student input will be limited to leaving comments and making predictions.

### **3.3.2 The Administrator**

Administrator privileges will be given to students who will manage the application. These students will be responsible for updating the database and hence the application with news regularly. They will perform functions like add and edit news, add and edit fixtures and add and edit teams. This view will be secured with a password that will be known only by these selected students.

### **3.3.3 OPERATING ENVIRONMENT**

The application is web based with some mobile components. The web application has a desktop view and is mobile friendly. The mobile application is built on the Android platform and J2ME platform.

## **3.4 HOW THE PROBLEM WAS SOLVED**

### **3.4.1 DATABASE AND RELATIONS**

In my quest to create the application, I went ahead to create various relations in phpmyadmin. The purpose of these relations is to hold the data that might be inputted by students or data that might be requested by students through an action. Some of the relations created include users, news, fixtures and teams. A list of the relations created can be found in the appendix attached to this document.

### **3.4.2 MOBILE WEB APPLICATION**

After considering the requirements, the user classes and the operating environment, I set out to develop the application. My first approach was to develop the regular user view. This is the view that most students will have access to. I started this by writing out the various functions that will communicate with the server. The language that was used is the Hypertext Preprocessor (PHP). The functions that were written include the registration function which allows new users to register for the application. All details provided during registration is saved into a database. Among the questions asked, a student is given the opportunity to submit his team preference and a password. The password and a username is used to authenticate users in a login function.

Upon logging in, the fixtures concerning the student's preferred team along with other information are displayed to the student. Also, when a user logs in, a session is started. Certain variables are stored as session variables to authenticate students as they navigate through the pages of the application. To cater for users who might open the application through their mobile browser, the mobile version of the above is created.

### **3.4.3 THE MOBILE APPLICATION**

Two java based platforms were chosen to create the mobile application. They are android and J2ME. Android platform targets the smartphone users while J2ME aims at feature phones. This will allow the mobile application reach a wide range of students. In creating the application for both platforms, scripts were written to communicate with the server. It is necessary to create the script because the mobile application on both platforms will communicate with the server in order to deliver information to students. Both platforms connects to the server via HTTPconnection.

Just like the web application, it is necessary to save a session when a user logs in for the first time. Also, for a mobile application it is more convenient for a session to be saved to prevent the student from logging in each time he desires to use the application. However, this is only necessary for the android application since the J2ME application is limited to displaying information and does not require user interactions.

It was discovered that this could be made possible on android through the use of shared preferences. Research was carried out to determine how this could be implemented and implementation was attempted. This initially produced errors. After a few more tutorials, it was possible to save the values in shared preferences. Unfortunately, it was impossible to retrieve the values in the next activity. Bundles were then used to pass and retrieve values which in this case are the `userId`. This is a snippet of the code used to save the value in shared preferences:

```
SharedPreferences.Editor editor = pref.edit();  
    editor.putString("userid", result);  
    editor.commit();
```

Intent

intent=**new**

```
Intent(LoginActivity.this,HomeActivity.class);  
    b.putString("id",pref.getString("userID", result));  
    intent.putExtras(b);  
    startActivity(intent);
```

This is the code I used to retrieve the passed `userID`. I used a toast to confirm its presence

```
Bundle b = this.getIntent().getExtras();  
    String s=b.getString("id");  
    Toast.makeText(this, s, Toast.LENGTH_LONG).show();
```

This was also not very effective. After a few more tutorials, the singleton method was used. This allows a particular variable that will be needed in other activities to set and then called when needed. The userID and game ID were then set and stored when a student leaves a comment for a news article or predicts a game. This is the snippet of the singleton class that was created:

```
public static class Singleton {  
    private static Singleton instance = null;  
    protected Singleton() {  
  
    }  
    public static Singleton getInstance() {  
        if(instance == null) {  
            instance = new Singleton();  
        }  
        return instance;  
    }  
  
    private String userId;  
  
    public String getUserId() {  
        return userId;  
    }  
  
    public void setUserID(String id) {  
  
        this.userId = id;  
    }  
  
    private String gameId;  
  
    public String getGameId() {  
        return gameId;  
    }  
  
    public void setGameId(String id) {  
  
        this.gameId = id;  
    }  
}
```

```
} }
```

This code snippet shows how the `userId` was set. This allows the `userId` to be stored in the variable `"LoginActivity.c"` and can be called in any activity

```
Singleton uid =new Singleton();  
uid.setUserID(LoginActivity.c);
```

This code snippet demonstrates how the `set userId` is called in another activity:

```
task.execute(new  
String[]{"http://10.0.2.2/APLAPP/andPredict.php?userID=" +  
LoginActivity.c+"&gNumber="+FixtureActivity.sgNumber+  
"  
"&HomeTeam="+URLEncoder.encode(h)+"&homeScore="+URLEncoder.  
encode(txt.getText().toString())+  
"  
"&AwayTeam="+URLEncoder.encode(a)+"&awayScore="+URLEncoder.  
encode(txt1.getText().toString())+  
-  
"  
"&Formation="+URLEncoder.encode(rButton.getText().toString()  
)+  
"&LineUp="+URLEncoder.encode(rButton2.getText().toString())});
```

Like the web application, the mobile application uses the scripts written to fetch and display information to the user.

### 3.4.4 THE ADMINISTRATOR

To test the user view, data was manually added to the database through `phpmyadmin`. It was observed that it was necessary to have an

administrator view. This view will allow an administrator to make changes and update the database. The administrator bears the responsibility of managing the content of the application by adding and editing information in the database. In the login script, a clause was included which identified when the administrator logs in. It then redirects the user to the administrator page. The page displays the various functions the administrator can perform. AJAX was used in the beginning to avoid the page loading anytime a function was clicked but this produced a lot of errors especially when JavaScript was added. AJAX was therefore used to load some pages and redirected others depending on the function that was clicked.

#### **3.4.5 CSS DESIGN**

Creating functions without appropriate user interface is worthless. After creating the script, it was deemed necessary to create a good interface especially for the regular user view. To test the functions, a simple page with a div and some colors was developed. This interface was however not attractive. In the quest to build a better interface, twitter bootstrap, a CSS and HTML based framework which helps with user interface design was used. This attempt was unsuccessful as the framework as time was a limiting factor considering the fact that there is the need to learn how the framework is used. After a few research, a web template from CssTemplateHeaven was used. The template was chosen because it fitted

perfectly with the objective of the project.. The template was edited and hyperlinks were used to connect various pages. The CSS however could not cater for the mobile view of the web application. A simple interface from what was discovered during research was built. This interface is appropriate for mobile devices and allows users have a similar experience as the desktop view.



## 4.0 HOW THE APPLICATION WORKS

### 4.1 WEB APPLICATION

The application allows a new user to register and an existing user to login. After a new user registers, he is then presented with the login page. A student who is authenticated during login has his userID and the team of his choice which he specifies during registration saved as session variables. After logging in the student is presented with the index page that has links to all the other pages. The team of choice is passed to the index as a variable and this allows it to display the first three upcoming fixtures for the team of choice. From the index page, the student can visit other pages based on his desire. This can be achieved by clicking on the various hyperlinks as they are clearly labeled to enhance usability. On each page, the student has an option to logout. This destroys session and redirects the student to the login page.

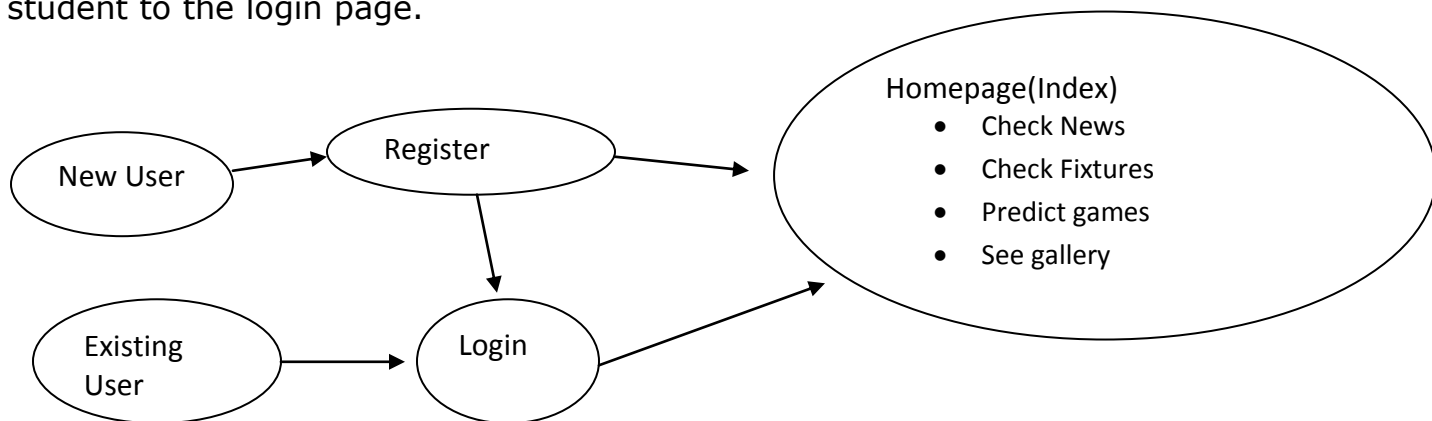


Figure 1: Shows a flow of activity for a user

## FEATURES

### Home

This feature brings the student to the index page which is the homepage of the web application. It presents the student with a page that holds hyperlinks to the various pages of the web application. These pages are labeled with their corresponding actions to make navigation of the application easy. Figure 2 shows a screenshot of the homepage

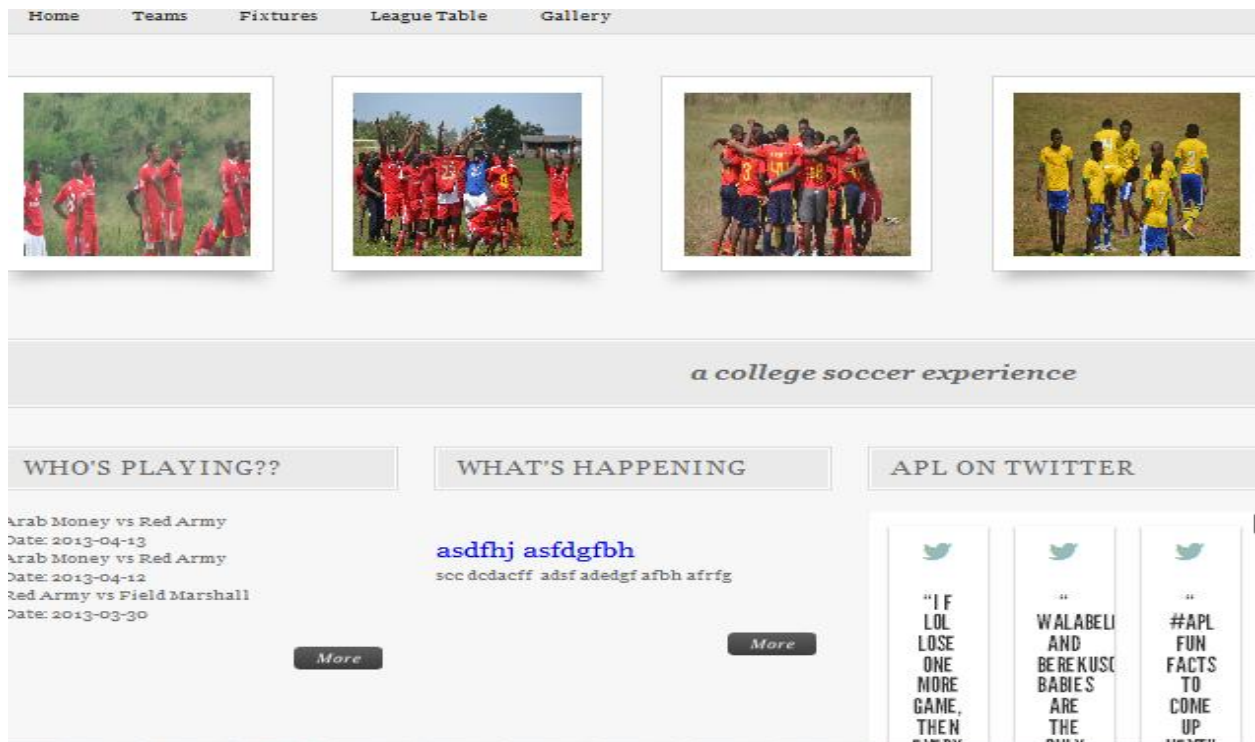


Figure 2: A screenshot of the homepage of the web application

## **Teams**

This feature allows the user to navigate to a page where all teams participating in the league are displayed. A student also has the option of clicking on a particular team to display information about the team. Upon clicking on a particular team, a student gets access to all fixtures concerning the team. The fixtures are tagged as either pending or played to inform the student about the status of the game.

## **Fixtures**

This feature allows the student to view all games that are yet to be played. The student has the option of predicting the outcome of the games displayed.

## **Predict**

This feature allows users to predict the outcome of game. It also shows the user opinion polls. Aside that, the user is also allowed to propose a lineup that will be used by his proposed winning team or the team he supports among the two teams playing.

## **What's Happening**

This is a news feature of the application. It displays the most current news on the homepage. It has a button, 'more', that allows the reader to read and comment on the current news. The button does not only allow the current news to be read but also display other news heading in a side bar.

### **APL On Twitter**

This feature displays tweets by the various twitter handles that concerns the league. It is limited to display tweets from the various handles. Users are not allowed to tweet


### **Who's playing**

This feature shows three of the most recent games that are yet to be played by a student's team of preference on the homepage.

### **League Table/Table**

This feature shows the league table. The league table shows the current standings of all teams participating in the league

Logged in as Huberta [logout](#)



### ASHESI PREMIER LEAGUE

Pos	Team	P	W	D	L	Gf	Ga	Gd	Pts
1	LOL	10	6	3	1	25	15	10	21
2	Arab Money	10	5	3	2	18	21	-3	18
3	Walabele	10	4	4	2	20	15	5	16
4	Brekuso Babies	10	3	5	2	20	17	3	14
5	Red Army	10	3	2	5	17	20	-3	11
6	Field Marshall	10	2	3	5	15	25	10	9

[home](#) | [news](#) | [teams](#) | [fixtures](#) | [table](#) | [gallery](#)



Figure 3: A screenshot of the mobile view of the web application showing the league table

### Gallery

This feature presents the league in pictures. It gives a student access to pictures taken during matches.

## **Archives**

This gives the student access to past news concerning the league. It has tabs for all the months. These months are hyperlinks that lead to a list of news items for that particular month.

### **4.2 MOBILE APPLICATION**

Just like the web application a new user needs to register before he logs in. An existing user however is allowed to login. The student is presented with a list of well labeled actions that can be executed. Depending on what the student desires, he can click on the various actions listed.

#### **4.2.1 ANDROID**

Just like the web application a new user needs to register before he logs in. An existing user however is allowed to login. The student is presented with a list of well labeled actions that can be executed. Depending on what the student desires, he can click on the various actions listed. Also, the student can click on the menu button on the android device. This pulls out another list of well labeled actions that can be carried out. The actions are labeled according to their purpose to enhance usability and easy usage of the application.

## FEATURES

### Home

This feature brings the student to the homepage of the android application. It presents the student with a page that has tabs which provides links to the various pages of the application. These tabs are labeled with their corresponding actions to make navigation of the application easy. Also, the homepage automatically opens the news tab and displays the various news headings. A news heading can be clicked to display the news content

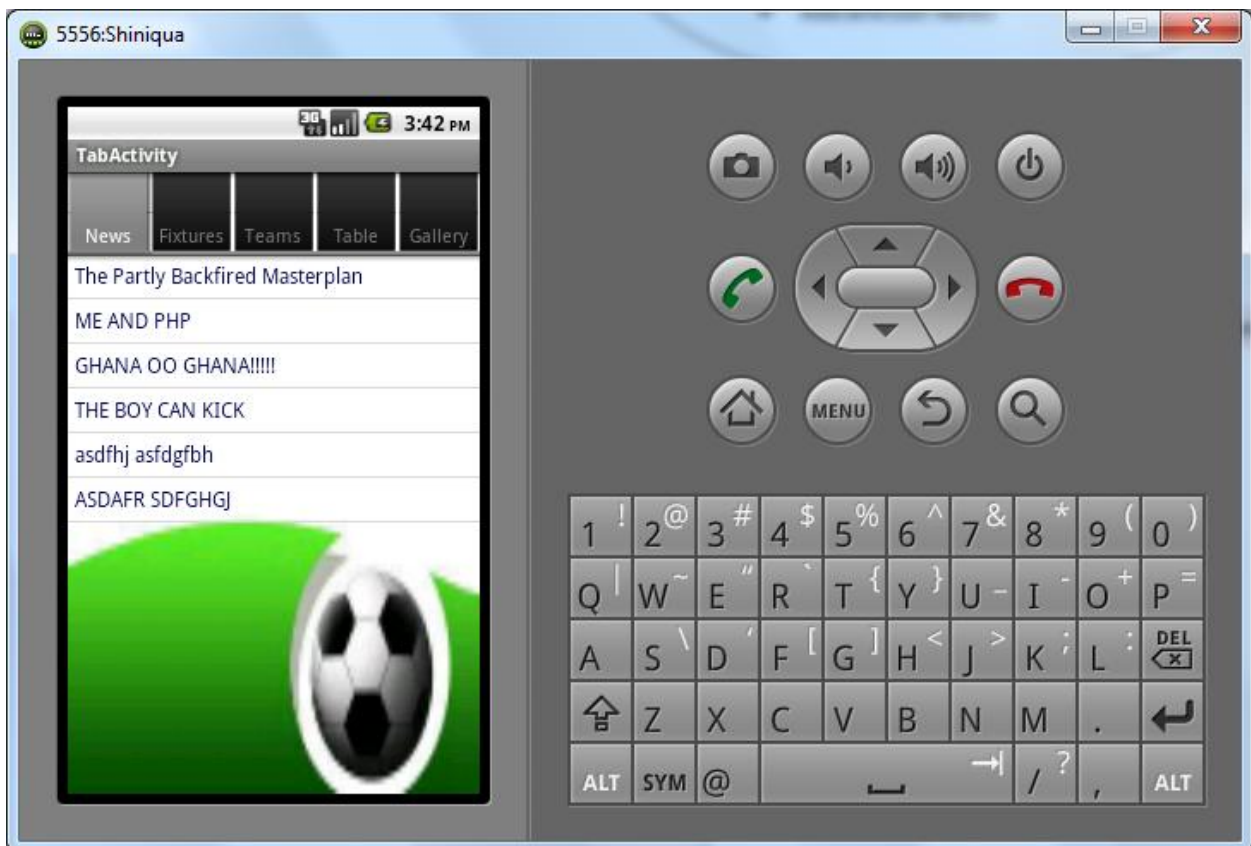


Figure 4: A screenshot of the android homepage

## **Teams**

This feature allows the user to navigate to a page where all teams participating in the league are displayed. A student can click on a particular team to display information about the team.

## **Fixtures**

This feature allows the student to view all games that are yet to be played. The student has the option of predicting the outcome of the games displayed by clicking on it.

## **Gallery**

This feature shows the league in pictures. It gives a student access to pictures taken during matches.

## **Check Prediction Status**

This feature allows the student to check his prediction ability based on the number of correct predictions he has made. A student should have made at least five right predictions to get a positive feedback, otherwise, he gets a negative feedback.





Figure 5: A screenshot showing a negative result for a user's prediction status

### Search

This feature allows the student to search for news articles by typing a key word. The main purpose of this is to ensure that a student can search for specific team news by typing the team's name.

### Games Played

This feature allows the student to check all games that have already been played. The student can then click on a game to reveal all students who made predictions for the game and whether they were wrong or right.

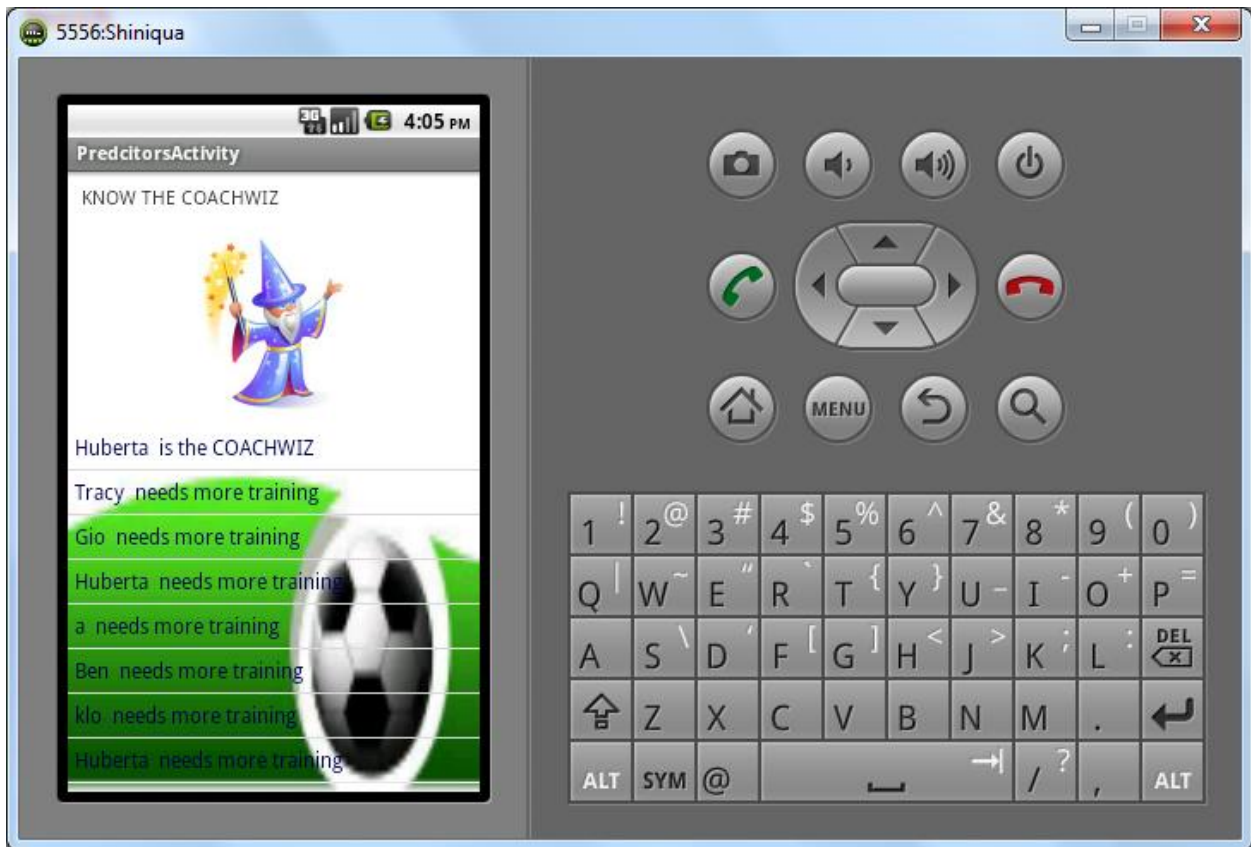


Figure 6: A screenshot showing the predictors of particular game and the outcome.

### See Team Fixtures

This feature allows the student to view the names of all participating teams. Upon clicking on a team, the student can view all fixtures for that particular team. This includes games that are yet to be played and the outcome of games that have been played.

### League Table/Table

This feature shows the league table. The league table shows the current standings of all teams participating in the league

### **4.2.2 J2ME**

The J2ME application is targeted at students who will like to mainly retrieve information but are not necessarily interested in any form of engagement like the predictions. This application is therefore limited in functionalities. It does not require a user to login or register but readily displays news and fixtures to the student.

### **FEATURES**

#### **Home**

This feature brings the student to the homepage of the J2ME application. It presents the student with a page that shows a list of all the features of the application.



Figure 7: A screenshot showing the homepage for J2ME

## Read News

This feature redirects the student to a page that the headings of all news articles. Upon clicking on an article, a student can read the content of that particular news.



Figure 8: A screenshot showing an open news article.

## **See Fixtures**

This feature allows the student to view all games that are yet to be played.

## **Teams**

This feature allows the user to navigate to a page where all teams participating in the league are displayed. Since the main aim of the J2ME application is to display information, a student can click on a particular team to display information on the team's fixtures. This will show games played and games that are yet to be played

### **4.3 THE ADMINISTRATOR**

The administrator has to log in to be directed to the admin page. This page is just a simple page that has the list of all the actions an administrator can evoke. Upon clicking an action label, the administrator is able to make changes to the database. Some of these actions take input from the administrator. These inputs are well labeled according to their requirement. This is to make the application easy to use.

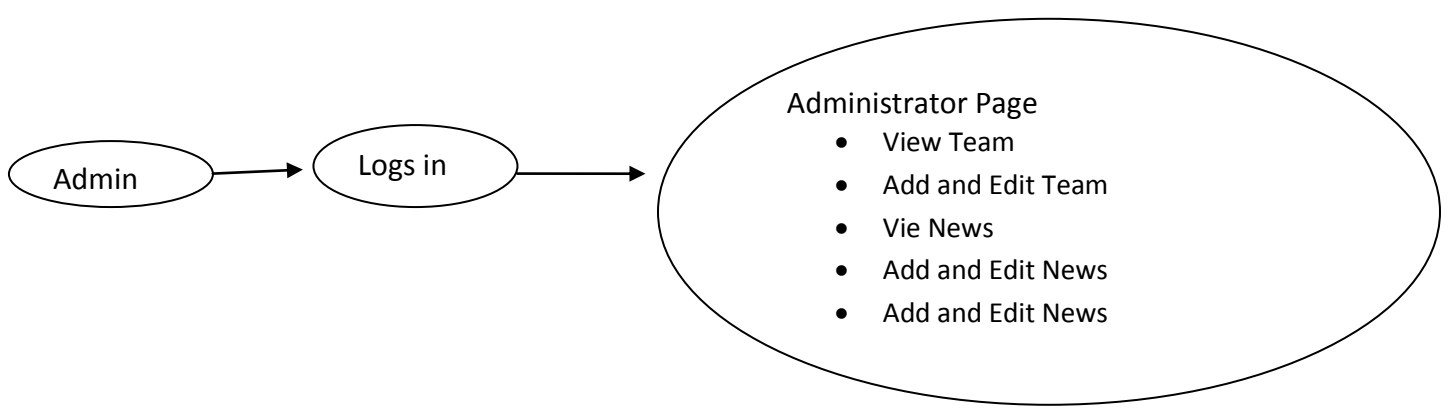


Figure 9: Shows the flow of activity for the administrator view

## FEATURES

### View Fixtures

This feature allows the administrator to view all fixtures in the system. Upon clicking it, it also reveals a link that allows the administrator to add fixtures. Games that are yet to be played have a link that allows the administrator to edit them in the event of an error. Also, they have a link that allows the administrator to add scores after the game has been played. Upon doing this, the status of the game changes to played and the fixture is no more editable. The administrator can only view the scores of games that have been played. Fixtures can also be deleted by the predict link.

### View News

This feature displays the headings of all news articles to the administrator. It also reveals a link that allows an administrator to add news articles. All the headings have a View link that allows the administrator to view the content

of the news. Upon viewing the news content, the administrator has the option to edit the news content.

### **View Teams**

This feature allows the administrator to view the list of all participating teams. The administrator can also delete a team from the system when the team is no more in existence.

### **Add Teams**

This feature allows the administrator to add a team to the league upon its creation.

### **Upload Picture**

This feature allows the administrator to upload images to the gallery. This saves the image in a file on the server and the path saved in a database.



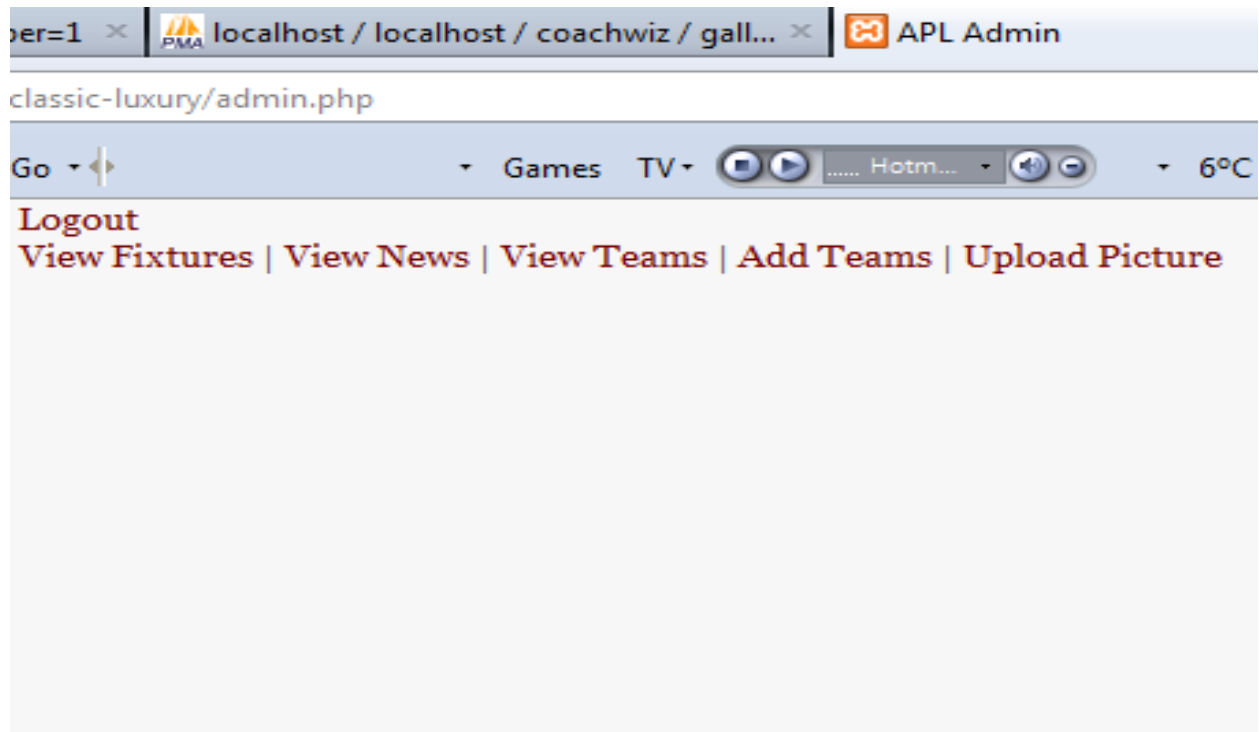


Figure 10: A screenshot showing the administrator panel

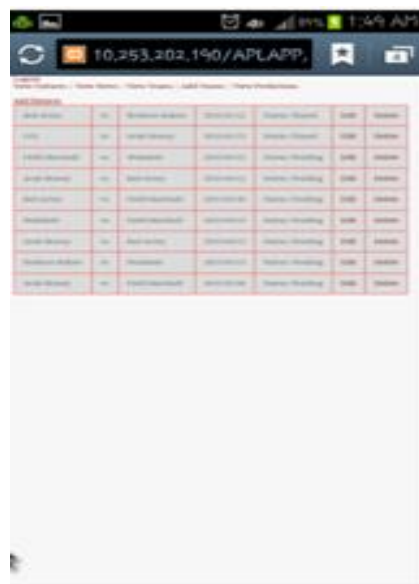


Figure 11: A screenshot of the administrator view of fixtures on an android phone.

## **4.4 TOOLS USED FOR DEVELOPMENT AND IMPLEMENTATION**

The tools used for development were selected based on familiarity and ease of use. They are:

### **HTML**

This is also known as Hypertext Markup Language. It is a language for client side scripting. Its main purpose is to tell the browser how to display web pages during web development.

### **PHP**

This is also known as Hypertext Processor. It is a language for server side scripting. Its main purpose during web development is to ensure that interaction with the server is possible. This language was used a lot throughout the development of the application. This is because the application involves a lot of interactions with the server as all information are either submitted to the server or retrieved from the server.

### **MySQL**

This is a relational database management system. Its ability to handle large amount of data and my familiarity with it influenced my choice. All my relations were saved on this server. It enabled me to run many test queries.

### **XAMPP**

This is a web service that is made up of APACHE HTTP server, PHP interpreter and MySQL database. This was chosen because it is able to run

locally on my machine. Also, it is suitable for this project because PHP is the chosen server-side scripting language and MySQL is the desired database.

## **CSS**

This is known as Cascading Style Sheet. This was used to arrangement elements on the web pages to produce an attractive user interface.

## **JSON**

This is known as JavaScript Object Notation. This was used in some of the scripts as it made it easier to display certain elements in the android application.

## **4.5 TESTING**

To evaluate how effectively the application works, it was subjected it to certain tests.

### **4.5.1 DEVELOPMENT TESTING**

This was mostly conducted during the development phase of the application. The purpose of this was to ensure that all functions do exactly what they were intended to do. This test was mainly conducted by me. Since I had knowledge on what the functions should do and how the application should serve students, I assume the role of a user and test out the functions after implementation. If a particular function does not serve its purpose correctly,

I identify the problem and then solve it before moving on to the next function.

#### **4.5.2 REQUIREMENT TESTING**

This method of testing was done against the list of requirements that were stated at the beginning of the application development. This test is to ensure that the application satisfies all the requirements mentioned. It is necessary to run this test as it will help determine if the application is serving its purpose effectively.

#### **4.5.3 COMPATIBILITY TESTING**

The purpose of this test is to ensure that the application behaves correctly on multiple platforms. For this reason, I ran the application on Mozilla FireFox and Google Chrome to evaluate its performance on both platforms. I chose the two platforms because they are highly used and preferred by the students of the Ashesi community. The web application was also tested in a mobile browser to determine how it displays.

#### **4.5.4 CORRIDOR TESTING**

This testing involves allowing potential users to try out the application for feedback. The feedback gathered during this testing are then used to

improve upon the application. The prospective students are therefore made to use the application with little guidance except the objective of the application. Feedback is then gathered and use as reference to better the application.

#### **4.6 TEST RESULT ANALYSIS**

The web application displays perfectly on both Mozilla FireFox and Google Chrome. However this was not the case for the mobile view of the application. When tested on certain devices, the interface shrinks and does not fill up the screen. This can be attributed to the fact that the div size was specified without consideration to the different screen size available. Apart from the layout, all functions work well.

Students who conducted the corridor testing were able to easily navigate through the various pages of the web application. They attributed this to the good labeling of the various actions. This allowed them to identify what to click depending on what exactly they want to do.

Development testing of the mobile application revealed that a user session was not necessarily being maintained on both the Android and J2ME platforms. A user will therefore be required to login anytime he opens the application.

## **5.0 OBSERVATION, CONCLUSION AND FUTURE WORK**

Besides the observations made during testing, the application works well and satisfies its main objective of disseminating news and information concerning the league. It is evident that the project serves its main purpose which is to create a platform that will effectively disseminate news about the Ashesi Premier League. It effectively provides a better alternative to the existing solution.

The development of this application introduced me to a lot of new concepts in the field of mobile technology. Apart from the Ashesi Premier League, I have come to the conclusion that it is essential to extend the use of mobile technology to other businesses as it widens the scope for the target audience. Through the use of mobile technology, any business can reach a large range of prospective consumers. However, it is essential to also maintain the traditional desktop view for web application. This is important because it will allow users of an application have access to it no matter their location and the device they use.

Currently, this application developed by this project targets the Ashesi students specifically. It therefore presents an opportunity that can be built upon. This application can be upgraded such that its user group will include alumni, other non-Ashesi students and faculty who would like to follow the league. Also, the application can be add features that allow the user connect with the school electronic mail account so that students can also receive

information concerning other events in the school. Finally, the application can also be upgraded such that students are allowed to choose another favorite league they will like to follow. This will create a platform that will not only disseminate news about the Ashesi Premier League but will give the Ashesi student an opportunity to reach information about the his choice of league will still connected to his school mail account. Due to the prediction feature, this can also serve as a data source for a future data mining project for predicting matches.

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## APPENDIX I

### DATABASE

To build the application the following relations were created:

- Users
- Teams
- Fixtures
- News
- Comment
- Predictions
- Gallery
- League

#### Users

This table records details of all student when the register to use the application.

Column	Description
ID	PrimaryKey, Records user id
Fname	Records user firstname
Lname	Records user lastname
Age	Records user age
Gender	Records user gender
Occupation	Records user occupation

Location	Records user location
Experience	Records user level of soccer experience
prefTeam	Records user favourite team
Password	Records user password

## Teams

This relations holds data for all teams participating in the league

Column	Description
tNumber	Primary Key, Auto Increment, Records the team number
Logo	Records the logo of the team
Name	Records the name of the team
Description	Records team description

## News

This relation holds data for news articles

Column	Description
nNumber	Primary Key, Auto Increment,Records news number
Heading	Records the heading of news article
Summary	Records the summary of news article
Content	Records the content of news article

Date	Records date created
------	----------------------

## Gallery

This relation holds the pictures for the league

Column	Description
number	Primary key, Auto Increment, Records game number
image	Records Image path
date	Records the date of creation

## Predictions

This relation holds predictions by users.

Column	Description
userID	Foreign key from user table
gNumber	Foreign Key from fixtures table,Records game number
HomeTeam	Records the the team playing home status
homeScore	Records the score of home team
AwayTeam	Records the the team playing away status
awayScore	Records the score of away team

Formation	Records the proposed formation
LineUp	Records the whether the user has knowledge of lineup the team will use

## Comments

This holds students comments on news articles.

Column	Description
nNumber	Foreign Key from news table,Records news number
userID	Foreign key from user table
Comment	Records user comment

## League

This holds data on game outcomes in other to generate a league table.

Column	Description
teams	Records name of teams
played	Records the number of games played
win	Records the number of games won
draw	Records the number of games drawn
loss	Records the number of games lost
gf	Records number of goals scored
ga	Records number of goals conceded

gd	Records goal difference
points	Records the points accumulated by team

## APPENDIX II

### DEFINITIONS AND ACRONYMS

PHP – Hypertext Preprocessor

HTML – Hypertext Markup Language

CSS – Cascading Style Sheet

AJAX – Asynchronous JavaScript and XML

HTTP – Hypertext Transfer Protocol

SQL – Structured Query Language

J2ME – Java2 Micro Edition

JSON – JavaScript Object Notation

Fixture – This refers to a scheduled game in soccer.

League – This refers to a scheduled game in soccer.

LineUp – This refers to the arrangement of players on a field for a specific match.