LIVE SCORE APPLICATION DEVELOPMENT FOR FLAG FOOTBALL BASED ON ANDROID

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ABSTRACT

Flag Football is a variation of American Football. There are several differences between Flag Football and American Football, but the most basic is the tackle technique that is replaced by a technique called deflagging. There is no score information or other match details that are informed directly making many of the Flag Football followers / lovers late to receive or even do not know the information. Based on these problems, an analysis has been carried out to determine the needs to build the Flag Football Live Score application. Based on the results of the analysis, the Flag Football Live Score application must have the functionality to be able to accommodate all information relating to Flag Football activities. The application built also includes statistical data collection for each player competing. Methods for processing statistical data using the SAW (Simple Additive Weighting) method. The construction of this football flag application uses the Waterfall software development model. The tools used in the preparation analysis use the Unified Modeling Language (UML). The testing of the football flag application uses blackbox and direct observation of the ongoing flag football match. Based on the results of the test, it can be concluded that the live score flag football application can accommodate all information related to football flag activities that includes information on the schedule, scores and player statistics.

Keywords: Flag Football, Android, Live Score, Simple Additive Weighting, Statistic

1. INTRODUCTION

Flag Football is one variation of American Football. The analogy, Flag Football can be said as a futures American Football. There are several differences between Flag Football and American Football, but the most basic is the tackle technique that is replaced by a technique called deflagging. In an American Football match, the ball carrier is declared "down" and the game stops when the defender or defender manages to tackle the ball carrier until his knee or hand touches the ground. In Flag Football, the ball carrier is declared "down" and the game stops when the defender succeeds in pulling out at least one flag attached to the waist of the ball carrier [1].

In Indonesia, the Flag Football league is held by each IFFA region (Indonesian Flag Football Association), where each league is divided into two classes, the minor league (Minor League) and the major league (Major League). Every team that competes in both leagues must be registered to IFFA. Registered teams can be professional teams or established teams from schools or universities extracurricular. Flag Football was so popular in 2012 and so many registered teams. So in the next year, the flag football league was divide into 2 type of league. The criteria for class division are very simple, each team that registered before 2011 will play the major league and each team that registers from 2011 will enter the minor league. Each season there will be a playoff match that determines whether the team will drop from major to minor or go up from minor to major.

At the beginning of each league, each team will be determined which team will fight against. This scheduling meeting was only attended by representatives of the teams that followed the league, so that the general public or the lovers of Flag Football were very limited to get the detailed information. Likewise, when a match is in progress, there is no score information or other match details informed to Flag Football followers / lovers directly, making many of the Flag Football followers / lovers late to receive or even do not know the information.

Based on the results of interviews conducted there are several problems that arise from various points of view. The problem experienced by the players is the difficulty in obtaining match information, this information is related to the preparation / training that will be carried out before the match is carried out and the match result information that is only informed by the team that is competing, so we have to check one by one each team account that wants known the results of the match. Another problem that arises for the officials of several teams that is felt to be telantnya information if there is a change in the match schedule caused by the information only infused with each team in the social media account.

The problem that occurs in the public is the lack of information about flag football because they have to look for information one by one on the social media accounts of the teams participating in the flag football tournament. This has an impact on the level of public interest in this sport, they think that this sport includes hard exercise.

Based on some of the problems that arise above, with the existence of an integrated application that can include all information about flag football. Some information that is needed and desirable is starting from the guide to playing Flag Football, detailed and realtime match information, news related to Flag Football and with the addition of player statistical information which aims to facilitate IFFA in selecting the best players aiming for the allstar team formation. With the application is expected to solve the problems that occur and help to facilitate the presentation of complete information for flag football activities, especially in the city of Bandung.

1.1 Purpose And Objectives
For various problems that arise, the researchers' intention in this final project is to build a Live Score application for Android-based Flag Football sports which also includes all the detailed information about Flag Football activities in the city of Bandung. While the objectives to be achieved in this study are:
1. Facilitate the community in finding all information regarding flag football activities in Bandung.
2. Providing a application to accommodate all information about flag football, especially in Bandung.

2. CONTENT OF RESEARCH
2.1 Flag Football
Flag Football is one variation of American Football. The analogy, Flag Football can be said as a futures American Football. There are some differences between Football Flag and American Football, but the most basic is the tackle technique which is replaced by a technique called deflagging (removing the flag from the opponent's body). In an American Football match, the ball carrier is declared down (the game pauses because the knee or hand carrying the ball falls on the ground) and the game stops when the defender or defender succeeds in dropping the ball carrier to the knee or hand touching the ground. In Flag Football, a ball carrier is declared "down" and the game stops when the defender (defender) manages to pull out at least one flag (flag) attached to the waist of the ball carrier.

The flag football game is played on a 80x50 yards field. This game usually played on a grass field, it can be an ordinary soccer field or other grassy field. As a delimiter, a barrier will be installed every 10 yards. The barrier usually using a traffic cone (a cone-shaped and orange road divider).

Every team that plays on the field must consist of 8 players. The division of the player's position is free to the team that plays according to what strategy they will use. The game will last for 2x20 minutes. Flag football matches consist of several sets. Each set is played, one team will act as an attacker (the team that attacks) and the opponent will act as a defender (the team that survives). The attack team will be given the opportunity to attack 4 times. When the attacker team has been down 4 times, the defender team will change the role of being the attacker, this rule will continue until the 2x20 minute period ends.

Flag football game using an oval shaped ball. The first ball holder when kick-off (the match starts) is that there is a player who plays a defensive lineman. The ball is held by attaching the ball perpendicular to the ground. The position of all players must be in the middle of the field. When the match whistle is sounded, the player holding the ball will give the ball to the player in the quarterback position that stands behind him by giving the ball past the underside between the two legs of the defensive lineman.

The next regulation is that in one attack opportunity, each team can only do one pass / move the ball counted from when the ball has been held by the quarterback. Passing the ball can be done by simply giving directly to other players or by being thrown to other players. The match will continue until anyone who has the ball holder has made it to the opponent's endzone area (the last 10 yards in the opponent's game area) and declared touchdown (goal in flag football). And if when the game is in progress the holder of the ball is successfully revoked the flag that is on his body then declared down (the game pauses because the knee or hand of the ball carrier falls on the ground) and continues to the next opportunity. The next opportunity will start in the area where the previous player has successfully deflagged (the flag is removed from the player's body).

2.1.1 History Of Flag Football
Flag football was originally named Touch and Flag Football. This sport was first played in the 1930s. Initially this sport was created by members of the United States military as their entertainment sport. Over time, in the span of 1960 to 1970, this sport was always held under the name National Collegiate Flag Football Championship which was regularly held every month at New Orleans University and attended by several universities at that time.

The first major competition was formed in 1988 by Mike Cihon and was named USTFL (United States Flag Touch Football League). The USTFL is the biggest competition in the United States which is always held in Orlando, in 2002 the competition held tunnels with 175 teams. In 1999, PFFL

(Professional Flag Football League) was formed and held until now.

In Indonesia, IFFA stands for Indonesian Flag Football Association, currently is the largest organization of flag football activities and the biggest football lovers in Indonesia. IFFA was established on February 14, 2009, as a continuation of the Indonesian Flag Football League which was vacuumed since 2001. At present the IFFA already has permanent management and quite a number of members. IFFA has management in Jakarta, and plays at Hockey Field Senayan.

2.2 Live Score

Live Score is a type of service that is presented / held by several sports sites and online betting operator sites. The main purpose of the site that has the Live Score function is to provide real-time information about the results of the sports matches provided. This information is usually provided free of charge. This service is so popular among betting players in sports midwives, because with this service allows them to know the results of the match directly so they can determine their decision in betting. This service allows displaying match information simultaneously. Even in some services, an online chat feature is added so that users can interact with each other.

2.3 Android

According to Ardiansyah, Android is an operating system for linux-based cellular phones. Android provides an open platform for developers to be able to create their own applications that can later be used for all types of mobile devices.

Based on the presentation of opinion by Ardiansyah, it can be concluded that Android is an operating system used for Linux-based mobile. Android is open source so it gives developers the freedom to develop software as expected so that it is very possible to develop rapidly when using this platform.

2.3.1 History of Android

Initially, Google Inc. buy Android Inc. who are newcomers who make software for cellphones / smartphones. To develop Android, the Open Handset Alliance was formed, which is a combination of 34 hardware, software and telecommunications companies. At the time of the initial release of Android, November 5, 2007, the Android together with Open Handset Alliance said it supports the development of open source on mobile devices. On the other hand, Google released Android codes under the Apache license, a software license and an open platform mobile device. There are two types of distributors of Android operating systems. The first is full support from Google or Google Mail Services (GMS) and the second is the truly free distribution without Google's direct support or known as Open Handset Distribution (OHD).

Currently most smartphone vendors have produced Android-based smartphones. Not only being an operating system on smartphones, currently Android is the main competitor of Apple on the Tablet PC operating system. The rapid growth of Android due to Android itself is a very complete platform both from the operating system, applications, development tools, and very high support from the open source community in the world. The following is the development of the Android OS to date.

2.4 Design And Analysis

The purpose of analysis and design is to understand and design what details are needed for future system needs. The design phase focusing on detailed technical solutions can be the basis for the implementation phase.

2.4.1 Live Score Method Implementation

In displaying the results of a match in a particular sports competition, a system is needed that can display the match information in realtime so that the information provided to users will always be updated.

To display the results of the match in realtime, in this study the author uses the auto refresh method on the application source code that was built. Examples of writing the code used are as follows :

```
public void onCreate(Bundle savedInstanceState)
{
    super.onCreate(savedInstanceState);
    setContentView(R.layout.main);

    this.mHandler = new Handler();

    this.mHandler.postDelayed(m_Runnable,5000);

}

private final Runnable m_Runnable = new
Runnable()
{
    public void run()

    {
        Toast.makeText(refresh.this,"in
runnable",Toast.LENGTH_SHORT).show();


refresh.this.mHandler.postDelayed(m_Runnable,
5000);
    }

};
```

In the previous source code, the number "5000" is the time value in millisecond (ms) which aims to make the activity on the android application that is built will be refreshed at every 5000ms. With the use of the above code, the application will continue to update the data every time you want to determine. Activity in the application will continue to be refreshed when there is a data change or no data changes at all. The disadvantage of using this method is the waste of bandwidth used because even though there is no change in application data it will still request and continue to retrieve data from the database.

2.4.2 System Architecture Analysis

In the construction of this football flag application has two systems, namely the front end and back end systems. Where the front end system is an application system used by the official to enter match data and visitors to view match schedule data. Whereas for the back end system will be used by IFFA admin and managers to perform data processing. The processed data includes player data, club data, match schedule data, match report data and player statistics. In conducting data communication, the communication design that will be made using API (Application Programming Interface). The API is used to process data that is in the database by converting the values that are searched and changing them into text format. JSON is used as a form of data exchange between programming languages where the system to be built will involve the Java and PHP programming languages. From the explanation of the two systems to be built, the following is a description of the system to be built :
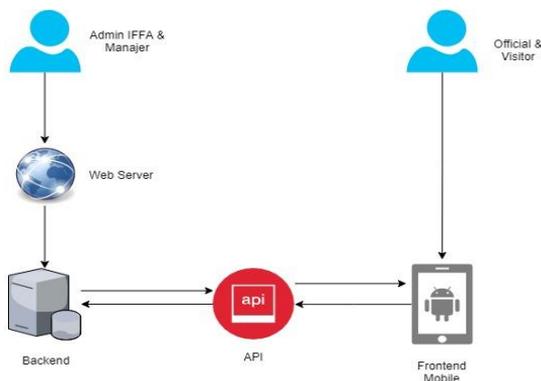

Figure 1 System Architecture That Will Be Built

2.5 Implementation

The purpose of the system implementation is to build a system as an implementation of the results of the analysis and design of the system, so that the system built will be in accordance with all the needs that have been analyzed and designed in the previous stage.

2.5.1 Hardware Implementation

The computer hardware used to build the live score football application can be seen in table 1.

Table 1 Hardware Implementation

No	Hardware	Specifications
1	Processor	Intel Core i3-4010U 1.70GHz
2	RAM	4 GB
3	Hardisk	500 GB
4	VGA	GeForce GT 720M 2GB

While the android hardware used to run the live score application for Android-based football flags can be seen in table 2.

Table 2 Android Hardware Implementation

No	Hardware	Specification
1	Processor	Octa-core 1.5 GHz Cortex-A53
2	RAM	1 GB
3	Internal Memory	8 GB
4	*Display*	5 inch

2.5.2 Software Implementation

Computer software used to build applications for live scores for Android-based football flags can be seen in table 3.

Table 3 Software Implemantation

No	Software	Description
1	Operating System	Windows 10 x64
2	Android SDK	Version 25.1.7
3	Adobe Dreamweaver	Version CS6
4	XAMPP	Version 2.5.8

While the Android software used to run the Android live flag football live score application is to use Android version 5.1.1 or Lollipop.

2.5.3 Interface Implementation

Interface implementation carried out on the football live score flag application consists of several views. The following are some of the interface displays that have been implemented.
1. Backend System Dashboard Interface

The backend system dashboard interface is the initial display when the backend system is accessed. In this view there is a login form for the IFFA admin or club manager. The main menu display can be seen in Figure 2.

Figure 2 Backend System Dashboard Interface

2. Match Schedule Data Interface

The schedule data interface in this application serves as a page for processing flag football match schedule data. There are several functions in this page, namely adding schedule data, editing schedule data and deleting schedule data. Interface display if the schedule data can be seen in Figure 3.

Figure 3 Match Schedule Data Interface

3. Match Schedule Interface on mobile

The mobile system match schedule interface is the main page display if the Android system is run. This page shows every information of the match whether it is running or has ended. Each schedule has detailed match information presented to users. Display of the mobile system match schedule can be seen in Figure 4.
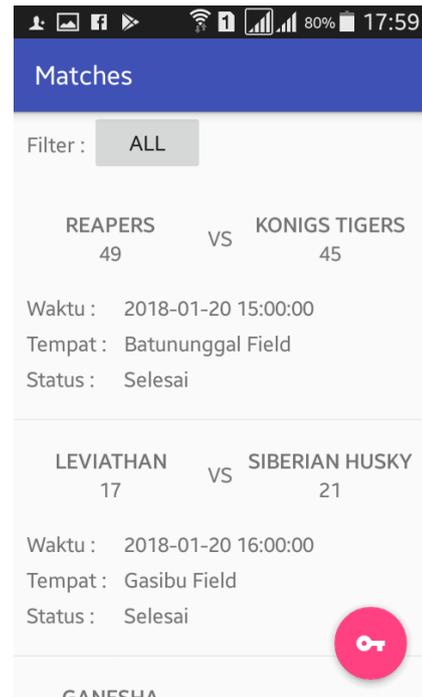

Figure 4 Match Schedule Interface on mobile

4. Mobile System Match Data Input Interface

The mobile system match data input interface is a system view that functions to enter match data by the official match in charge. This display can affect the score data and the statistical data of the players who are competing. The display of the mobile system match input data can be seen in Figure 5.

Figure 5 Mobile Data Match System Input Interface

2.6 System Testing
2.6.1 Questionnaire

Questionnaires were given to users namely IFFA admin, official and team managers with 11 respondents. This questionnaire uses a Likert scale with 6 questions. The following are the questions that will be asked to users can be seen in the table below.

Table 4 Questionnaire

No	Questions
1	This Android-based live score football application software is easy to use?
2	This software can make it easier for you to record player statistical data?
3	This software can help you to know which teams play in each type of league?
4	This software can help you to set the flag football match schedule?
5	This software has successfully displayed data live?
6	The software can help you determine the desired player for the allstar team based on statistics?

From the 6 questions above each answer has a score of assessment using a Likert scale which can be seen in table 5

Table 5 Questionnaire Assessment Score

Abbreviation	Description	Score
SS	Strongly Agree	5
S	Agree	4
RG	Doubtful	3
TS	Disagree	2
STS	Very Disagree	1

Judging from the questionnaire assessment table above, the Likert scale table can be made as follows:

Table 6 Calculation Table of Likert Scale Value

Abbreviation	Description	Score	Max Score
SS	Strongly Agree	5	11 * 5 = 55
S	Agree	4	11 * 4 = 44
RG	Doubtful	3	11 * 3 = 33
TS	Disagree	2	11 * 2 = 22
STS	Very Disagree	1	11 * 1 = 11

Judging from the calculation table above the assessment score can be made as follows:

Table 7 Likert Range Scale Table

Abbreviation	Description	Score Range
SS	Strongly Agree	44-55
S	Agree	33-44
RG	Doubtful	22-33
TS	Disagree	11-22
STS	Very Disagree	1-11

2.6.2 Questionnaire Results

The questionnaire results from each of the questions obtained from the 11 respondents are as follows:

2.6.2.1 Question No 1

The results of the questionnaire for question number 1 can be seen in Figure 6
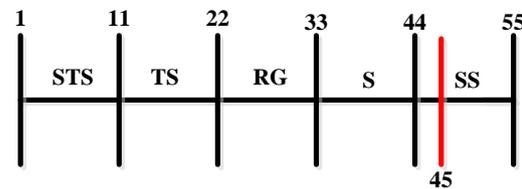

Figure 6 Scale of Calculation Results Question No 1

2.6.2.2 Question No 2

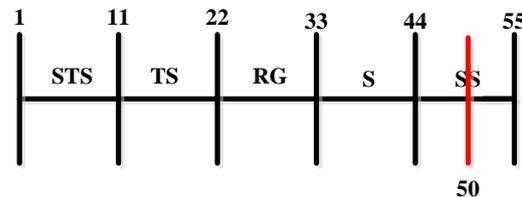The results of the questionnaire for question number 2 can be seen in Figure 7.

Figure 7 Scale of Calculation Results Question No 2

2.6.2.3 Question No 3

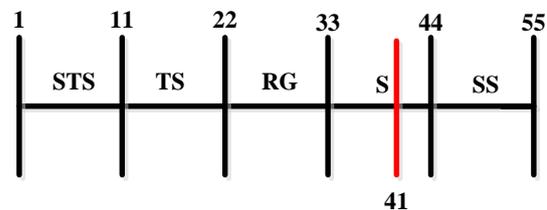The results of the questionnaire for question number 3 can be seen in Figure 8.

Figure 8 Scale of Calculation Results Question No 3

2.6.2.4 Question No 4

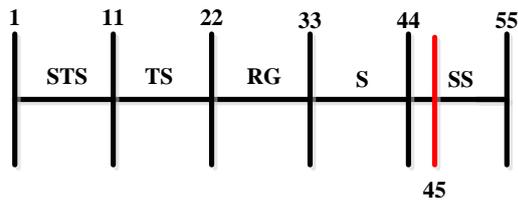Questionnaire results for question number 4 are seen in Figure 9.

Figure 9 Scale of Calculation Results Question No 4

2.6.2.5 Question No 5

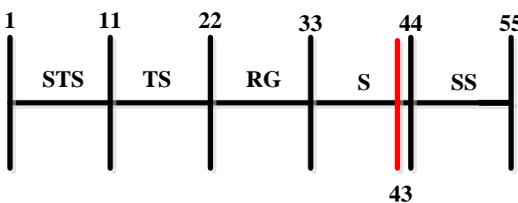Questionnaire results for question number 5 are seen in Figure 10.

Figure 10 Scale of Calculation Results Question No 5

2.6.2.6 Question No 6

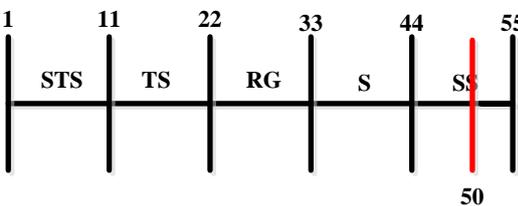Questionnaire results for question number 6 are seen in Figure 11.

Figure 11 Scale of Calculation Results Question No 6

2.6.3 Interview Results

Interviews are conducted to find out the opinions of end users regarding the applications that have been built. The following are the results of an interview with Ibrahim Raharjo as the official match of the team playing in league flag football.

Table 8 Interview Results

No	Questions	Answers
1	Is the application was easy to use?	In my opinion, the application made is quite easy to use
2	Will the statistical data of players entered into the system be useful later?	In my opinion, with the function of entering the player's statistical data with this application it is very helpful for us to find good players for the allstar team later. From the statistical data, we can also determine treatment or special training for players who are lacking in various techniques.
3	Can the app that is built can provide live match information?	At the time I tried, the application was not able to display the score directly. But maybe later the application that is being created can display scores directly.
4	Can the application built help in selecting players who will enter the allstar team?	Yes, as I said earlier with this application now looking for a really good player is easier. It's not like before, who chose it based on whatever and like the manager without looking at the player's original ability in the field.

2.6.4 System Testing Conclusions

Based on the results of the beta testing that has been done, it can be concluded that this application is in accordance with the expected objectives, namely to be able to accommodate and provide all kinds of information about flag football activities, especially in Bandung in just one application.

3. CONCLUSIONS

3.1 Conclusions

Based on the results of the implementation and testing of the Live Score Application for Android-based Flag Football sports, the following conclusions can be drawn:

1. With this football flag application, all kinds of information about football flag activities can be presented and easily accessible to all types of users.
2. With this football flag application, all kinds of information can be accommodated and delivered to users in just one application.

3.2 Advices

Based on the results of research on the Score Flag Football Android Live application that was built, it focuses on how the system accommodates all types of data related to flag football activities. The application that has not been completed is perfect, raises some suggestions that will be very useful for the development of this application further. The suggestions are as follows:

1. The Live Score Flag Football application must have a more attractive appearance..
2. How to display the player's statistical information should be even better.
3. Statistical filter variables can be of more variety.
4. Add some functions to be able to present more and detailed information about flag football activities.

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