Sports Tournament Management System

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Abstract. Nowadays, due to overwhelming of the number of tournaments held in Universiti Teknologi Malaysia, most organizers experiencing difficulties to manage and retrieve the required information. The modules are built to provide the display function of list of tournaments and teams, searching, management, configuration. This purpose of this project is to improve tournament management using Sports Tournament Management System (Skora). Tournament organizer able to manage information such as teams, participant, match, and result. This system is developed using Laravel Framework[3] and Ionic Framework[4] for web and mobile application respectively. Some of technology has been used in order to make the system more effective such as Socialite, Google Cloud Messaging and Runcloud.io. In addition, the system used MySQL as data storage and Sequel Pro as Database Management System.

Keywords: Sports, tournament, competition, round-robin, playoff.

1   Introduction

Participation in sports is extremely important, and should be encouraged much more. Children and young people, in particular, need to do sports so that they develop good habits that they can continue into adulthood. The main benefits of sport are improved health and fitness, and the development of social and communication skills[1]. People that do sport on a regular basis are burning more calories than those that do not, and are therefore less likely to end up overweight.

In Universiti Teknologi Malaysia (UTM), lots of tournaments for sports such as futsal, netball, volleyball, badminton, football, handball, and sepaktakraw. This tournament usually conducted by the student. The organizer implies the tournament rules such as League (Round-robin), Play-off, Grouping and Play-off. The score or result for every match will be updated from time to time in the tournament. The tournament got positive feedback from the participant who joined the event, and also most of the tournament run successfully in UTM.

Tournament manager system is a very uncommon system for the organizer to use it in UTM. They are willing to use manual system which is not centralized and cause lots of money and work. Basically to host a sports tournament in UTM, there have 3 phases which is pre-event, event, and post-event. For pre-event, the organizer need to commercialize the tournament throughout the campus. They aim to get participants as much as they can get. Registration to join the tournament can be made by social media like Facebook, Instagram or WhatsApp. Hence, a lot of resources need to manage by organizer when registering. Once registration is closed, the organizer have to create fixtures which scheduling the match among the teams joined. They need to draw on large paper and display it during the tournament.

Thus, a system entitled "Sports Tournament Management System" developed. Development of this system is to build a system that allows organizer to manage tournament. This paper consist of Introduction, Related Work, Methodology, Result, Discussion, and Conclusion.

2   Related Work

Based on several interviews with students and UTM staff who have experienced organizing the tournament, there are several features need to have in this system. Most of organizers want the system can be built in portable device such as smartphone. They would prefer smartphones better than notebook as it is easy to

bring and effectiveness on connectivity. As ubiquitous as Wi-Fi networks seem to be these days, there are still vast expanses where there is no wireless network but the smartphone can still get 3G even 4G signal.

Besides, the system able to access using social account such as Facebook, Twitter or Google Plus. This will reduce steps to create an account since email verification is applied in this system which make more complicated.

3   Methodology

The methodology used is Agile Software Development (ASD). In the software development, ASD is a methodology for the creative process that anticipates the need for flexibility and applies a level of pragmatism into the delivering finished product. There are few of methods that using ASD concept which are Scrum, Lean and Kanban Software development, Extreme Programming (XP), Crystal, Dynamic Systems Development Method, and Features-Driven Development. The method that will be focused on for this project is Scrum.

4   Result

Table 4.1: Use Case Description

Use Case	Description
Create Tournament	This use case allows the tournament organizer to create a tournament. The organizer needs to fill in tournament name, sports.
Add Team	This use case allows the tournament organizer to add team into the tournament. The team have to create by participant first.
Manage Team Request	This use case allows the tournament organizer to decide whether to approve or decline team requested to join the tournament.
Create Grouping	This use case allows the tournament organizer to create grouping either league or playoff. Then, the organizer can add team to the grouping based on their preference.
Create Fixtures	This use case allows the tournament organizer to create the fixtures. Organizer can choose whether to create all fixtures manually or automatically.
Update Tournament Information	This use case allows the tournament organizer to update the tournament information such as name, logo, description, event date, and also league configuration.
Sign Up	This use case allow users to create an account in the system. The system will send email verification to user.
Login	This use case allows the tournament organizer and player to login into the system. User also may choose to login with social media either Facebook or Google Plus.
View Tournament	This use case allows users to view tournament details such as teams, current standing and results.
View Team	This use case allows users to view team details such as team's activity, member, and tournament joined.
View User	This use case allows users to view user profile such as sports involved, teams, and timeline.
Search tournament, team or user	This use case allows users to search tournament, team or users without fully input the name.
Update User Profile	This use case allows the users to update their profile such as first name, last name, image, address, and password.
Create Team	This use case allows participant to create team. Participant only input team name.
Add Member	This use case allows participant to add member into the team. That

	member must sign up with this system, so that the participant can search by username or email.
Join Tournament	This use case allows participant to request to join the tournament. Participant must select which team will join the tournament. Then, wait for approval from tournament organizer.
Update Team Information	This use case allows team leader to update the team information such as name and logo.
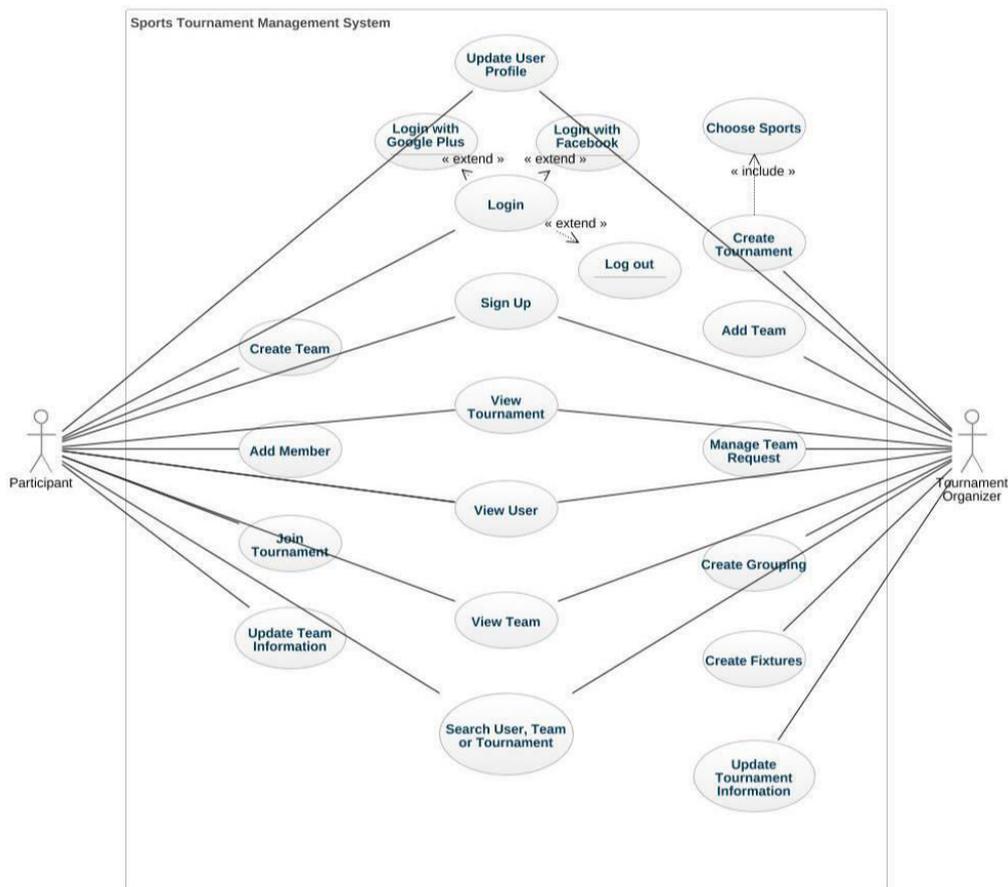
Figure 4.1 Use Case Diagram

4.1 Benefits of Model View Controller (MVC)

MVC is perfectly fit for developing web application. The usage of MVC improves the testability of the code because it can test all the logic and function without executing the User Interface first thus increase development time of the project. Figure 4.2 shows the MVC architecture.
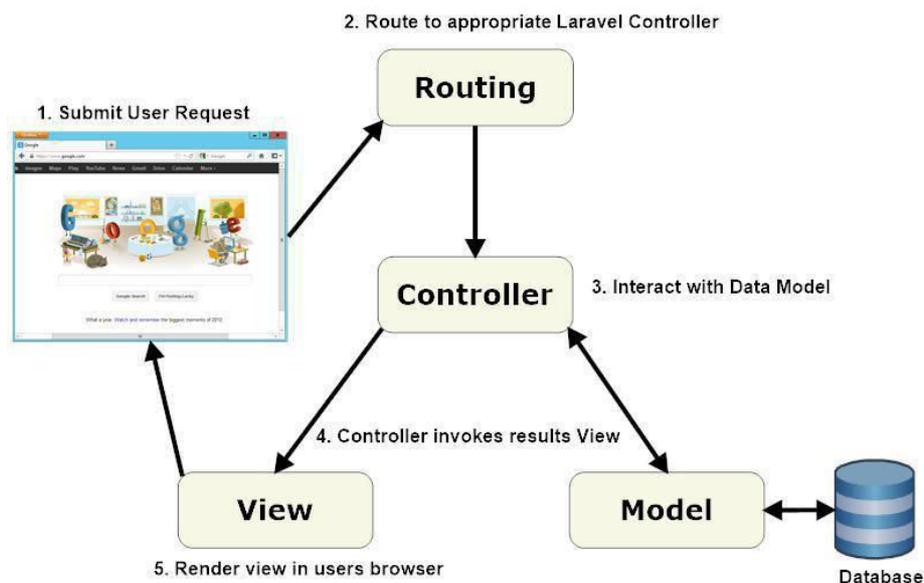
Figure 4.2 Architecture of MVC[3]

5   Implementation and Testing

An android smartphone model Samsung Galaxy Note Edge Version 5.0.2 is used for testing procedure for mobile application while MacBook 15' will be used for testing web application. Method for testing is Black Box Testing.

Table 5.1: Example Test Case for Create Tournament

Test Case ID	TCCT1	TCCT2	TCCT3
Input/Action/Condition			
Tournament Name	""	Sufkom 2017	""
Select "Sports" dropdown	""	Bowling	""
Tap "SUBMIT" button	X	X	
Tap "CANCEL"			X
Expected Result			
Message "Tournament Name is required" is display	X		
Message "Please choose sports category" is display	X		
Message "Tournament is successfully created" is display		X	
Modal Create Tournament is closed	X	X	X
Redirect to Tournament page		X	
Actual Result			
Message "Tournament Name is required" is display	X		
Message "Please choose sports category" is display	X		
Message "Tournament is successfully created" is display		X	
Modal Create Tournament is closed	X	X	X

Redirect to Tournament page		X	
Result	**NOT PASS**	**PASS**	**PASS**

6 Conclusion

Tournament for team event such as volleyball or football is suitable to use this system compared to individual event such badminton or ping-pong.

For future improvement, payment gateway will be applied in this system since some of tournaments have fee submission to join. Therefore, it is better to provide payment gateway in this system.

As for conclusion, all of the objectives of this project has been achieved. This system gives a good impact for communities as it allows them to manage tournament easily.

References

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