Mobile Mosque Companion Application
(KakiMasjid)

Muhammad Akram Shaari[1], Ruhaidah Samsudin[2]*

*Department of Software Engineering, Faculty of Computing, Universiti Teknologi Malaysia,
81310 Johor Bharu, Johor, Malaysia*
[1] *arekram@live.com,* [2] *ruhaidah@utm.my*

Abstract

Mosque are important in a Muslim life. Mosque perform many activities that are related to the religion Islam. Apart from performing jamaah prayers, mosques usually hold other events. Mosques also do a lot of reminder, classes and lectures every day for the Muslim. However, these things are not noticed by a lot of people since the events or classes are only posted on notification boards or Facebook pages. Furthermore, with the busy lifestyle of current people, it is easy for these things to get unnoticed. Therefore, this project aims to develop a mobile based companion application for mosque that enables the user to easily view upcoming events and mosque schedules and participate in question and answer. This project uses Rational Unified Process as the development methodology. The requirements are gathered in the early phase of development and they are analysed to create a system design that can address the problems. The application is developed for Windows Phone and Windows operating system using Visual Studio 2013. The application developed will make it easier for the public to see a mosque schedules and events, thus making it easier for them to give time to those activities.

Keywords: Mosque, Mobile, Application System, Events, Windows Phone

1.0   Introduction

Mosque is a place of worship for followers of Islam. There are strict requirements for a place for prayer to be regarded as mosque. Mosque usually have elaborate domes, minarets and prayer halls. Mosque serves as a place where Muslims come together to perform solat which means prayer. In a prayer, the imam leads the congregation in prayers. Mosque also serves as a centre for information, education and dispute settlement. Mosques provides Muslim communities with many services in cultural and religious aspects. (Al-Krenawi, 2016).

A mosque can choose to hold events that are related to the religion. These events include classes and religious celebration or courses related to Islam. Mosques are regarded as the centre of education for Islam. Education has been spread throughout the Muslim world via the mosque, which held classes to teach the people in the topics related to Islam The classes are taught by Imam that are responsible for the said mosque. These classes are normally held after prayer sessions. Mosques also organize education events such as pre-marriage course that Muslim citizens can join.

Mosque have great importance in Muslim daily life. The objective of this project is to study and analyse the issue in organizing events for mosque, and then design mobile application for the convenience of Muslims in attending such events and classes. The next objective is to develop mobile application that helps the user to find and view the events, post questions as well as discuss the answers, and finding solutions to answered questions. The last objective is to test the developed mobile application and fix any bugs found.

The paper is organized as follow. Section 1 presents the introduction of the paper. Section 2 describes the methodology used, followed by the result of this project in section 3. Section 4 discusses whether the objectives are met. Section 5 concludes this paper.

2.0   Problem Statement

Applications that enables user to view classes, lectures and events that are being held by mosques do not exists in the market. Available applications cannot list events by mosque or remind the user of such events. Therefore, application that can give the user information about these events and remind the user can help the user to attend such events.

3.0   Methodology

The development of KakiMasjid application is done using Rational Unified Process (RUP). RUP is chosen because it is a complete software development methodology that places an emphasis on accurate documentation. Moreover, the ability to reuse components is able to reduce the development time required (Peter, 2002). Since development in RUP are not associated with a specific workflow, all RUP workflow may be active at all stages of the development process.

For this project, the requirements are gathered in Inception Phase and are analyzed in the Elaboration Phase using use case diagram, activity diagrams, sequence diagrams, class diagram, and entity relationship diagram. The system is developed and tested for bugs in the Construction phase. The construction phase is done in three iteration. Further testing is done in the Transition Phase.

4.0   Result

Table 1 below shows the strength and weakness for the existing system which are Facebook, Google+ and myMasjid. Figure 1 below shows the use case diagram of the application system.

Table 1 Comparison between existing systems

|	Strength	Weakness
Facebook	• Simple, and user friendly interface design. • Have event management functionality • User can subscribe to events to receive notification about events organized by them in the future.	• User cannot create event on windows phone application. • Events system is too complex and requires invitation to fully works. • Cannot list events from multiple sources unless the source is subscribed.
Google+	• Interface design: simple, high readability and user friendly. • Functionality: lots of functionality available. • Have event management functionality	• Requires to invite people when creating events. • Events management requires invitation to be effective. • Cannot subscribe to events.
myMasjid	• Have prayer time functionality • Can list nearby mosque by distance • Can list the events • Simple user interface	• Mosque announcement, iqama times, and ask imam does not work. • Classified and featured events require payment • Events system is too simple, user can only view the event. • Only available on android OS.
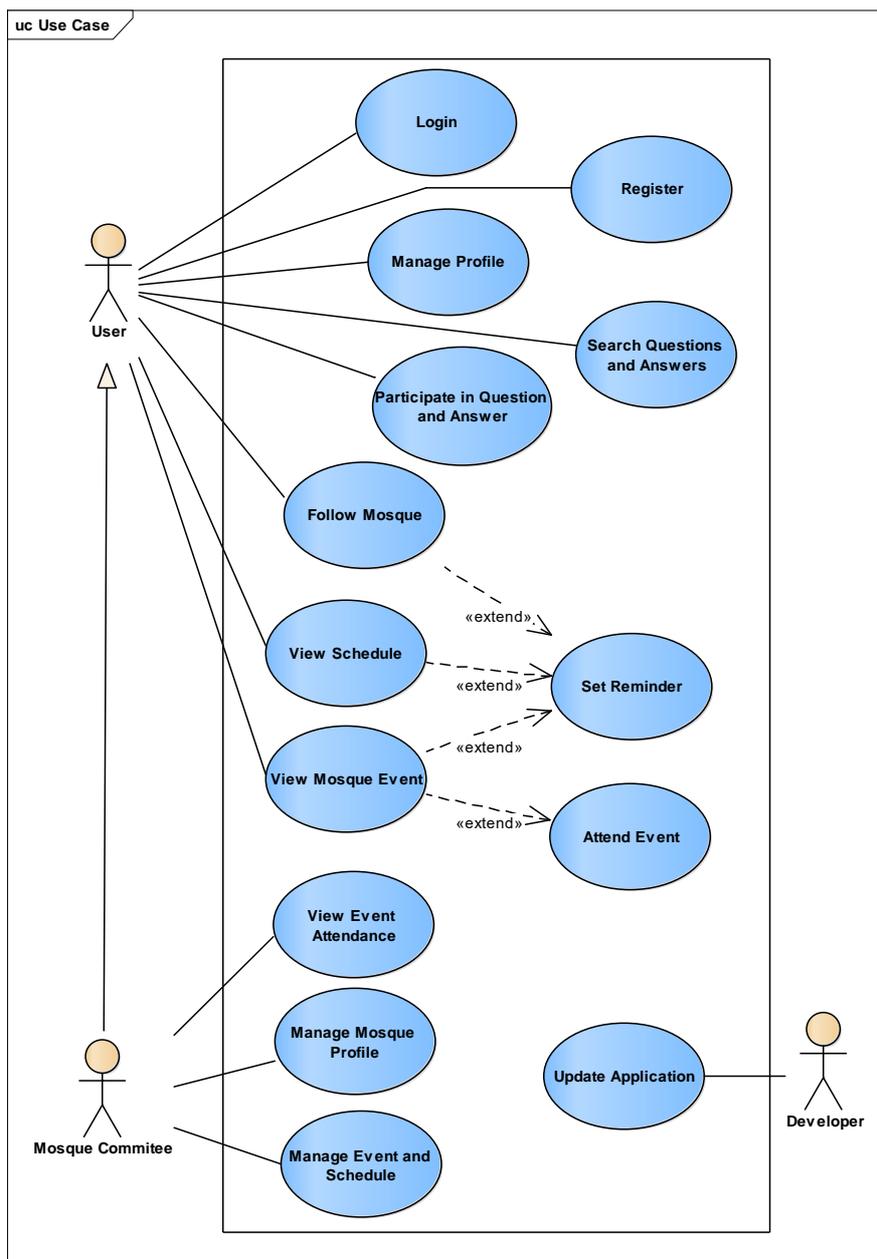
Figure 1 Use Case for KakiMasjid

The application was developed as native application because it was found that hybrid application offer reduced user experience in mobile application (Malavolta et al, 2015). The development was done using C#. The main architecture used is client-server architecture using REST approach. The client uses MVVM pattern, while the server uses MVC like pattern. Figure 2 below shows the MVVM pattern used to develop the client application. MVVM is used because it helps with *separation of concerns* (Smith, 2009; Falafel Software Inc, 2013). Figure 3 below shows the user interface for events found in the application.
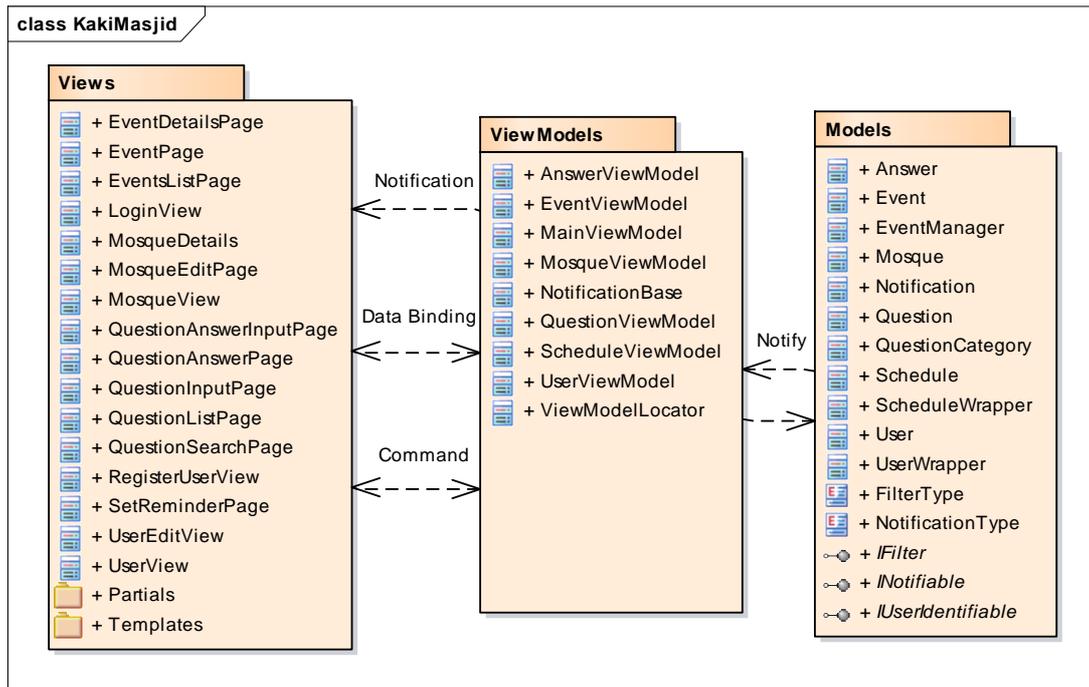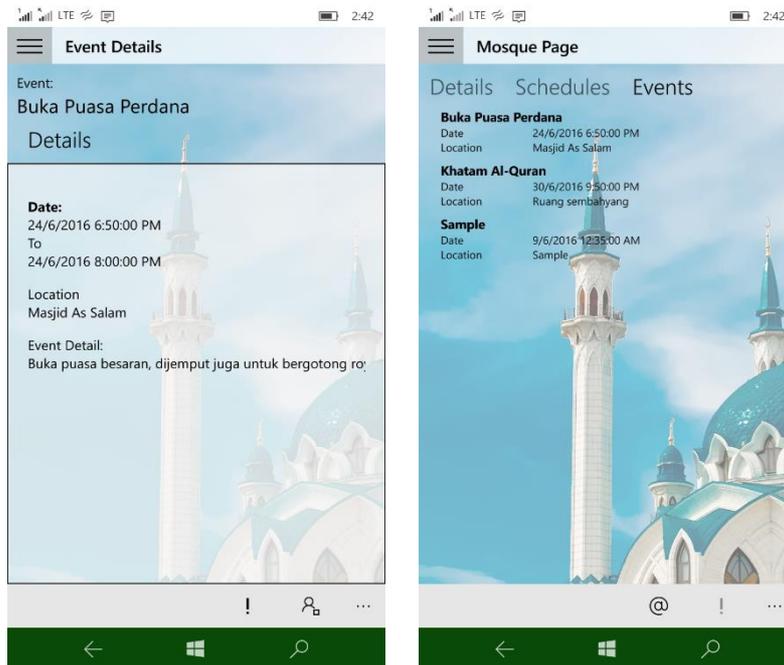
Figure 2 MVVM pattern

Figure 3 Interface for Events in KakiMasjid

5.0   Discussion

The Objectives of this project as stated below are to study and analyse the issue in organizing events for mosque, to design a mobile application for the convenient of Muslims in attending the events and classes that are organized by mosques, to develop a mobile application that helps the user to find and view the events that are being held by mosques, post questions as well as discuss the answers, and also finding solutions to answered questions, and to test the developed mobile application and fix any bugs if the bugs are present.

The first objective is achieved as existing system are analysed and compared to discover the weakness to improve the system. Secondly, the design objective are met when the user interface design and architecture design are made. Third objective are met when the coding of the system is made. The last objective is met when the testing using black box method is done.

6.0   Conclusion

The main outcome and achievement of this project is to achieve all the objectives. Therefore, KakiMasjid is developed as mobile based system that able to ease people to view the events of a mosque, and participate in question and answer while allowing mosque committee to manage events to spread the information to people.

References

Al-Krenawi, A. (2016). The role of the mosque and its relevance to social work. *International Social Work*, 359-367.

Falafel Software Inc. (2013). *Pro Windows Phone App Development Third Edition.* New York: Apress.

Malavolta, I., Ruberto, S., Soru, T., & Terragni, V. (2015, June). End Users' Perception of Hybrid Mobile Apps in the Google Play Store. *2015 IEEE International Conference on Mobile Services (MS)*, 25-32.

Peter Eeles, K. H. (2002). *Building J2EE Applications with the Rational Unified Process.* Addison-Wesley.

Smith, J. (2009, February). *The Model-View-ViewModel (MVVM) Design Pattern for WPF*. Retrieved from MSDN Magazine: https://msdn.microsoft.com/en-us/magazine/dd419663.aspx