

Bus Ticket Booking Mobile Application

Lyana Abdul Yazid¹ and Ruhaidah Samsudin²

Faculty of Computing, Universiti Teknologi Malaysia (UTM), Malaysia

¹ llya_na93@yahoo.com, ² ruhaidah@utm.

Abstract. In this era of globalization, almost all people prefer to apply the technology to manage their work in their daily lives. The use of technology in everyday life becomes a choice because it is more efficient, easier, and it is proven to save the time and energy. Nowadays the use of public transport such as bus express is always in high demand from consumers because of the cheaper ticket prices and services offered include a trip to almost all cities in Peninsula Malaysia. However, the sold of bus ticket is still done manually which is customers who want to buy the bus ticket need to go to the counter and buy the bus ticket manually. Therefore, Bus Ticket Booking Mobile Application (NiceTicket) was developed to facilitate the journey of a person. This system makes full use of the internet and can be used by all users who access the application. This system is expected to enable users to see the bus schedule provided, make a selection of seat and the price of the bus ticket. In addition, users can also purchase bus tickets and make an online payments. The methodology that I have choose for this system is the prototype model which is more suitable to be used in the actual situation of the development process to develop a system that capable to meet the user's needs. The architecture pattern that I chose is Model-View-Controller or MVC which is used in interactive applications that require flexible incorporation of human-computer interfaces. Testing is done regularly and repeatedly on the system to accept the probability the result of the user input. The method used in testing is user acceptance testing and black box testing.

Keywords: Android, Mobile Applicaton, Meteor

1 Introduction

The use of public transport as the main transport is still a choice for the most of the population in Malaysia to their desired destination. Public transport such as bus express is always in high demand from consumers because of the cheaper ticket prices and services offered include a trip to almost all cities in Peninsula Malaysia. The use of bus express is increasing, especially in the festive season and school holidays, and this led to the citizen in Malaysia, especially those living in big cities such as Kuala Lumpur, Johor Bahru and Penang often face problems to get the bus ticket (Noor Azila binti Mohamad, 2010), In this current technology, rapidity in daily life place great emphasis to smoothen the the time planning. Ease of the technologies such as mobile apps offer many advantages to the users (La, H. J. & Kim, S. D., 2010). Thus, a planning is also very important to ensure everything goes well as planned. In this era of globalization makes the use of the technology has gained a place. Almost all consumers prefer to apply the technology to manage their work in their daily lives. The use of technology in everyday life becomes a choice because it is more efficient, easier, and it is proven to save the time and energy (H.M. Deitel, P.J. Deitel & A.B. Goldberg, 2004). Thus the aim of this project is to develop the Bus Ticket Booking Mobile Application (NiceTicket) which aims to ease the process of buying the bus ticket in more efficiently and quickly and develop a website for staff and administrator to manage the bus booking system. The first objectives that is achieved through the development of this project is to study the existing system of the bus ticket booking to be developed in mobile phone. The second objectives is to design and develop the ticket bus booking system through the application technology in mobile phone. The last objectives is to test and evaluate the ticket bus booking system through the application technology in mobile phone that is developed.

2 Problem Background

Currently, the sold of bus ticket is still done manually which is customers who want to buy the bus ticket need to go to the counter and buy the bus ticket manually. In addition, users also cannot buy the bus tickets over the phone and the phone line is always busy. It brings a lot of inconvenience to the user. Users also need to go to the

counter to get information or to inquire about the bus schedule. This causes them to arrive early to the bus station so that the bus ticket is not sold out. The other problems is the possibility to miss the bus tickets, bus tickets is stolen or left behind. This causes the user to go back to the bus station to buy a ticket. Furthermore, users have to pay cash when they buy a bus ticket, and sometimes people had to queue long to buy the bus tickets. The situation still cannot guarantee the seating to be obtained. Customers who live far from the bus station may also have trouble buying bus tickets, especially on certain days, for example during the festive season and school holidays. This scenario contributes to other customers such as planning time to the counter in and paid parking spaces problem.

3 Methodology

The prototype methodology is chosen as the methodology for this system development. Prototype model allows the development of application systems in stages which involve four important phases namely analysis, design, development and implementation phase (Bennett, McRobb & Farmer, 1999). In analysis phase, a literature review was conducted for understanding the problems faced by the user in obtaining bus tickets and how the system will be developed can be applied. The study of the hardware, software and technology that can be used are also being conducted. The design phase where the process of designing the proposed system will be initiated in this phase where the solutions have been proposed in the model based on the information that has been obtained. By using UML, use case diagram, class diagram, the actual situation in the system operation that are developed can be established clearly. This phase also involves the design of the modules involved, interface design and database design (Ali Munassar & A. Govardhan, 2010).

In the development phase of the prototype, the coding system will be carried out. This phase also involves documentation of the program in which it is important to facilitate the understanding and future reference (Nur Fatimah Mustaffa, 2013). The development of this prototype will go through several iterations that will engage users and initial prototype. The prototype that is ready to be evaluated by the user if there are any changes, the prototype will be changed according to user feedback. This process will be repeated until the user is satisfied. Further development of the entire system will be generated (Jim Rudd, Ken Stern, 1996). For coding on the mobile device which is the application on mobile phone, the system uses a programming language JavaScript using Meteor platform.

The database is used to store data related to the system where the MongoDB is the database used for the system. Coding part of the website for reference purposes of users and the administrator management. System development using JavaScript programming language and will be integrated with databases. The system is installed on a web server that supports JavaScript programming language (Gomaa, H., 2011). In implementation phase, the system that has been developed will be installed for users. Testing of the system installed is also done to ensure that the system developed meet the specifications needs during the phase of analysis and design phase. Test methods used to test this system is user testing and a black box testing (Ricca, F. & Tonella, P, 2001).

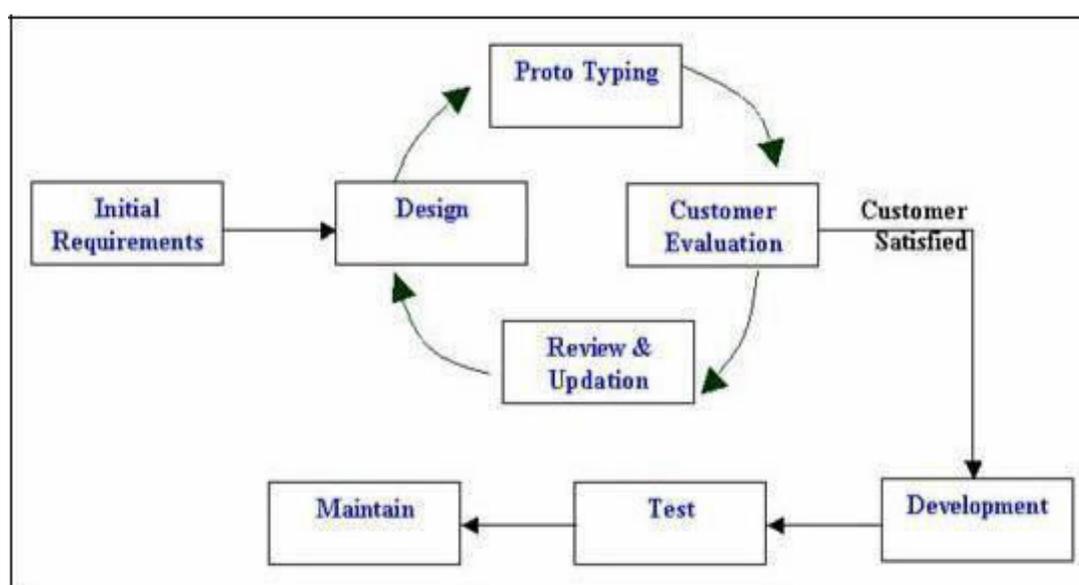


Figure 1 The Prototype Model

4 Result

Below is an achievement achieved by NiceTicket. Some functionalities and features of the system are compared.

Table 1: NiceTicket compared to other mobile application

Features of the existing system	Company		
	Air Asia	KTMB	IRTCMobile
Interface Design	Attractive	Not attractive	Attractive interface
Response time	Fast	Moderate	Moderate
User Interactivity	High	Low	High
Functionality	Allow to make reservation via online	Allow to make reservation via online	Allow to make reservation via online
Organization information	Contains basic information and brief organization	Does not contain the basic information of the organization.	Contains basic information and brief organization
Registration	Users need to register as a member	Users must register before booking	Users need to register as a member
Payment method	i. Debit Payment via Maybank and other bank ii. Credit payment by credit card	i. Debit Payment via Maybank and other bank ii. Credit payment by credit card	Payment can only be made through credit cards.
Overall	User friendly and simple	Not user friendly	User friendly and simple
Technology Used	ASP.NET	ASP.NET	ASP.NET

	Java		Java
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Table 1 discuss the comparison between NiceTicket with other existing system that allow the reservation process. Figure 2 below represents the whole architecture design of NiceTicket that utilizes the MVC architectural design that allows the separation of classes to each of their specialties.

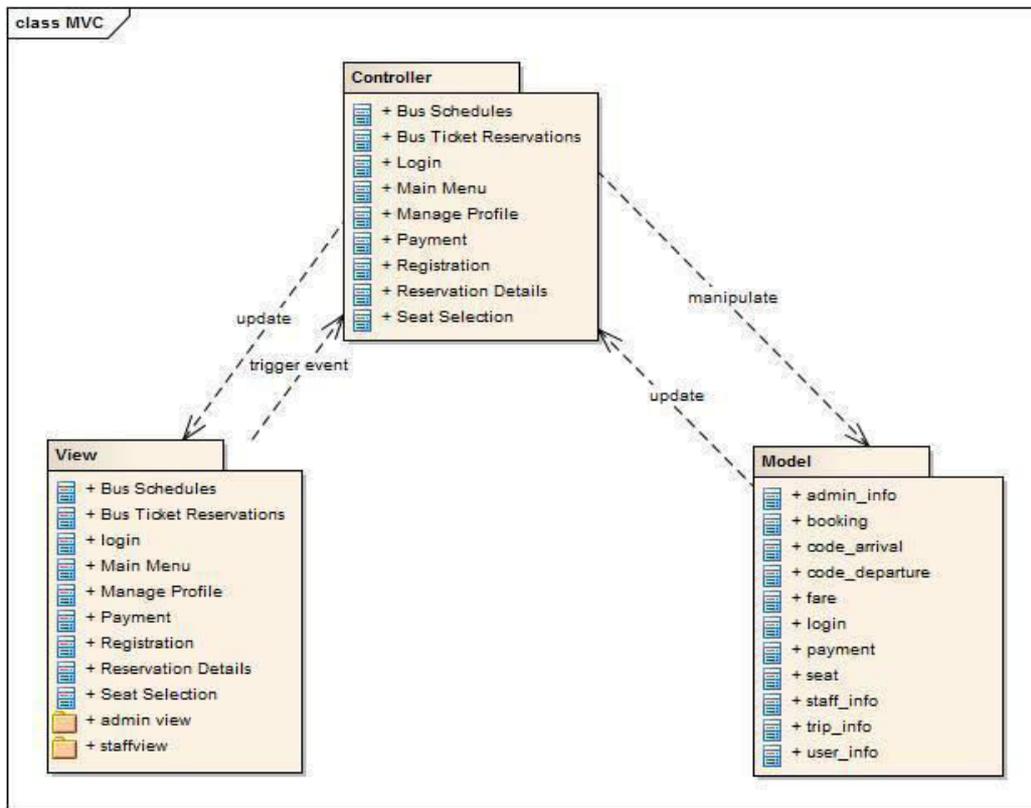


Figure 2 MVC architecture of Bus Ticket Booking Mobile Application

The use case diagram for Bus Ticket Booking Mobile is shown below. Main users for this mobile application is the user of the bus passenger while the main users for the website is the staff and administrator who managed the information in the system. The use case diagram for Bus Ticket Booking Mobile Application in the mobile application is shown in Figure 3 while Figure 4 shows the use cases diagram for web version.

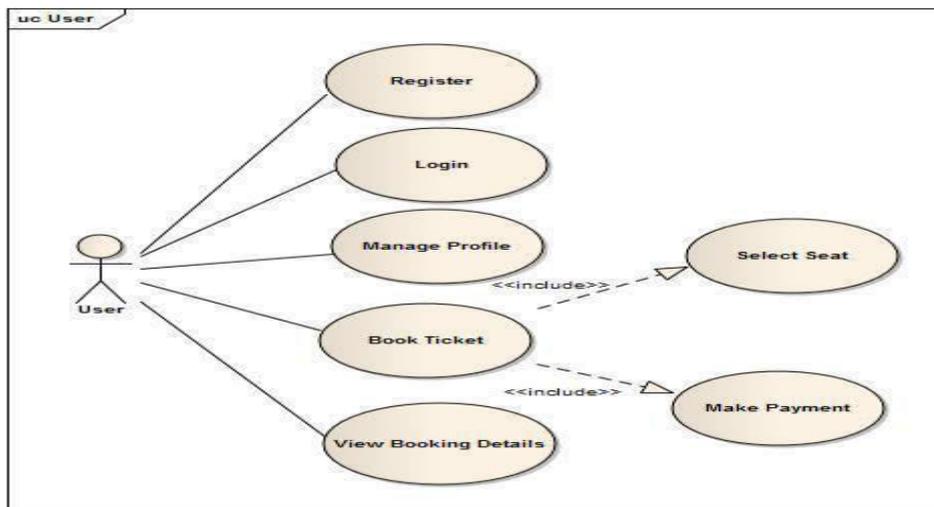


Figure 3 Use Case Diagram for the System (Mobile)

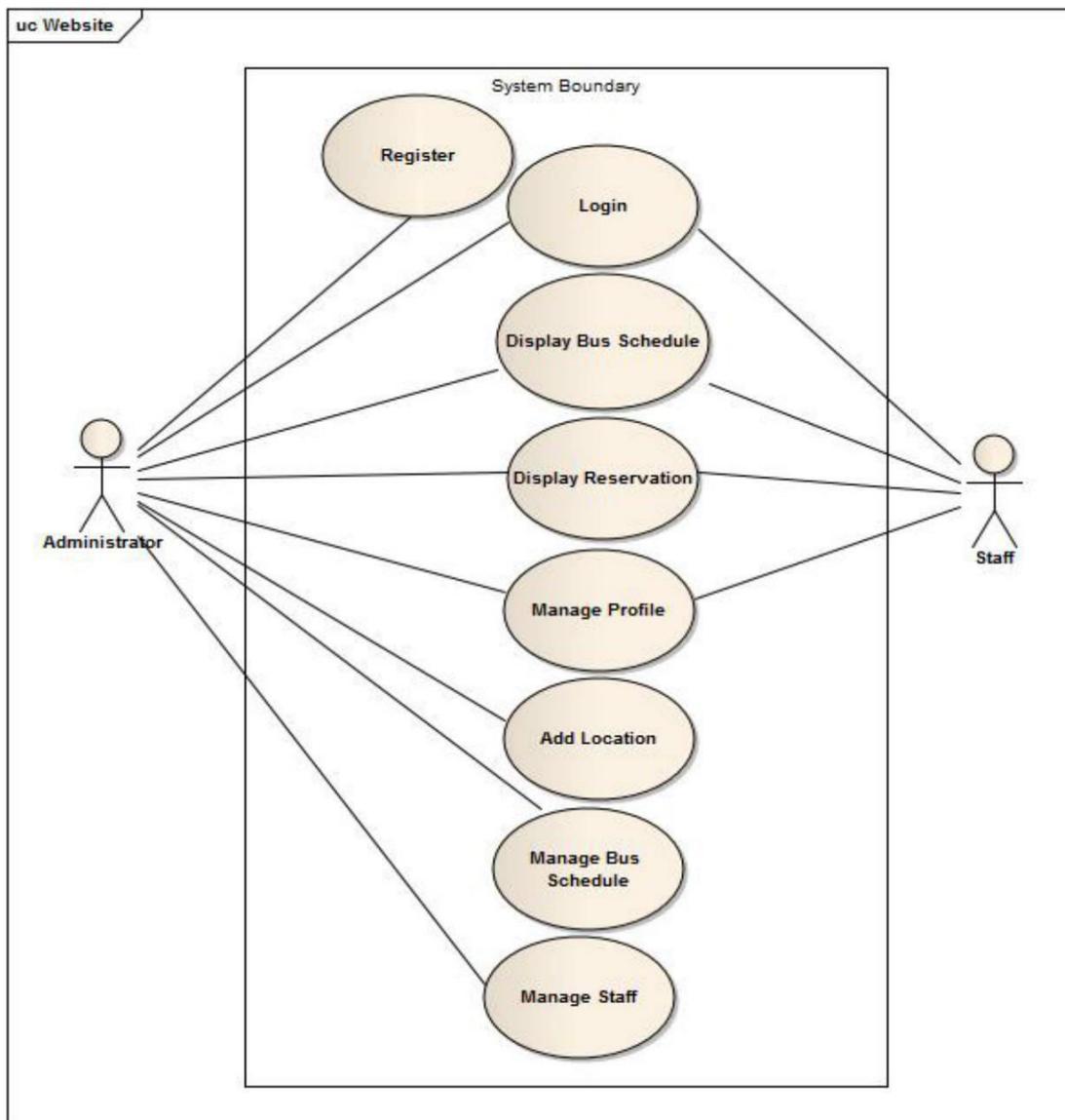


Figure 4 Use Case Diagram for the System (Web)

Table 2: Use case description of Bus Ticket Booking Mobile Application

Use Case	Brief Description
Register	This use case allows the users to register their details before access the system. When users apply for the registration, they are required to enter the ID and password of their choice. They also have to fill out other information such as address, email, identity cards, telephone numbers and others
Login	This use case allow the user to login to the system. Users are required to enter ID and password that have been filled during registration. The system will verify whether the ID and password entered is same as in the database or not. If the username and password are not found, an error message will be displayed to the user.
Manage Profile	This use case allow the user to manage their profile. Users who have already registered are allowed to update their personal information if there are any changes that occur. The updated information will be stored in the database and will replace the old information redirected to the login screen or interface to enter new ID and new password.
Book Ticket	This use case allow the user to book the tickets as per his or her requirements. User can make the reservation of bus tickets by choosing the departure location, arrival location, and date.
Select Seat	This use case allow the user to select the seat in the bus. The seat in 4 condition. Available, selected, locked and sold.
Make Payment	This use case allow the user to allow the user to make the payment of the bus ticket.
View Booking Details	This use case allow the user to view the booking details that have been made. To check the booking was done through the application of Nice Ticket, user need to login and the application will display the detail of the reservation that has been made.

Figure 4 below shows the booking interface of NiceTicket mobile application. User can select the departure and arrival location as well as the date too. After searching, the available departure time and seat will be displayed.

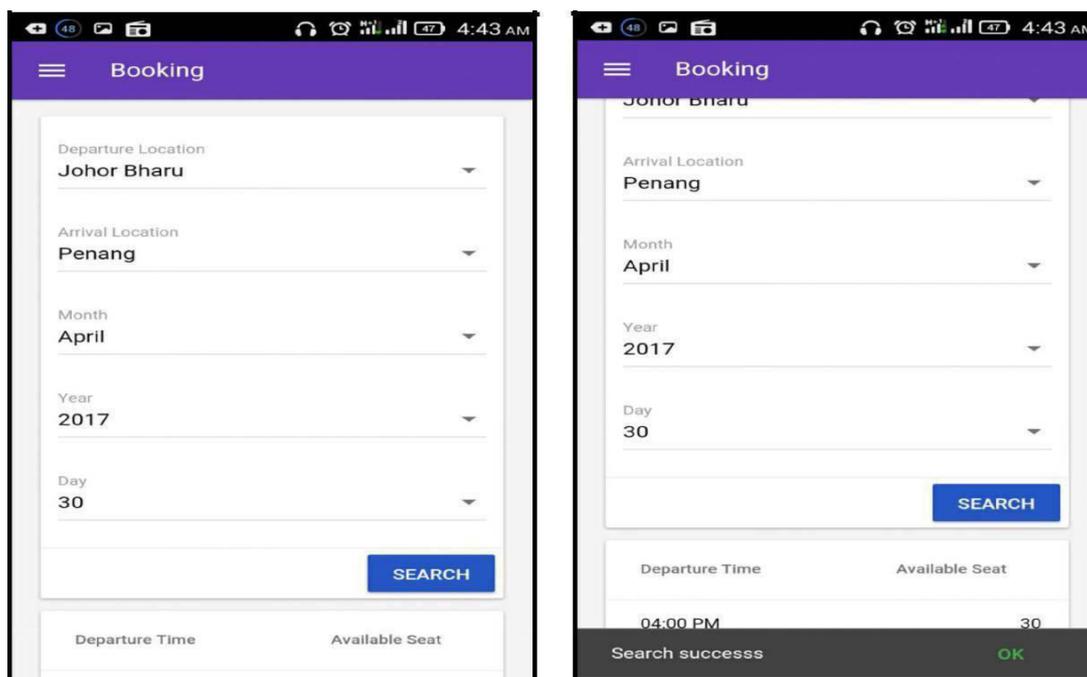


Figure 4 Bus Ticket Reservations Interface

5 Discussion

The development of NiceTicket gives benefits and convenience to the users of the bus, the staff and the bus management. NiceTicket is also using smart mobile phone technology that has an advantages over systems that use the laptop. With this Bus Ticket Booking Mobile Application, is expected to ease the process of buying the bus ticket in more efficiently and quickly. Thus, users can saves a lot of time because they do not need to arrive early to queue at the ticket counter to the bus if the bus tickets are sold out and the user does not need to go to the counter to ask about the bus schedule.

Futhermore, user can choose their seat in real time and directly make the payment of the reservation through the application. This system provide convenience especially to people who are busy with work because they can make the reservation at anytime and anywhere. In addition, this system also helps the management work becomes easy as well as facilitate communication between users and the bus company. This system also helps to speed up the process of getting a ticket and also makes the process easier and reduce management work to record all the information and updated the bus schedule. The testing of Nice Ticket was done using android based mobile phone by some students from Faculty of Computing, University Teknologi Malaysia. For administrator, the testing was done using the web based by the staff at the Nice Executive Sdn Bhd headquarters in Penang.

6 Conclusion

The main outcome and achievement of this project is to achieve all the objectives. Therefore, NiceTicket is developed as mobile based system to ease the process of buying the bus ticket in more efficiently and quickly and develop a website for staff and administrator to manage the bus booking system. Some ideas have been suggested for future improvement of NiceTicket. NiceTicket can be enhanced into a better quality to benefits its users. The suggestion for future improvement on NiceTicket are integraton with other online banking system to make the payment gateway more flexible so that user can be more convenient (Jamie Saine, 2013). Other suggestion is NiceTicket should be enhanced to iOs platform since the number of user is rapidly increasing

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