

TICKET SYSTEM FOR MARA LINER USING SMS

ROSMAIZATUL AZMA BINTI A.RAHMAN

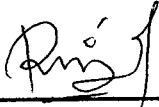
**This report is submitted in partial fulfillment of the requirements for the Bachelor of
Computer Science (Computer Networking)**

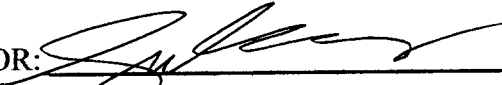
**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITY TEKNIKAL MALAYSIA MELAKA
2010**

DECLARATION

I hereby declare that this project report entitled
TICKET SYSTEM FOR MARA LINER USING SMS

is written by me and is my own effort and that no part has been plagiarized
without citations.

STUDENT:  Date: 25/06/2010
(ROSMAIZATUL AZMA BINTI A. RAHMAN)

SUPERVISOR:  Date: 25/06/10
(ENCIK SUHAIMI BIN BASRAH)

DEDICATION

A special dedication to my beloved family, my supervisor for giving supporting to complete my final year project. Also to dedicate to all friends who help direct and indirect in finishing my project. Thank you so much.

ACKNOWLEDGEMENTS

Bismillahirrahmanirrahim

Praise to Allah for giving me strength and patience to complete the Projek Sarjana Muda.

To my beloved parents and siblings who give me full support morally and economically, motivate and inspire me during the hard time to complete this project.

To my supervisor, Encik Suhaimi Bin Basrah who guide, assist and advice me all the way through this project.

To all my friends, who always give me the moral support and been there whenever I am in need.

ABSTRACT

Ticket System for Mara Liner Using SMS is a stand alone system development project. The primary purpose is to develop a system that customer can check and book ticket using sms. This system application will cover the information about the available ticket, booking ticket, and notification or reminder. The system will be used by the administrator and staff of the Mara Liner counter ticket. This system comprise of redeem booked ticket module, schedule management module, location management module, user management module, tools module, price setting module, activity log module and notification or reminder modules. To develop this system, Object Oriented approach is used and waterfall model had been chosen as a methodology. Results get from this application development is hoped to give the ability for the administrator and staff to give the best service to the customer.

ABSTRAK

Ticket System for Mara Liner Using SMS merupakan sistem yang berasaskan sistem penggunaan setempat. Tujuan sistem ini dibangunkan adalah untuk membolehkan pelanggan membuat semakan dan menempah tiket menggunakan *sms*. Sistem ini merangkumi maklumat berkenaan dengan tiket sedia ada, tempahan tiket dan peringatan. Sistem ini digunakan oleh pentadbir dan pekerja kaunter tiket Mara Liner. Sistem ini juga merangkumi modul menebus tiket, modul pengurusan jadual, modul pengurusan lokasi, modul pengurusan pengguna, modul peralatan, modul pengubahsuaian harga, modul aktiviti sistem dan mempunyai modul peringatan. Untuk membangunkan sistem ini, pendekatan *Object Oriented* telah digunakan dan model *waterfall* telah dipilih sebagai metodologi. Sistem ini adalah diharapkan supaya membolehkan pentadbir dan pekerja memberikan perkhidmatan yang terbaik kepada semua pelanggan.

TABLE OF CONTENTS

CHAPTER	SUBJECT	PAGE
	DECLARATION	ii
	DEDICATION	iii
	ACKNOWLEDGMENTS	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	xii
	LIST OF FIGURES	xv
	LIST OF ABBREVIATIONS	xvii
	LIST OF APPENDICES	xviii
CHAPTER I	INTRODUCTION	
	1.1 Project Background	1
	1.2 Problem Statement	2
	1.3 Objective	3
	1.4 Scope	3
	1.4.1 Specific User	3
	1.4.1 Specific Functionality	4
	1.5 Project Significance	4
	1.6 Expected Output	4
	1.7 Conclusion	5

CHAPTER II	LITERATURE REVIEW AND PROJECT METHODOLOGY	
2.1	Introduction	6
2.2	Literature Review	7
2.2.1	Domain	8
2.2.2	Keyword	9
2.2.2.1	Mobile Application	9
2.2.2.2	GSM Modem	9
2.2.2.3	Short Messaging	10
2.2.2.4	Mobile Technology in Teleticket	11
2.2.3	Previous Research	12
2.2.3.1	Library SMS Notification System	13
2.2.3.2	Early Alert Notification System	16
2.2.3.3	Open Source Ticket Request System	17
2.2.3.5	General Comparison of the System	20
2.2.4	Standard Technology for Mobile Networking	21
2.2.4.1	GSM Structure	21
2.2.4.2	SMS Transmission within PSTN	23
2.2.4.3	The 2G Standard	23
2.2.4.4	The 2.5G Standard	24
2.2.4.5	The 3G Standard	25
2.2.4.6	GSM Frequency Band	25
2.2.4.6.1	GSM-900 and GSM-1800	27
2.2.4.7	Comparison between 2G, 2.5G and 3G	28
2.2.4.8	GSM Security	30
2.3	Proposed Solution	31
2.3.1	Project Methodology	31
2.4	Project Requirements	35
2.4.1	Software Requirements	35

2.4.2	Hardware Requirements	35
2.5	Project Schedule and Milestone	36
2.6	Conclusion	39

CHAPTER III ANALYSIS

3.1	Introduction	40
3.2	Problem Analysis	41
3.2.1	Analysis of Manual Process	41
3.2.1.1	Current Manual Process Scenario	41
3.3	Requirement Analysis	43
3.3.1	Data Requirement	43
3.3.2	Functional Requirement	48
3.3.2.1	Main Function of the System	48
3.3.2.2	Use Case Diagram for Ticket System for Mara Liner Using SMS	50
3.3.2.3	Sequence Diagram for Administrator	57
3.3.2.4	Sequence Diagram for User Staff	59
3.3.3	Non-functional Requirement	61
3.3.3.1	Performance Requirement	61
3.3.4	Other Requirement	61
3.3.4.1	Software Requirement	61
3.3.4.2	Hardware Requirement	63
3.4	Conclusion	64

CHAPTER IV DESIGN

4.1	Introduction	65
4.2	High-Level Design	66
4.2.1	System Architecture	66
4.2.2	User Interface Design	67
4.2.2.1	Navigation Design	77
4.2.2.2	Input Design	79
4.2.2.3	Output Design	80
4.2.3	Database Design	83
4.2.3.1	Conceptual and Logical Database Design	83
4.3	Detailed Design	84
4.3.1	Software Design	84
4.3.2	Physical Database Design	84
4.4	Conclusion	85

CHAPTER V	IMPLEMENTATION	
5.1	Introduction	86
5.2	Software Development Environment Setup	87
5.3	Software Configuration Management	88
	5.3.1 Configuration Environment Setup	88
	5.3.2 Version Control Procedure	90
5.4	Implementation Status	91
5.6	Conclusion	92
CHAPTER VI	TESTING	
6.1	Introduction	93
6.2	Test Plan	93
	6.2.1 Test Organization	93
	6.2.2 Test Enviroment	93
	6.2.1 Test Schedule	95
6.3	Test Strategy	96
	6.3.1 Classes of Test	96
	6.3.1.1 Unit Testing	96
	6.3.1.2 Integration Testing	97
	6.3.1.3 System Testing	97
	6.3.1.4 User Acceptance Testing	97
	6.3.1.5 Black Box Testing	98
6.4	Test Design	98
	6.4.1 Test Description	98
	6.4.1.1 Interface Unit Testing – IUT 01	99
	6.4.1.1 User Acceptance Unit Testing – UAUT 01	99
	6.4.2 Test Data	100
6.5	Test Result And Analysis	100
6.6	Conclusion	106

CHAPTER VII	PROJECT CONCLUSION	
7.1	Observation on Weakness and Strengths	107
7.1.1	Strengths	107
7.1.1.1	Save Time	107
7.1.1.2	System Security	108
7.1.1.3	Simple and User-friendly Interface	108
7.1.2	Weakness	108
7.1.2.1	Prototype	108
7.1.2.2	Delay	108
7.1.2.3	Unable to receive SMS	108
7.2	Proposition for Improvement	109
7.2.1	Auto Sending SMS Notification	109
7.3	Contribution	109
7.4	Conclusion	110
REFERENCES		111
BIBLIOGRAPHY		113
APPENDICES		114

LIST OF TABLES

TABLE	TITLE	PAGE
2.1:	Comparison between Existing Systems via SMS	20
2.2:	GSM Frequency Band List	26
2.3:	Comparison Standard and Technology Mobile Networking	28
2.4:	Duration of each activity	36
2.5:	Project Schedule for PSM I	36
2.6:	Project Schedule for PSM II	38
3.1:	Data Model for Login Table	44
3.2:	Data Model for Schedule Table	44
3.3:	Data Model for Location Table	45
3.4:	Data Model for Inbox Table	45
3.5:	Data Model for Booked Table	46
3.6:	Data Model for Commands Table	46
3.7:	Data Model for Application_Setting Table	47
3.8:	Data Model for Parameter Table	47
3.9:	Data Model for Price_Setting Table	47
3.10:	Data Model for Reminder Table	48
3.11:	Description of Login Use Case	50
3.12:	Description of Searching Customer Info Use Case	52
3.13:	Description of Send Notification or Reminder Info Use Case	53
3.14:	Description of Login Use Case	54
3.15:	Description of Searching Customer Info Use Case	56
3.16:	Description of Setup Notification or Reminder Info Use Case	57
3.17:	Hardware Requirement for System	63

4.1:	Input Design for the System	79
4.2:	Output Design of the System	80
5.1:	Implementation Status of Ticket System for Mara Liner Using SMS	91
6.1:	Hardware and software requirement	94
6.2:	Test Schedule of SMS Notification System	95
6.3:	Test Description	98
6.4:	Ticket System for Mara Liner Using SMS Interface Unit Testing	99
6.5:	User Acceptance Testing	100
6.6:	Module 1 Test Case Result	101
6.7:	Module 2 Test Case Result	102
6.8:	Module 3 Test Case Result	103
6.9:	Module 4 Test Case Result	104
6.10:	Module 5 Test Case Result	105
6.11:	Module 6 Test Case Result	106

LIST OF FIGURES

DIAGRAM	TITLE	PAGE
2.1:	GSM Modem's Hardware	10
2.2:	Notification for Library SMS Notification System	13
2.3:	Library SMS Notification System Interface Version 1	14
2.4:	Library SMS Notification System Interface Version 1.1	15
2.5:	Early Alert Notification System	16
2.6:	Open source Ticket Request System Main Interface	17
2.7:	Structure of a GSM Network	21
2.8:	Architecture of a GSM Network	22
2.9:	Transmission Overview	23
2.10:	Waterfall Life Cycle Diagram	31
3.1:	Current Manual System Flow	42
3.2:	Main Function of the system	49
3.3:	Use Case for the Administrator	50
3.4:	Use Case for User Staff	54
3.5:	Sequence Diagram for Administrator (Login)	57
3.6:	Sequence Diagram for Administrator (View Data)	58
3.7:	Sequence Diagram for Administrator (Send Notification or Reminder)	59
3.8:	Sequence Diagram for User Staff (Login)	59
3.9:	Sequence Diagram for User Staff (View Data)	60
3.10:	Sequence Diagram for User Staff (Setup Notification or Reminder)	60
4.1:	System architecture of System	66

4.2:	Login Interface	67
4.3:	Main Interface	68
4.4:	Customer Redeem Interface	68
4.5:	Add New Schedule Interface	69
4.6:	Schedule List Interface	70
4.7	Send Broadcast SMS Interface	71
4.8:	Add Location Interface	72
4.9:	Edit Location Interface	72
4.10:	Add New User Interface	73
4.11:	Edit User Interface	73
4.12:	Virtual Console Interface	74
4.13:	Send SMS Interface	75
4.14:	Price Setting Interface	76
4.15:	Navigation Design of Ticket System for Mara Liner Using SMS	78
4.16:	Message Box for Successfully Login	81
4.17:	Message Box for Unsuccessfully Login	81
4.18:	Message Box of Successfully Deliver Message	82
4.19:	Message Box of Unsuccessfully Deliver Message	82
5.1:	Overview of Software Development and Hardware Environment of System	87
5.2:	Microsoft Visual Basic 2008 Express Edition	89
5.3:	MobitekSMSAPI3 in Reference Window	90
6.1:	Login Failed Test	100

LIST OF ABBREVIATIONS

SMS	Short Messaging System
GSM	Global System for Mobile Communication
2G	Second Generation
3G	Third Generation
SIM	Subscriber Identity Module
AUC	Authentication Center
IMSI	International Mobile Subscriber Identity
PHP	Personal Home Page/ Hypertext Preprocessor
PSTN	Public Switched Telephone Network
GPRS	General Packet Radio Service
EDGE	Enhanced Data for Global Evolution
ITU	International Telecommunication Union
SDLC	System Development Life Cycle
ETSI	European Telecommunication Standard Institutes
IMT-2000	International Mobile Telecommunication-2000

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A:	Proposal Form	114
B:	Gantt Chart	122
C:	User Manual	124
D:	Log Book	135

CHAPTER I

INTRODUCTION

1.1 Project Background

SMS is another choice to communicate between people in long distance. As we know, SMS is most effective way to notify somebody rather than mailing. Instead, SMS just a simple text message than a complicated mailing.

Nowadays, a mobile phone device is getting more important in our daily routine life. When these mobile phones are connected to the Internet, the powers of the mobile devices are endless. With SMS, we can deliver timely data to the user at any place and any time. The application itself will help user to manage and do their daily routine life activity other than messaging and video conferencing. This project will cover the development of a system at Mara Liner. A proper system will be done using the appropriate software and hardware. The existing system that used in Mara Liner in Malaysia is unable to manage certain occasion such as checking or booking ticket.

Basically, a customer will be given information straight to counter ticket about the available ticket. Somehow, any notification will be informed by mail and internet, counter ticket management only manages to arrange date and it depend on first come first serve. This situation gives bad perspective to a customer for those who came early but need to wait and queue to get the ticket. Plus, the problem seems to be repeatedly

day by day and all the complaint seems to be just an old topic, even counter ticket management still unable to make any further action. These problems need to be settled to help customer especially to old folks, so does not need to wait a whole time just to have a short moment to get the ticket.

1.2 Problem Statement

Nowadays, ordinary people always busy as usual. Sometimes they do not have enough time to attend to check and get the ticket. More complicated the ordinary ticket was given to a customer to notify dates and sometimes customer accidentally lost or misplaces the ticket.

A lot of people appear in counter ticket mostly to check ticket, to book and get ticket or for the matter of business. In the counter ticket, the customer congestion normally happened, by the way many customer information were added, updated and deleted by system administrator. Human error would be the reason for data lost, switch and duplicated. Based on the problems that occur this system will give beneficial to counter ticket management or customer in order to make a proper scheduling and management more tag on up with the technology using nowadays. This system also will make the counter ticket environment became so easy and faster. The system did not happen to alert customer it also helps counter ticket management to augment the performance and task productivity.

This entire problem can be solved by using this system. All the information can be retrieved at any time and at any place when the customer or users need it.

1.3 Objective

The main objectives of the system are:

- i. An integrated GSM modem system for a checking ticket system.
 - By using the GSM modem as a device connected with the system, SMS will be send in order the purpose of the system need.
- ii. Sending specific reminder via Short Message Service (SMS).
 - The arrangements of the checking, booking ticket and reminder to get the ticket need to be vivid to avoid any redundant or overlapping management.
- iii. Avoid wasting for customer.
 - Without a proper scheduling time, customer needs to rush to have a ticket at counter ticket.

1.4 Scope

The scope of the project is only applied on two areas: Specific users and specific functional. Each area is describes as below.

1.4.1 Specific User

- System Administrator
 - The person who managed the system and have privileges mode.
- Staff
 - The staff needs to setup an update ticket available, location and price according to current schedule.

1.4.2 Specific Functionality

- Notification via SMS
 - Customer will be notified via SMS and all the ticket information will be shown for further reviews.
- A reliable management information system
 - A system that can react as an information system but in the same time, manage the ticket according to current schedule time and ticket available status.

1.5 Project Significance

The significance of this project is to enable system administrator to manage and setup the ticket schedule time for each customer. Notification or alert via SMS will help customer to keep in track what time and date they need to redeem their ticket. All information about the available ticket, booking ticket will be stored for future review.

1.6 Expected Output

This system expected to give a lot of benefits to counter ticket management and customer's personal information definitely safe and updated. This system also expectantly could help customer when they are alerted by these system, the information given definitely for them to compose a time arrangement for that day. Truly, every system have its specialties, how it be capable of to be manage and how its preserve expectation output.

1.7 Conclusion

As a conclusion, this system is very suitable in the environment of the counter ticket Mara Liner because all of the information needs to be record simply by using personal computer or laptop that flexible to use anywhere and anytime. The SMS notification system gives many benefits to the user in order to progress their job and make sure all the output avoid the entire problem that have been faced before. This chapter reviews on the description of the project and some related background information on the project. Beside that, this chapter observes the problem statement of this project to give a clear insight of what is the scope and objectives of the project. This chapter will become the guideline to all the work that is to be carried out in the later stage.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

Chapter 2 is the main chapter for whichever project that will be developed. The purpose of this chapter is to present a selected literature review, which is very important for the research. This chapter also describe and explain on the literature review carried out on the system and also the methodology that be used in developing this system. This chapter enlightened the project that will be developing to assure the system is far more effective. Besides that, previous research also will be discussed in this section at least three system and methodologies that being used in other research which is related to this system will be explained and compared to highlight the differences.

For the next section, every project development includes discussion of the methodology used where are methodology is use as the solution tree to the project. Methodology is a set of guidelines, standards and processes that is involved and followed explicitly in order to produce a product or software. In this study the methods is consist of the compatibility development process. By having the proper project methodology, the project is able to be complete within the given time.