

THESIS APPROVAL STATUS FORM

JUDUL: VEHICLE NUMBER BIDDING SYSTEM FOR JPJP

SESI PENGAJIAN: 2005/2006

Saya AZLINA BINTI HARRIS
(HURUF BESAR)

mengaku membenarkan tesis (PSM/Sarjana/Doktor Falsafah) ini disimpan di Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dengan syarat-syarat kegunaan seperti berikut:

1. Tesis adalah hakmilik Kolej Universiti Teknikal Kebangsaan Malaysia.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. ** Sila tandakan (/)

 SULIT (Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)

 TERHAD (Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)

 √ TIDAK TERHAD


(TANDATANGAN PENULIS)

Alamat Tetap: 56, Lintang Sembilang,
Bandar Seberang Jaya, 13700 Seberang
Perai, Pulau Pinang.

Tarikh: 31/3/06


(TANDATANGAN PENYELIA)

En. Ahmad Fadzli Nizam Bin
Abdul Rahman
Nama Penyelia

Tarikh: 31/3/06

CATATAN: ** Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa.

^ Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

raf

QA76.64 .A94 2006



0000039084

Vehicle number bidding system for JPJPP / Azlina Harris.

VEHICLE NUMBER BIDDING SYSTEM FOR JPJPP

AZLINA BINTI HARRIS

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


**FAKULTI TEKNOLOGI MAKLUMAT DAN KOMUNIKASI
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
2006**

ADMISSION

I admitted that this project title name of
VEHICLE NUMBER BIDDING SYSTEM FOR JPJPP

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

STUDENT : _____ Date : _____
(AZLINA BINTI HARRIS)

SUPERVISOR : _____ Date : 31/3/06

(EN. AHMAD FADZLI NIZAM
BIN ABDUL RAHMAN)

DEDICATION

To my beloved parent, your love and support are my greatest inspiration.

To my friends, for your sacrifices, encouragement, and support towards project accomplishment.

To my lecturer, for being receptive and critical, and challenging me to be a better student.

To my supervisor, for guiding and helping me through the project.

ACKNOWLEDGEMENTS

First of all, I would like to thanks to Kolej Universiti Teknikal Kebangsaan Malaysia because give me an opportunity to go through my Project Sarjana Muda. The Kolej Universiti Teknikal Kebangsaan Malaysia provides lab facility for online searching source from internet.

In here I would to thanks for En Ahmad Fadzli Nizam Bin Abdul Rahman who is my PSM supervisor. He is playing an important role in areas of encouragement, instructions and inspiration.

I would like to convey my deepest appreciation and gratitude to my course mates because they are willing to help me.

In addition, I would also like to thanks for my dearest family and friends for their encouragement and support. Without their helps, I believe that I cannot perform well during this PSM II. For those whose name is not stated, I would like thanks all the help and support that give to me in performing the PSM.

ABSTRACT

Vehicle Number Bidding System which has been suggested to manage the process of buying the vehicle number through bidding or personal for *Jabatan Pengangkutan Jalan Pulau Pinang*. The scopes of VNBS are managed Personal Applicant, Bidding Applicant, Bidding Result, Successful Applicant, Unsuccessful Applicant and Payment. The scopes are important role to make the system systematic, reliable and efficiency. From the researching, the current system is not providing a complicated management system and not effective to handle the personal and bidding application. Besides that, the expense is high in spending human powers for the task to complete. Apart from that, the significant project is making the vehicle number bidding process more advanced and complicated. The VNBS database can be shared through Local Area Network connection between multiple computers. At here, the Object Oriented Analysis Design (OOAD) is a new system development approach encouraging and facilitating re-use of software components applied into VNBS system. With this methodology, a computer system can be developed on a component basis which enables the effective re-use of existing components and facilitates the sharing of its components by other systems. As conclusion, VNBS is a networking sharing database system to make the managing of personal and bidding application more advanced and complicated.

ABSTRAK

Vehicle Number Bidding System (VNBS) dicadangkan untuk menghasilkan dan menguruskan proses pembelian nombor kenderaan secara penawaran dan juga personal untuk Jabatan Pengangkutan Jalan Pulau Pinang. Skop *VNBS* adalah menguruskan Pemohon Personal, Pemohon Penawaran, Keputusan Penawaran, Pemohon Berjaya, Pemohon Tidak Berjaya and Bayaran. Skop ini penting bagi memastikan system lebih sistematik dan cekap. Daripada kajian didapati sistem semasa tidak dapat membekalkan satu pengurusan pembelian nombor kenderaan yang lengkap. Sedangkan, syarikat perlu membiayai tenaga kerja dari semasa ke semasa. Di sini, *VNBS* akan menyelesaikan masalah dalam menghasilkan satu sistem yang lengkap dan serba guna. *VNBS* akan menggunakan perkongsian pangkalan data dalam *Local Area Network* untuk berhubung dengan beberapa komputer. *Object-Oriented Analysis Design (OOAD)* ialah satu pendekatan tentang pakai semula dan perkongsian komponen tersebut. Dengan metodologi ini, sistem komputer dapat dibangunkan dengan berkesan apabila guna semula komponen dan kelengkapan dalam sistem. Oleh itu, rangkaian perkongsian pangkalan data akan dapat menguruskan *VNBS* dengan lengkap dan berkesan.

TABLE OF CONTENTS

TITLE	PAGE
ACKNOWLEDGEMENTS	i
ABSTRACT	ii
ABSTRAK	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	ix
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS	xiii
LIST OF APPENDICES	xiv
CHAPTER I - INTRODUCTION	1
1.1 Project Background	1
1.2 Problem Statements	2
1.2.1 Problem Analysis	4
1.2.2 Methods of Solution	5
1.3 Objectives	6
1.4 Scopes	7
1.4.1 Login	7
1.4.2 Personal Applicant	8
1.4.3 Bidding Applicant	8
1.4.4 Bidding Result	8
1.4.5 Successful Applicant	8
1.4.6 Unsuccessful Applicant	9
1.4.7 Confirmation Letter	9
1.4.8 Cancellation Letter	9
1.4.9 Payment	9
1.4.10 Receipt	9
1.4.11 Report	10

1.5	Project Significance	10
1.6	Expected Output	11
1.7	Conclusion	11

CHAPTER II - LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1	Introduction	12
2.2	Fact and Finding	12
2.2.1	Case Studies on Auction Sentry	13
2.2.2	Case Studies on Auction Navigator	14
2.2.3	Case Studies on HarvEX	16
2.2.4	Case Studies on Paragon Last Minute Gebot	17
2.2.5	The Comparison of Case Studies	18
2.3	Project Methodology	18
2.3.1	The Chosen Methodology	19
2.4	Project Requirements	21
2.4.1	Software Requirements	21
2.4.2	Hardware Requirements	23
2.5	Project Schedule and Milestones	23
2.6	Conclusion	24

CHAPTER III - ANALYSIS

3.1	Introduction	25
3.2	Problem Analysis	25
3.2.1	Business Process	26
3.2.2	Problem Statements	28
3.3	Requirement Analysis	29
3.3.1	Functional Requirement	29
3.3.1.1	Functions of The System	31
3.3.2	Business Flow	33
3.3.3	Use-Case Diagram	35
3.3.4	Actors	36
3.3.4.1	Staff	36
3.3.4.2	Administrator	36

3.3.5	Use Case Description	37
3.3.5.1	Authenticate User	37
3.3.5.2	Manage Applicant	39
3.3.5.3	Manage Personal Applicant	41
3.3.5.4	Manage Bidding Applicant	43
3.3.5.5	Generate Bidding Result	45
3.3.5.6	Manage Successful Applicant	47
3.3.5.7	Manage Unsuccessful Applicant	49
3.3.5.8	Generate Report	51
3.3.6	Software Requirements	53
3.3.6.1	Operating System	53
3.3.6.2	Visual Basic 6.0	53
3.3.6.3	Microsoft Access 2003	53
3.3.6.4	Rational Rose	54
3.3.6.5	Microsoft Project	54
3.3.6.6	Microsoft Visio 2003	54
3.3.6.7	Adobe Photoshop 7.0	54
3.3.7	Hardware Requirements	55
3.3.8	Network Requirements	55
3.4	Conclusion	56
CHAPTER IV - DESIGN		57
4.1	Introduction	57
4.2	High Level Design	57
4.2.1	Raw Input/Data	58
4.2.1.1	Input Form	58
4.2.2	System Architecture	61
4.2.2.1	Platform Architecture Overview	63
4.2.2.2	Static Organization	63
4.2.2.3	High-Level Class Diagram	66
4.2.2.4	Package And Subsystem Layering	67
4.2.2.5	Deployment View	69
4.2.3	User Interface Design	70
4.2.3.1	Navigation Design	85

4.2.3.2	Input Design	88
4.2.3.3	Output Design	88
4.2.4	Database Design	88
4.2.4.1	Entity Relationship Diagram	89
4.3	Detailed Design	90
4.3.1	Physical Database Design	90
4.3.1.1	Data Dictionary for Description of Entities	90
4.3.1.2	Relationship Description	92
4.3.1.3	Attributes Description	93
4.4	Conclusion	96
 CHAPTER V - IMPLEMENTATION		98
5.1	Introduction	98
5.2	Software Development Environment	99
5.3	Software Configuration Management	100
5.3.1	Configuration Software Setup	100
5.3.2	Version Control Procedure	102
5.4	Implementation Status	105
5.5	Conclusion	109
 CHAPTER VI - TESTING		110
6.1	Introduction	110
6.2	Test Plan	111
6.2.1	Test Organization	111
6.2.2	Test Environment	112
6.2.3	Test Schedule	112
6.3	Test Strategy	113
6.3.1	Classes of Test	113
6.4	Test Design	114
6.4.1	Test Description	114
6.4.1.1	Unit Testing	115
6.4.2	Test Data	115
6.5	Test Result and Analysis	115
6.6	Conclusion	116

CHAPTER VII - PROJECT CONCLUSION	117
7.1 Observation on Weaknesses and Strengths	117
7.1.1 Weakness	117
7.1.2 Strengths	118
7.2 Propositions for Improvement	118
7.3 Conclusion	119
REFERENCES	120

LIST OF TABLES

TABLE	TITLE	PAGE
2.1	Comparison between the Systems	18
2.2	Software Requirement for VNBS	21
2.3	Hardware Requirement for VNBS	23
3.1	Module Description	29
3.2	The Minimum Hardware Requirements for VNBS	55
4.1	Bidding Application Form	58
4.2	Personal Application Form	59
4.3	Bidding Result Form	60
4.4	Confirmation Letter	60
4.5	Cancellation Letter	61
4.6	Entities Description	90
4.7	Relationship Description	92
4.8	Administrator Entity	93
4.9	Staff Entity	93
4.10	Applicant Entity	93
4.11	Personal Entity	94
4.12	Bidding Entity	95
4.13	Successful Entity	95
4.14	Unsuccessful Entity	96
4.15	Payment Entity	96
5.1	Version Control for Security Module	102
5.2	Version Control for Applicant Module	102
5.3	Version Control for Personal Applicant Module	103
5.4	Version Control for Bidding Applicant Module	103
5.5	Version Control for Successful Applicant Module	103

5.6	Version Control for Unsuccessful Applicant Module	104
5.7	Version Control for Payment Module	104
5.8	Implement Status for Security Module	105
5.9	Implement Status for Applicant Module	105
5.10	Implement Status for Personal Applicant Module	106
5.11	Implement Status for Bidding Applicant Module	106
5.12	Implement Status for Successful Applicant Module	107
5.13	Implement Status for Unsuccessful Applicant Module	108
5.14	Implement Status for Payment Module	108
6.1	Cycle and Duration of Testing	112

LIST OF FIGURES

FIGURE	TITLE	PAGE
1.1	The process of manual system	3
2.1	Auction Sentry Main Screen	14
2.2	Auction Navigator Main Screen	15
2.3	HarvEX Main Screen	16
2.4	Paragon Last Minute Gebot	17
2.5	RUP workflows in a typical project	20
3.1	Activity Diagram for Current System	27
3.2	Activity Diagram for Personal Applicant Process	33
3.3	Activity Diagram for Bidding Applicant Process	34
3.4	Use Case Diagram for VNBS	35
3.5	Use Case for Authenticate User	37
3.6	Sequence Diagram for Authenticate User	38
3.7	Use Case for Manage Applicant	39
3.8	Sequence Diagram for Manage Applicant	40
3.9	Use Case for Manage Personal Applicant	41
3.10	Sequence Diagram for Manage Personal Applicant	42
3.11	Use Case for Manage Bidding Applicant	43
3.12	Sequence Diagram for Manage Bidding Applicant	44
3.13	Use Case for Generate Bidding Result	45
3.14	Sequence Diagram for Generate Bidding Result	46
3.15	Use Case for Manage Successful Applicant	47
3.16	Sequence Diagram for Manage Successful Applicant	48
3.17	Use Case for Manage Unsuccessful Applicant	49
3.18	Sequence Diagram for Manage Unsuccessful Applicant	50
3.19	Use Case for Generate Report	51

3.20	Sequence Diagram for Generate Report	52
4.1	Package Representing Layers VNBS System Architecture	62
4.2	VNBS Architecture Layer	63
4.3	The CSCI for VNBS packages	64
4.4	Class Diagram for VNBS	66
4.5	Three-Tier VNBS Model	68
4.6	Deployment Model for VNBS	69
4.7	Main Screen for VNBS	70
4.8	Staff Login Screen	71
4.9	Staff Menu Screen	72
4.10	Vehicle Number Search Screen	73
4.11	Applicant Screen	74
4.12	Personal Applicant Screen	75
4.13	Bidding Applicant Screen	76
4.14	Bidding Result Screen	77
4.15	Successful Applicant Screen	78
4.16	Unsuccessful Applicant Screen	79
4.17	Payment Screen	80
4.18	Admin Login Screen	81
4.19	Admin Menu Screen	82
4.20	New Staff Registration Screen	83
4.21	Report Screen	84
4.22	Navigation Design for VNBS Main Screen	85
4.23	Navigation Design for Administrator Menu Screen	86
4.24	Navigation Design for Staff Menu Screen	87
4.25	Entity Relationship Diagram for VNBS	89
5.1	Three-Tier Architecture	99

LIST OF ABBREVIATIONS

ABBREVIATION	WORD / DESCRIPTION
KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia
JPJ	Jabatan Pengangkutan Jalan
JPJPP	Jabatan Pengangkutan Jalan Pulau Pinang
VNBS	Vehicle Number Bidding System
UML	Unified Modeling Language
ERD	Entity Relationship Diagram
OOAD	Object Oriented Analysis Design
LAN	Local Area Network

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A	Gantt Chart	121
B	Input Design	130
C	Output Design	134
D	Unit Testing	138
E	Test Data	144
F	Test Result and Analysis	148
G	VNBS User Manual	152
H	VNBS Letter, Receipt and Report	180

CHAPTER I

INTRODUCTION

1.1 Project Background

The project was to design and develop a system that could be use by the staffs of *Jabatan Pengangkutan Jalan Pulau Pinang (JPJPP)*. The project title is Vehicle Number Bidding System (VNBS). The project will be a standalone application that emphasized on simplifying the process of vehicle number bidding application.

The manual system will take time and is not efficient to identify the result for the vehicle number bidding applications. In this case, the VNBS is the solution system to overcome problem of that faced by the user.

A Vehicle Number Bidding System has been designed and developed to be used by the staffs in the *Unit Pendaftaran Baru*. This unit manages the process of buying a new vehicle number. There are two types of applicant which are personal and bidding. The personal applicants are the people who buy the current or the running vehicle number. The bidding applicants are the people who bid for the certain vehicle number. This vehicle number is a new vehicle number and still not running in the current list.

With the system, the staff that handles the bidding applicant only record the information needs and the system will generate the result of the bidding applications. The system also will generate confirmation letter for the successful applicant and

cancellation letter for unsuccessful applicant. After the successful applicants complete the balance payment, the system will generate the payment receipt for the successful applicant. The staff that handles the personal applicant has to check the current vehicle number first. After received payment from the applicant, the staff has to record all the information need by the system. The system then will generate the payment receipt for the personal applicant.

Without the system, the staff has to check all the bidding application forms, sort the forms order by vehicle number and write the bidding result form. The manual process takes much time to complete. Sometimes, the staffs have to spend days to process the bidding applications form and find the results.

1.2 Problem Statements

Based on the research conducted by interviewing the staffs in *Unit Pendaftaran Baru*, they still using the manual system to process any bidding application forms. The manual process has many problems because it involved many steps to get the bidding results. Figure 1.1 below show the steps on how to process the vehicle number bidding application forms in manual system.

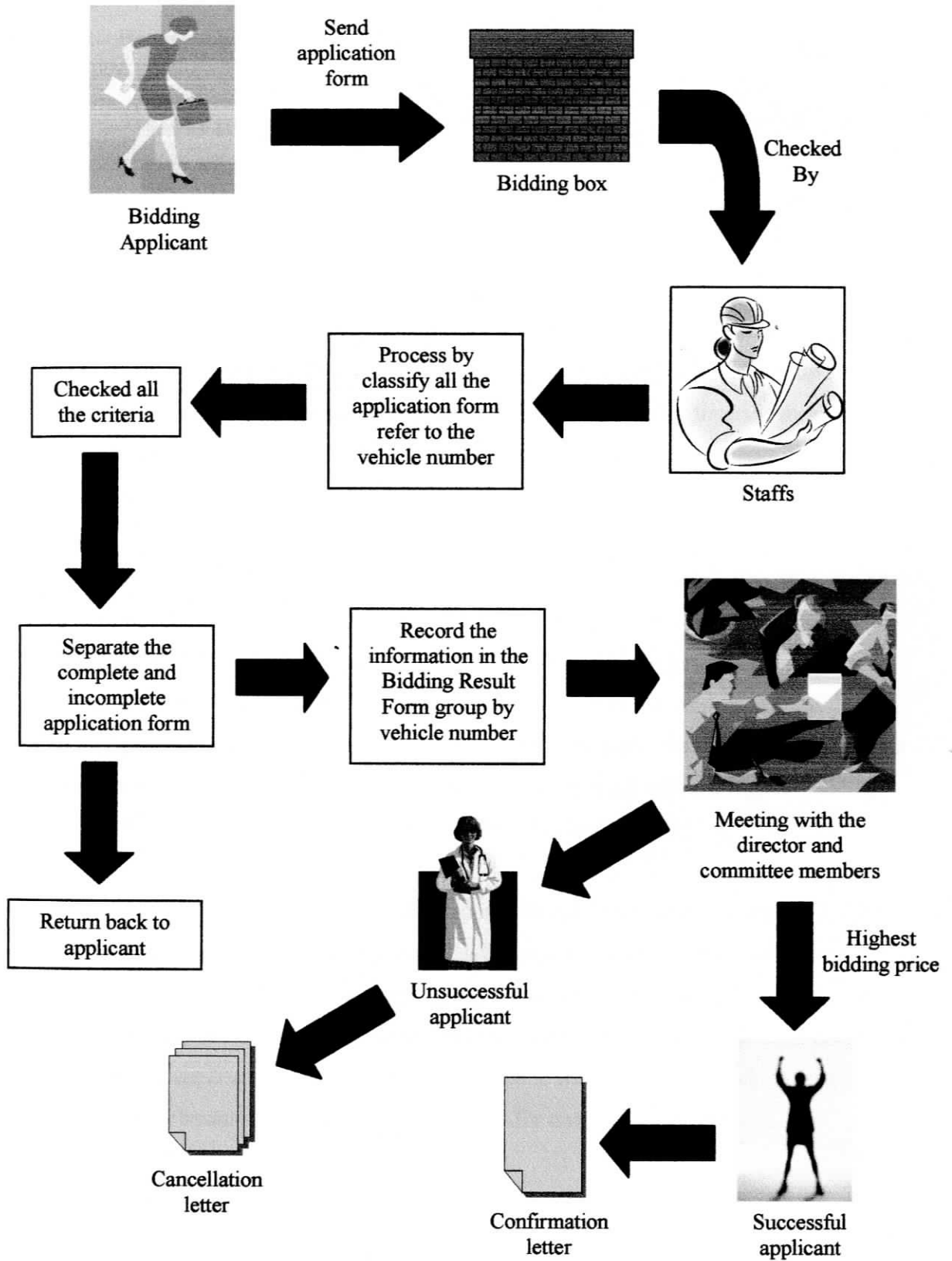


Figure 1.1: The process of manual system

1.2.1 Problem Analysis

The main problems that arise from the manual system which can be state in the documentation are:-

i. Wasting Time

The process of recording by manually is taken much time. It sometimes causes some problem to the staff as they must be concentrated on their work. When the bidding box is open to public, the bidding applicant will put the bidding application form in the bidding box. After the bidding date is closed, the staffs will start to process the application form.

The staffs wasting their time when they have to check manually whether the all the criteria like application form, money order for the deposit must be minimally 10% from the bidding price and the photocopy of IC are included. When all the criteria are completed, they have to separate and group the form refer to the vehicle number. After the application form is group by the vehicle number, the staffs then have to check which application form has the highest bidding price. The applicant with the highest bidding price is the successful applicant and will get the vehicle number.

The staffs then have to fill in the Bidding Result Form for every vehicle number. This form contains the bidding application information that bid for the vehicle number. After the Bidding Result Form are sign by the committee, the confirmation letter then will be given to the successful applicant and cancellation letter will be given to the unsuccessful applicant. The Bidding Result Form is written manually, which take much time to finish because there are many applicants for one vehicle number.

ii. **Many Staffs Involve**

Actually, there are only two staffs manage and process the bidding application forms but when the bidding box is closed to public, the two staffs that handle the bidding box will ask another staffs to help them. These jobs need many human powers because it involved many steps to process the application forms likes checking, recording and sorting.

1.2.2 **Methods of Solution**

There are several types of solution for the problem statement of the manual system. A standalone system will be developing to solve the problems. The new system will replace the manual system totally. Below show the ways on how the new system will solve the manual system problems.

i. **Solution for Wasting Time**

As usual, the staffs have to do many works to get the bidding results. They have to check, record and sorting the application forms one by one. The system can solve the problem in efficient ways.

With this system, the staff has to record the bidding application information in the system. The system then will save the information in the database. From the bidding application information, the system will generate the bidding result. This bidding result contain the list of bidding application information that bid for the same vehicle number. The successful applicant information will be in the top of the list. The staff must print the Bidding Result Form because it needs to be confirmed and sign by the chairman and the committee of the *Unit Pendaftaran Baru*.

After confirmation, the staff has to record the required information in the system so that the system can generate the confirmation letter for the successful applicant and

cancellation letter for the unsuccessful applicant. The system will save time in processing the bidding forms.

ii. Solution for Many Staffs Involve

With the system, only one or two staffs are needed to process the bidding application form. The system will do all the human jobs automatically. The system will classify the application form, check the highest bidding price, generate the bidding result, and print the confirmation letter for successful applicant and cancellation letter for unsuccessful applicant.

1.3 Objectives

Before starting the development for VNBS, several drawbacks have been identified through the research conducted. Hence, VNBS is planned to develop to reduce drawbacks and ensuring a useful system is created that will meet predefined objectives and requirements. The project objectives are: -

i. To provide a security vehicle number bidding system

The staff has to enter the password to use the system. Only the authorized person can access to the system and this will keep the private data safety.

ii. To manages the bidding applicants and personal applicants

The system will separate the personal applicants and the bidding applicants. For the bidding applicant, the system will process the application form to get the result for successful applicant and unsuccessful applicant. For the personal applicant, the system will record the applicant information after they has make the payment.