

**DRIVING LICENCE MANAGEMENT SYSTEM**

**CASE STUDY: UGANDA REVENUE AUTHORITY**

**SUBMITTED**

**BY**

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**DECLARATION**

We, OGWANG MICHAEL and KYANDE AUGUSTINE, declare that this dissertation is our original work and has not been submitted for the award of a degree/diploma in any other university/college/institution.

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## APPROVAL

This dissertation entitled "Driver License Management System" was done under my supervision and has been submitted to the College Of Applied Sciences And Technology for examination with my approval as supervisor

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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>DBMS</b>	Database Managements System
<b>DFD:</b>	Data Flow Diagram.
<b>DLMS:</b>	Driver License Management System.
<b>DVLA:</b>	Driver and Vehicle Licensing Authority.
<b>IDE:</b>	Integrated Development Environment
<b>INF</b>	First Normal Form
<b>ITG</b>	Integrated Test Group
<b>NIS:</b>	Network Information Service
<b>RAM:</b>	Random Access Memory.
<b>TDLMS:</b>	Traditional Driver License Management System.
<b>URA:</b>	Uganda Revenue Authority.
<b>VELD:</b>	Vehicle Examination and Licensing Division.

## ABSTRACT

*In URA, there was use of traditional system. Traditional Driver License Management System (TDLMS) used paper and files to store data. This was not secure. Time consuming and processing was difficult. The objective of this study was to determine and describe a better means of solving the paper work problem surrounding the driver license management in the URA. The researchers also had questions to ask pertaining to their study. The sample questions included among others, the following: What hardware resources were required to build an effective and interactive DLMS? , What software resources were required to build an effective and interactive DLMS? , What protocols were required for DLMS storage, security, and retrieval? , This study was conducted through a cross-sectional survey research design. In this study, the researchers traced through the URA records, interviewed a couple of drivers around Kampala and determined the extent to which the current system could be improved. In this study, the sample size was 700 participants but only 500 interviewees were selected from among the drivers and staff of URA. Data was collected using questionnaire, interviews and review of existing documents. This study employed stratified sampling technique, which identified sub-groups in the population and their proportions and selected from each sub-group to form a sample. The data collected was presented in tabular format showing responses on traditional paperwork system, basing on the observations, and interviews conducted with sampled drivers from the 5 divisions of Kampala district and the staff of URA. 100% of the respondents revealed that there is no computerized driver license management system in URA. The study revealed that 74% of the respondents say the current system is time wasting and unreliable. 26% of the respondents however tend to believe that the current system should stay. It was then concluded that computerization of the driver licensing system is the only way to go.*

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 INTRODUCTION**

This chapter gives a detailed explanation on the background of DLMS, the research problems faced by the old system and the recommended solutions to the above short comings, the research objectives which includes both the main and specific ones, the questions which were asked by the researchers and answers got after the system was implemented, the significance of the study which highlights the benefit of the new system to users and the general public at large, and finally the scope of the study which gives a detailed area of jurisdiction of the researchers as per their study.

#### **1.1 BACKGROUND OF THE STUDY**

The Uganda Revenue Authority (URA) was established by a Uganda Revenue Authority statute of 1991 and set up in September of the same year as a central body for the assessment and collection of specified revenue, to administer and enforce the laws relating to such revenue and to provide for related matters. This statute incorporated all the laws that were enforced then regarding tax collection.

Uganda Revenue Authority precisely among the laws above also handled the aspect of driver license management. URA used a manual paper based system which wasted a lot of time and in most cases, one was required to come back after one month to pick his or her license. This was accompanied by a hectic lining up during registration, documentation and payment for the particular driver license category.

The above problem has been prevalent for a number of years and for more than one reason affected people psychologically and emotionally because of the disappointments

that came with driver registration after queuing for a long time, lost information due to poor storage method (paper work), and heavy payment due to client ignorance.

In order to solve the above problem, there was need to develop a computerized system that would handle the challenges mentioned, hence the study of Driver License Management System.

## **1.2 RESEARCH PROBLEM**

In URA, there was use of traditional system. Traditional Driver License Management System (TDLMS) used paper to store data. This was not secure. Time consuming and processing was difficult. So to remove such limitation and difficulty, a new computerized Driving License Management System was needed, which is easy to use, secure and take short time to process. This problem was finally solved by the implementation of the new computerized system.

## **1.3 RESEARCH OBJECTIVES:**

### **1.3.1 MAIN OBJECTIVE:**

The objective of this study was to design and develop a system that would solve paper work problem surrounding the driver license management in the URA. The new computerized system was able to bring that into being.

### **1.3.2 SPECIFIC OBJECTIVES:**

The new system was able to accomplish the following objectives:

- Describe and determine a better means of solving traditional DLMS by fully computerized system.
- Design and develop a better system that would over run the old traditional system.
- Test and implement the new computerized system to solve the problems surrounding DLMS at URA.

#### **1.4 RESEARCH QUESTIONS**

- What hardware resources were required to build an effective and interactive DLMS? The hardware required is computers with a minimum of at least 40GB hard drive size, processor speed of 1.86 GHz and RAM of 1.24 GB.
- What software resources were required to build an effective and interactive DLMS? The software requirements for this new system are: visual studio 2008, sql server 2005, sql server management studio, and windows operating system.

#### **1.5 SIGNIFICANCE OF THE STUDY**

In Uganda, the URA was unable to continuously and consistently follow the progress of the Drivers through its paper work system. The URA did not have up-to-date information on the security of the driver license data in the country. Hence with the new system in place, the security of driver information was put into being by new features such as user authentication and authorization.

This study also made it possible for drivers' license to be used for various purposes. A valid driver's license is both a legal determination and a personal asset that is often a requirement for education and training, employment, and other endeavors, like opening a personal bank account.

The researchers hope that the study will form a basis for further research on the DLMS. This should lead to the generation of new ideas for the better and more efficient DLMS.

#### **1.6 SCOPE OF THE STUDY**

This study on the Driver License Management System in Kampala was conducted between August, 2011 and February, 2012 through cross-sectional sample survey design of both the driver community and the staff of URA.

The study was conducted in Kampala district only in all the five divisions (Kampala Central Division, Kawempe Division, Nakawa Division, Makindye Division, and Lubaga

Division). Data was collected by the researcher using questionnaires, interviews, and Review of Existing Documents.

## **1.7 CONCLUSION**

The research problem of paper work was finally solved by computerizing the system; hence it became fast and secure to perform driver data transaction. The objectives to this study were achieved and storage of driver licence information for future retrieval was successful, the software and hardware resources needed for the system were implemented accordingly and their operation was as good as per user requirement specification. The significance of this study was seen in the effectiveness and motivation of the workers since there was easy and conduciveness in the working arena. The scope of the study was achieved since the area of jurisdiction of the researchers, the sample population and the time allotted was observed and followed promptly.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 INTRODUCTION**

In this chapter, the researchers reviewed literature related to Driver Licence Management System. The review was conceptualized under the objectives of study and focused mainly on computerization, data storage, data security and simplicity and their relationships with DLMS. These were the main issues on this study.

#### **2.1 COMPUTERIZATION OF DRIVER LICENCE MANAGEMENT SYSTEM**

Shelly Cashman (2000) defined computerization as furnishing with a computer or computer system while George Beekman (2003) defined Computerization as something modified to involve computers. According to Marilyn Meyer and Roberta Baber (1999), Computerization is a process that involves individuals, organization and society in general. These definitions agreed that computerization was a man made modification that affected man both directly and indirectly. However they ignored the fact that computerization was automation, processing, storage, retrieval and security which were considered as useful ingredients for this system. According to Nell Dale and John Lewis (2002), computerization was regarded as introduction of machinery to carry out tasks that were once done by manual labor. This definition however, did not explain how the computer as an introduced machinery was helpful in solving the tasks and which tasks in particular.

In view of the discrepancies in the definitions above, the definition of computerization adopted for this study was derived from Stacey C. Sawyer and Sarah E. Hutchinson (2000). Computerization is to support (1) Working towards making the system paperless

or minimizing the paper work and to provide, (2) Give pace to the Business, (3) To create the database for analysis (4) Fast Reporting & Queries. This definition was considered as appropriate because it mentioned the functionality of computerization in details.

Several theories were advanced to describe the relationship(s) between computerization and Driver License Management System. According to Nell Dale (2002) computerization should be an effort to eliminate paper works in the 21<sup>st</sup> century offices while Stacey C. (2000) suggested that computerization should not be taken as the only way DLMS will be secure since there was also hardware and software failure but rather taken as a necessary technology. Both propositions suggested that computerization was a thing of the current generation. However they both failed to address the issue of hardware and software compatibility, security measures that would be taken and the productivity of the system. Without the above measures in place, the system is as good as never was designed.

In view of the issues raised above, the relationship between computerization and DLMS should be characterized by the hardware and software availability, affordability and compatibility.

## **2.2 DATA STORAGE OF DRIVER LICENCE MANAGEMENT SYSTEM**

Data storage is referred to computer components and recording media that retains digital data, Brian K. Williams (1999) while Kurt F. Lauckner (1994) defined data storage as the term which had been used for the purpose of storing the data on different drives. However H.L Capron (1982) argued that data storage was the device which had been developed for the purpose of storing the data in the device for a longer period of time so that it could be easily retrieved when needed. These definitions agreed that data storage was the act of keeping records in a digital form for future reference. However they ignored the fact that, data storage was basically a computer hardware thing which was paramount in storage issues.

According to Johannes Gehrke (2000), data storage is regarded as the part of a computer that stored information for subsequent use or retrieval. This would then imply that data storage for our DLMS would not put into account the size of the Random Access

Memory (RAM) and the hard disk. In a case like this, the definitions did not give a clear description of data storage hence considered dangerous for this study.

Considering the above facts, the definition of data storage for this study was derived from Fred R. (1999). Data storage is the place (RAM and Hard disk) where data is held in an electromagnetic or optical form for access by a computer processor. This definition was considered appropriate because it explained the storage area, the data storage form and how to access it when needed. RAM for instance took the form of integrated circuits that allowed stored data to be accessed in any order with a worst case performance of constant time, Clancy (2008). The hard disk on the other hand is a non-volatile, random access digital data storage device, Artamonov (2007). Computer processor is the portion of a computer system that carries out the instructions of a computer program, to perform the basic arithmetical, logical, and input/output operations of the system, David (1996).

A good number of theories explained the relationship between data storage and DLMS. According to Kurt (1994), data storage should be looked at as a way digitally or electronically important information can be safely recorded for future reference. While Capron (1982) argued that data storage is in fact the holding of data in an electromagnetic form for access by a computer processor. These theories agreed that data storage was a digital or electromagnetic method of keeping information. However they both failed to mention whether the data was stored permanently or temporally, any backup setup in case of any loss, and the safety of the data (security). In view of the issues raised above, the relationship between data storage and DLMS should be characterized by the volatility of the data, accessibility, addressability, capacity and performance. This would serve to help the DLMS to be as efficient and perfect as a new system that was meant to offset the traditional driver license management system at URA.

### **2.3 DATA SECURITY OF DRIVER LICENCE MANAGEMENT SYSTEM**

Data security is the means of ensuring that data is kept safe from corruption and that access to it is suitably controlled, Jane Horvath (2008), while on the other hand, data

security is the practice of keeping data protected from corruption and unauthorized access NIS (1998). According to the above arguments, both sources agreed that data security was the protection of data from unauthorized access. They however did not explain in details how these data can be protected from users with no access rights to it. These short falls were a bit not appropriate for this study because the study intended to improve the security of the current system. The system in use at the time of carrying out this study did not have enough safety assurance of the recorded driver and vehicle information. The data could easily be lost in case of a fire break out or water spilling on the paper work which has got no backup anywhere.

In view of the discrepancies in the definitions above, the definition of data security adopted for this study was derived from Armonia (2002). Data security is the protection of data from unauthorized users through authentication, authorization, encryption, and access control. This definition was considered appropriate because it described in details how the data was going to be protected. It mentioned authentication which is a way of verifying if the data in question is still in its original format Kervin (2002). Authorization is the function of specifying access rights to resources, which is related to information security and computer security in general and to access control in particular Carroll (2004). Encryption is the process of transforming information (referred to as plaintext) using an algorithm (called cipher) to make it unreadable to anyone except those possessing special knowledge, usually referred to as a key, Springer (2009). Access control is a system that enables an authority to control access to areas and resources in a given physical facility or computer-based information system. Heinenmann (2007)

Several theories have been advanced to describe the relationship(s) between Data security and Driver License Management System. According to Jane Horvath (2008), data security should be the protection of data from intruders. However NIS (1998) disagreed with Jane because it is not about intruders only but it carried a lot more weight than that. NIS believed that the security of data was the general safety of the machine from intentional or accidental damage. Though both propositions generalized their findings on the safety of the data, they failed to recognize the importance of the physical security of

the environment in which the machine and the data is being kept. The implications of such proposition is very dangerous because even if the data is secured but the building where the machine is stationed is not strong or has security breaches, the whole study will be a waste of time.

In view of the issues raised above, the relationship between data security and Driver License Management System should be characterized by:

- Environmental design
- Mechanical, electronic and procedural access control
- Intrusion detection (with appropriate response procedures)
- Personnel Identification (authentication)
- Establish strong passwords
- Put up a strong firewall
- Install antivirus protection
- Update your programs regularly
- Secure your laptops
- Backup regularly
- Monitor diligently

These characteristics could help sort the security of the data of DLMS. With the above in place, the DLMS would be the perfect tool for the 21<sup>st</sup> century technology. It would be more secure compared to its predecessor, TDLMS.

## **2.4 SIMPLICITY OF THE DRIVER LICENCE MANAGEMENT SYSTEM**

Simplicity is something which is easy to understand or explain Craig (1998). While Oppy (2007) defined simplicity as the quality or condition of being plain or natural. These definitions agreed that simplicity is when something is easy and not complex as such. True and not false though, simplicity in the context of this study may claim that such a definition may not hold water. The definitions did not give any explanations what so ever of how easy it is to understand or describe how simple something could be. The

definition which was therefore considered appropriate for this study: “is a quality that is frequently sought by both users and technologists, although, as users frequently attest, it is not always found”, TechTarget (2007). This definition was considered appropriate because it addressed the aspect of quality, which is the standard of something as measured against other things of a similar kind; the degree of excellence of something, David (2006) and technologists, which are persons who use scientific knowledge to solve practical problems, Richey, R.C. (2008).

Several theories have been advanced to describe the relationship(s) between simplicity and Driver License Management System. According to Dancy (1999), simplicity means to be simple. While Craig (1998) believed that simplicity is when something is simple or complex depending on the way we choose to describe it. Simplicity is a cognitive theory that seeks to explain the attractiveness of situations or events to human minds, Chater (1999). They all gave the impression that simplicity was a derivative of the word simple. But they didn't specify in simple terms what it is all about. In view of the above raised issues, the relationship between simplicity and Driver License Management System should be that the new system will be simple to operate, save time and cost, and provide the best services ever. The license will be easy to carry because of its portability nature, renewal will be an easy task because the information was captured and stored in a computerized and secure format.

## **2.5 CONCLUSION**

Computerization is to support (1) Working towards making the system paperless or minimizing the paper work and to provide, (2) Give pace to the Business, (3) To create the data base for analysis (4) Fast Reporting & Queries. Data storage is the place (RAM and Hard disk) where data is held in an electromagnetic or optical form for access by a computer processor. Data security is the protection of data from unauthorized users through authentication, authorization, encryption, and access control. Simplicity is a quality that is frequently sought by both users and technologists, although, as users frequently attest, it is not always found.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 INTRODUCTION**

To develop the Driver License Management System, research of literature on concept of computerized management system, technologies and previous work done on driver licensing system was reviewed by reading Books, Journals, Professional magazines, searching on Internet using search tools like Google. The results of research and review helped in understanding the existing applications of management systems in driver license management systems.

#### **3.1 RESEARCH DESIGN**

This study was conducted through a cross-sectional survey research design. A cross-sectional research design is a research design where data is collected to make inferences about a population of interest (universe) at one point in time, Paul J. (2010). Cross-sectional survey presents an oriented methodology used to investigate population by selecting samples to analyze and discover occurrences. In this study, the researchers traced through the URA records, interviewed a couple of drivers around Kampala and determined the extent to which the current system could be improved. Cross-sectional survey enabled the researchers to provide numeric description of some part of the population, describe and explain events as they are, as they were or as they would be, provided issues such as economy of design, rapid data collection and ability to understand a population from part of it.

#### **3.2 POPULATION AND SAMPLING**

Population sampling is the process of taking a subset of subjects that is representative of the entire population, Castillo (2009). The sample must have sufficient size to warrant statistical analysis. In this study, our sample population was majorly in Kampala among the Drivers and the URA staff.

### 3.2.1 TARGET/ACCESSIBLE POPULATION

The target population consisted of 500 people that included the staff of URA and the Drivers around Kampala district. URA is the largest and oldest taxing body in Uganda. It is the one in whose hands the new system is. The drivers around Kampala district were taken as a sample group because they formed the highest number of drivers in the country and they had good knowledge of the irregularities of the system at URA. They were therefore considered appropriate for providing a focal point for this study of Driver License Management System visa vie Traditional Driver License Management System.

### 3.2.2 SAMPLE SIZE

A sample is the subset of a population, John Wiley (1962). In this study, the sample size was 700 participants but only 500 interviewees were selected from among the drivers and staff of URA. The 500 of the sample interviewees were distributed as follows:

Sample Population	Size
Kampala Central Division	90
Lubaga Division	90
Makindye Division	90
Nakawa Division	90
Kawempe Division	90
Uganda Revenue Authority	50
<b>Total</b>	<b>500</b>

**Table 3:1** showing the sample population and size

### 3.2.3 SAMPLING TECHNIQUES

This is a description of the strategies which the researchers used to select representative interviewees from the targeted/accessible population. This study employed stratified sampling technique, which identified sub-groups in the population and their proportions

and selected from each sub-group to form a sample. Stratified sampling was used to select the drivers and the staff of URA interviewees.

Stratified sampling technique was a technique that identified sub-groups in the population and their proportions and selected from each sub-group to form a sample. It grouped a population into separate homogenous sub-sets that shared similar characteristics so as to ensure equitable representation of the population in the sample. It aimed at proportionate representation with a view of accounting for the difference in sub-group characteristics.

Stratified sampling technique was therefore used to ensure that the targeted population was divided into different homogenous strata and that each stratum was represented in the sample in a proportion equivalent to its size in the accessible population. This was to ensure that each sub-group characteristic was represented in the sample thus raising the external validity of the study.

### **3.3 DATA COLLECTION**

Data is anything given or admitted as a fact and on which a research inference will be based. It is anything actual, or assumed, used as a basis for reckoning. Research is empirical and reality referent. Much deduction may precede its application but data is the end result of a research procedure.

#### **3.3.1 RESEARCH INSTRUMENTS OR TOOLS**

The study used questionnaires, interviews and document review as the main tools for collecting data. The selection of these tools have been guided by the nature of data to be collected, the time available as well as the objectives of the study. The aim of this study was to get the views, opinions, perceptions, feelings and attitudes towards the old system in comparison to the new system built.

Such information can best be collected through the use of interview techniques Abramson, J.J. and Abramson, Z.H. (1999). Semi-structured interviews are conducted with a fairly open framework which allow for focused, conversational, two-way communication. They can be used both to give and receive information. These enabled

the researchers to balance between the quantity and quality of data collected and provided more information about the system. This delicate balance between the quality and quantity of information was useful for a fuller explanation of the phenomena under investigation.

Interview was used since the study was concerned with variables that could not easily be observed directly such as views, opinions, perceptions and feeling of the interviewees. The sampled size was also quite large (500) and given the time constraints, interviews was the ideal tool for data collected. The target population was also well informed and was unlikely to have difficulties responding to the interview items.

### **3.3.1.1 INTERVIEWS**

Interviews of users were conducted as a data collection technique and this helped the researchers to get first hand information from the respondents giving an opportunity to gather information from respondents who are knowledgeable and who are being faced and affected by the current poor licensing system at the URA offices. The researcher interviewed some drivers in different divisions of Kampala and sampled staffs of URA and at the end of the interview, data requirements were noted.

#### **ADVANTAGES OF INTERVIEWS**

- Interviews were useful to obtain information about personal feelings, perceptions and opinions.
- They allowed more detailed questions to be asked.
- They were able to achieve a high response rate.
- Respondents' own words were recorded.
- Ambiguities were clarified and incomplete answers followed up.
- Precise wording were tailored to respondents and precise meaning of questions clarified.
- Interviewees were not influenced by others in the group.

### **DISADVANTAGES OF INTERVIEWS**

- Interviews were very time-consuming: setting up, interviewing, transcribing analysis, feedback, and reporting.
- They were very costly
- Different interviewers understood and transcribed interviews in different ways.

### **3.3.1.2 REVIEW OF EXISTING DOCUMENTS**

Analysis of the existing documentation at URA and all existing documents such as Daily record books; reports and other management documents were studied, this enabled the researches to understand how the driver licensing system operated, hence a appropriate measures were devised.

### **ADVANTAGES OF DOCUMENT REVIEW**

- Information contained in extant document(s) was independently verifiable.
- The document review process was done independently, without needing to solicit extensive input from other sources.
- Document review was typically less expensive than collecting the data on our own.

### **DIADVANTAGES OF DOCUMENT REVIEW**

- Data in the document source(s) was not exactly what we wanted for the needs assessment.
- Obtaining and analyzing necessary documents was a time consuming process.
- We were not able to control the quality of data being collected and only relied on the information provided in the document(s) to assess quality and usability of the source(s).

### **3.3.1.3 QUESTIONNAIRES**

Questionnaire is a collection of terms to which a respondent is expected to react to in writing. Questionnaires are useful for collecting information within the shortest period of time. It was used on the literate population.

Questionnaires were administered on personal basis to respondents. The questionnaires offered flexibility and a wide coverage. Participants were able to easily describe needed information in writing.

#### **ADVANTAGES OF QUESTIONNAIRES**

- They were relatively easy to analyze
- They were familiar to URA staff and the drivers
- Large samples of the given population were contacted at relatively low cost.
- They were simple to administer
- The format was familiar to most respondents
- Information was collected in a standardized way
- They were usually straight forward to analyze
- They were used because of the sensitive topics which users would feel uncomfortable speaking to an interviewer about.
- Respondents had time to think about their answers, they were not usually required to reply immediately.

#### **DISADVANTAGES OF QUESTIONNAIRES**

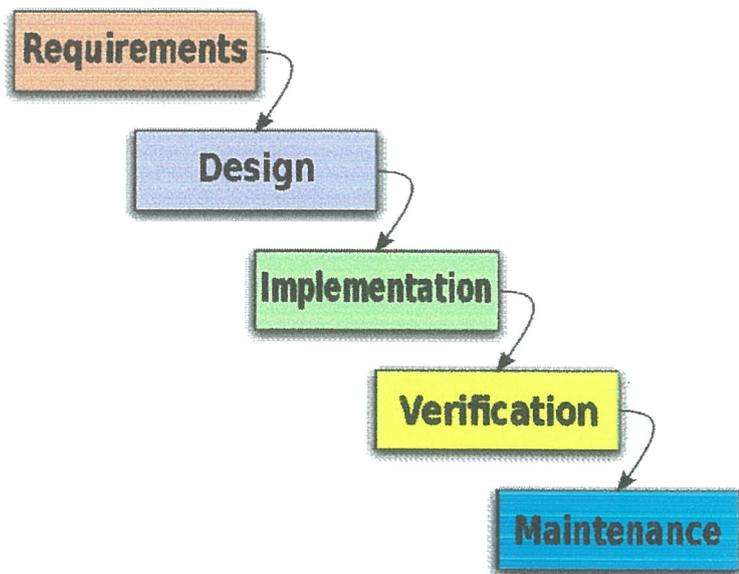
- When we could forget to ask a question, we could not usually go back to respondents, especially if they were anonymous.
- It was sometimes difficult to obtain a sufficient number of responses, especially from postal questionnaires.
- Respondents ignored certain questions.
- Questionnaires were incorrectly completed.
- They were not suitable to investigate long, complex issues.
- Respondents misunderstood some questions because of poor design and ambiguous language.
- Questionnaires were unsuitable for some kinds of respondents' e.g. visually impaired respondents.

### 3.4 PLANNING THE DEVELOPMENT PROCESS

The consideration here is to define a product lifecycle model. The software lifecycle encompasses all activities required to define, develop, test, deliver, operate and maintain a software product.

#### 3.4.1 WATERFALL MODEL

The **waterfall model** is a sequential design process, often used in software development processes, in which progress is seen as flowing steadily downwards (like a waterfall) through the phases of Conception, Initiation, Analysis, Design, Construction, Testing, Production/Implementation and Maintenance, McConnell, Steve (2006). It is illustrated below:



**Figure 3:1** showing the waterfall model

### 3.5 PRELIMINARY DEVELOPMENT SCHEDULE

This study used preliminary development schedule to estimate its system design.

#### 3.5.1 WORK BREAKDOWN STRUCTURE

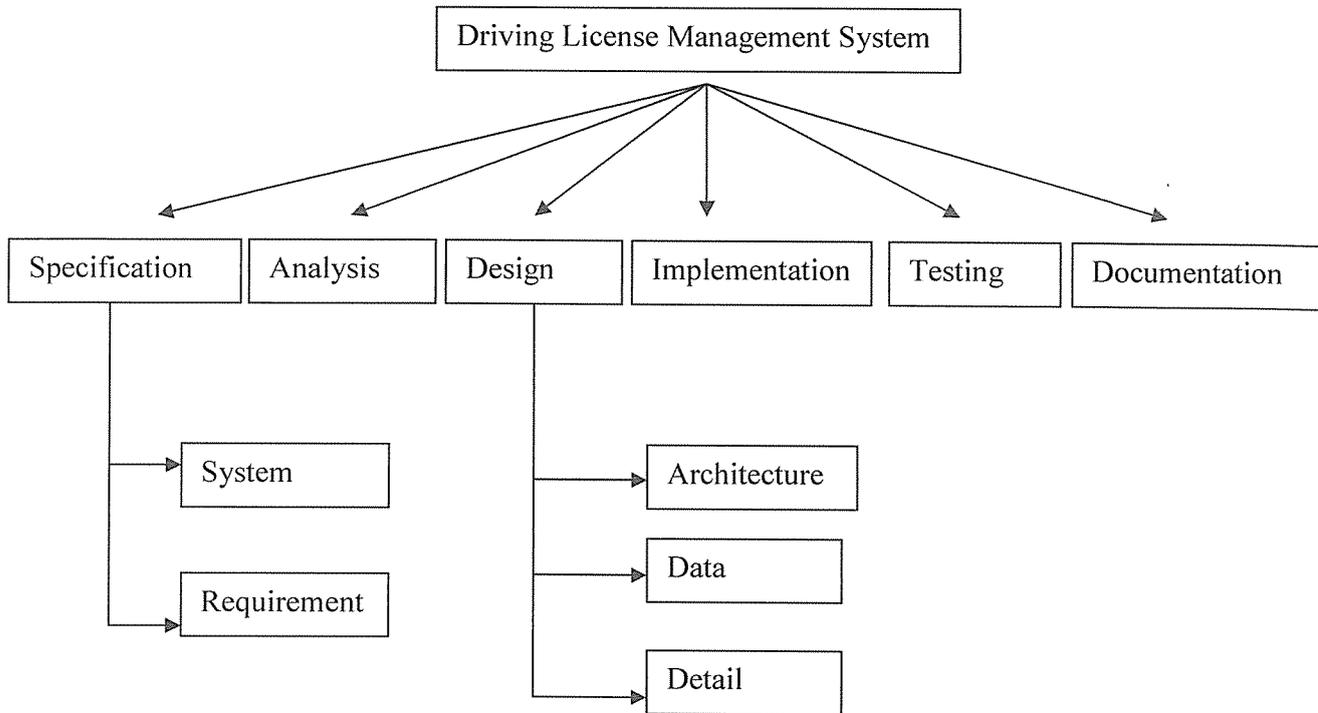


Figure 3:2 Work Breakdown Structure

### 3.6 TOOL USED

Software Requirements	Description
Visual basic.NET	IDE from Microsoft Corporation
Microsoft word 2007	Word processor from Microsoft Corporation
Microsoft sql server 2005	Data base from Microsoft Corporation
MSDN library	The help tool for the MS Visual studio.NET
Operating system	Windows 7

**Table3:2** showing software used

Hardware Requirements	Description
CPU	PENTIUM IV
SPEED	2 GHZ
COPROCESSOR	BUILT-IN
TOTAL RAM	128
HARD DISK	40GB
KEYBOARD	105KEYS
MOUSE	LOGITECH MOUSE
PRINTER	HP DESK JET

**Table 3:3** showing hardware used

### **3.7 LIMITATIONS OF THE STUDY**

- Time constraint: the time given by the university to complete the research project was not enough to carry in depth research.
- Financial constraints: a lot of money was required for buying the materials for carrying out the research; for transport to the field; for collecting data and for printing.
- The system required user training after implementation

### **3.8 CONCLUSION**

Research design used for this study was a cross-sectional survey design which enabled data collected to make inferences about a population of interest. The sample population was 700 but only 500 participants were registered. The sampling technique used was stratified sampling technique which helped to drivers and staff of URA interviewees. The research instruments used were questionnaires, interviews, and review of existing documents. The waterfall model was used as the life cycle model of the new software with work breakdown structure as the preliminary development schedule. Both the hardware and software tools used were highlighted and limitation to the study sited.

**DRIVING LICENCE MANAGEMENT SYSTEM**

**CASE STUDY: UGANDA REVENUE AUTHORITY**

**SUBMITTED**

**BY**

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**OGWANG MICHAEL            BIT/10006/81/DU**

**A RESEARCH REPORT SUBMITTED TO THE COLLEGE OF APPLIED  
SCIENCES AND TECHNOLOGY IN PARTIAL FULFILMENT OF  
THE REQUIREMENTS FOR THE AWARD OF THE  
DEGREE OF BACHELORS OF INFORMATION  
TECHNOLOGY OF KAMPALA  
INTERNATIONAL  
UNIVERSITY,**

**MARCH, 2012**

## CHAPTER FOUR

### FINDINGS, PRESENTATION AND ANALYSIS

#### 4.0 INTRODUCTION

This study investigated the best option for driver license management system. This was in light with the traditional paper work at URA. The data was collected using observations, interviews, and review of existing documents. This chapter presents the results of the analysis. This study aimed at designing a computerized framework for enhancing effective license management system for URA. Data collected were analyzed by categorizing to establish patterns and relationships from the information gathered. Secondly, data were presented and analyzed in percentages using tables, graphs and pie charts. Percentage was obtained by a formula  $\% = (n/N) * 100$  where n is the number of respondents, N is the total number of respondents.

#### 4.1 FINDINGS AND PRESENTATION

The data collected was presented in tabular format showing responses on traditional paperwork system, basing on the observations, and interviews conducted with sampled drivers from the 5 divisions of Kampala district and the staff of URA as follows:

Response	Number of Drivers	Number of URA staff	Percentage
Yes	-	-	-
No	450	50	100
Total	450	50	100

**Table 4:1** showing responses of Drivers and staff of URA whether they use computerized driver license management system.

From the above table, 100% of the respondents revealed that there is no computerized driver license management system.

## **4.2 HOW TRADITIONAL PAPERWORK OPERATES IN UGANDA REVENUE AUTHORITY**

From the observation and interviews conducted with the drivers and the URA staff, the findings revealed that the registration process is a night mare. This is because one has to queue for a very long period of time and a lot of documents are required at this stage plus analysis of each document. Both the clients and staff serving get so exhausted with handling very big cliental hence errors of omission and other inefficiencies that are realized during license renewal.

## **4.3 PROBLEMS FACED BY TRADITIONAL PAPERWORK IN URA**

### **Missing driver information**

Due to the poor storage system, the driver information could easily be misplaced or thrown away. This made the renewal of license very difficult. The person affected would be advised to re-register or even denied the license since the staff couldn't figure out what happened to his/her details.

### **Time wastage**

The whole process of registration and document validation took a lot of one's time and loss of patience. This caused reluctance in getting the license by the drivers.

### **Reliability of the system**

Since the system was manual and needed a lot of man power, its reliability could not be trusted. The available man power was too small to rely on and yet cliental is too big. In

the case where the office gets burnt, whole information can be lost because there is no any backup system anywhere

#### 4.3.1. TIME MANAGEMENT AND INFORMATION AVAILABILITY

Responses	Drivers	Staff	Percentage
Yes	330	40	74
No	120	10	26
Total	450	50	100

**Table 4:2** showing responses of drivers and URA staff of whether the current system is time wasting and unreliable

From the above, the study revealed that 74% of the respondents say the current system is time wasting and unreliable. 26% of the respondents however tend to believe that the current system should stay.

#### 4.4 PREFERENCE FOR COMPUTERIZED DRIVER LICENCE MANAGEMENT SYSTEM

Response	Drivers	URA staff	Percentage
Yes	400	30	86
No	50	20	14
Total	450	50	100

**Table 4:3** showing the response of respondents on whether or not they would prefer the computerized system to paperwork system.

From the above, 86% of the respondents revealed that they would prefer to have the computerized driver license management system while 14% tend to stick to the paperwork for reasons best known to them.

#### **4.4.1 REASONS GIVEN FOR PREFERENCE OF COMPUTERIZED DRIVER LICENCE MANAGEMENT SYSTEM.**

##### **Time saving**

The respondents noted that if URA adopted the new computerized system, the problem of queuing for so long would be solved. It would hence sort the problem of registration irregularities which wasted a lot of time.

##### **Data availability**

The respondents also pointed out that computerized system would enable safe data storage hence information cannot easily be lost since there are also backup provisions, this would create instant availability of driver information whenever needed.

##### **Security of driver information**

The respondents did not forget the fact that the old system had security weaknesses and hence consented that the new system would have stringent security measures such as user passwords, authentication and authorization

#### **4.5 DATA ANALYSIS**

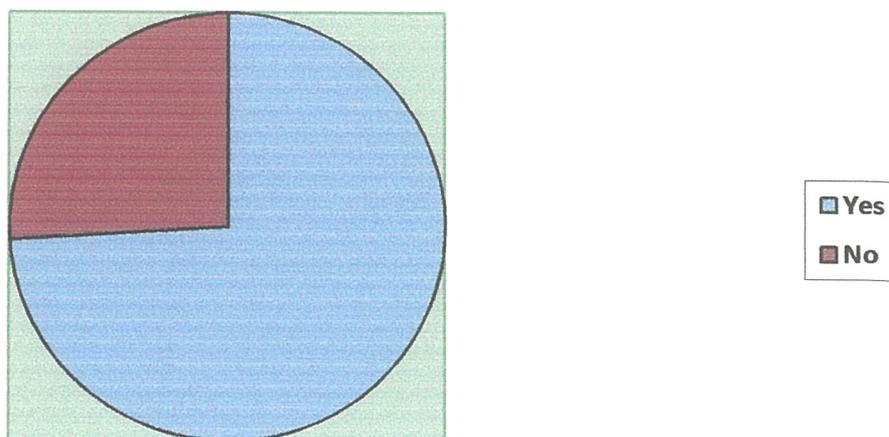
The researchers tested if URA uses a computerized driver license management system, and 100% of the 500 respondents revealed that URA does not use computerized DLMS as shown in table 4.1. This may be due to fears that computerized DLMS is expensive to manage and ineffective in delivery.

It also may be because the URA staff fear for their jobs since the computerized system would automate most of the activities that used to be done manually by a number of employees.

The researchers then investigated the problems faced in the DLMS of URA. This was done to identify the problems associated with the current system and opportunities for designing a better system, using software technology. Several problems were identified as shown in table 4.3 above.

Due to the irregularity factor associated with the old system, the researchers investigated whether time saving was paramount. As shown in table 4.2, 76% of 370 of the respondents were affirmative of the time wastage in processing the driver license. While 26% of the 130 respondents were comfortable with the system in place since they had nothing to lose.

**A pie chart representing the above response is as shown below**



**Figure 4:1 A pie chart showing the responses of whether the current system is time wasting or not.**

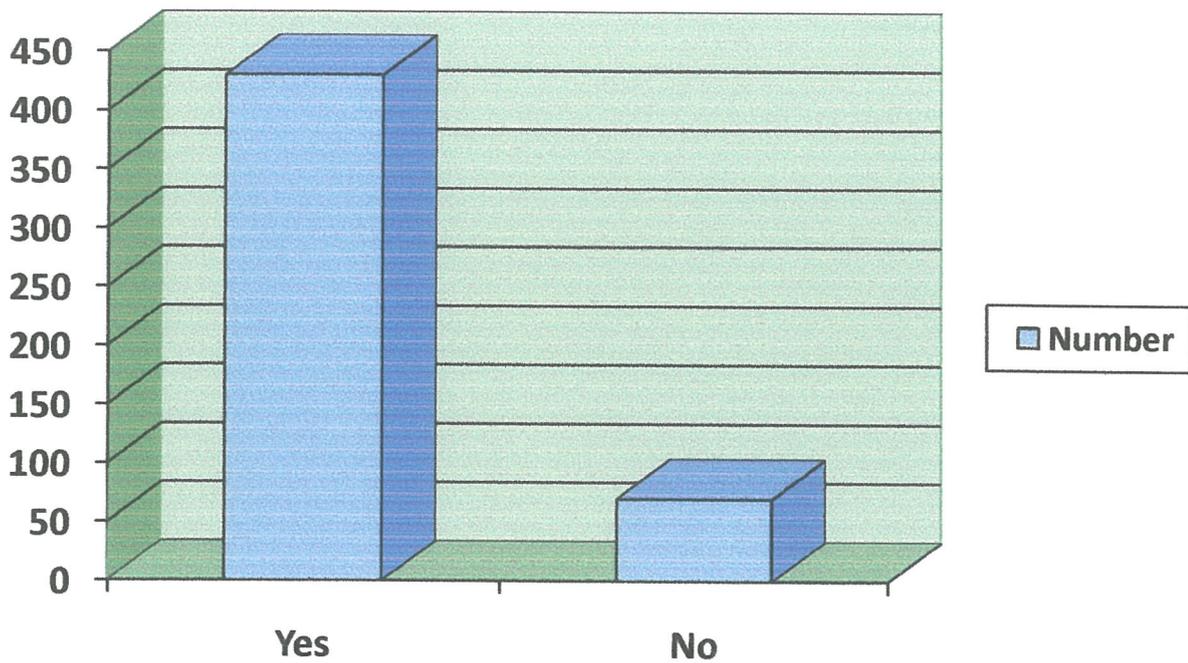
As seen from the pie chart, the majority indeed agree that the current system in place is very inefficient and thus brings a lot of time wasting in the registration process and license renewal.

The study also discovered that within the process of queuing for registration or license renewal, there are some small but unfortunate inconveniences faced by the clients e.g. bribery by people who don't want to stand in queues for so long, big government officials

that do not stand in the queue but drive their way through while leaving the rest of the people waiting, employees who would break off for lunch and either never come back or take so long before coming back.

Due to the problems associated with the current system, the researchers investigated if the participants would be willing to adapt a new computerized DLMS. Their findings were as below:

**A bar graph showing the responses of whether or not they prefer a computerized system**



**Figure 4:2 A bar graph showing the response for preference for a computerized system at URA**

As shown in the graph above, the majority of the participants have faith in computerized system. They believe that the new system could be the ultimate solution to the problems faced by the current paperwork issues at URA.

#### **4.6 CONCLUSION**

The researchers tested if URA uses a computerized driver license management system, and 100% of the 500 respondents revealed that URA does not use computerized DLMS. The data collected was presented in tabular format showing responses on traditional paperwork system, basing on the observations, and interviews conducted with sampled drivers from the 5 divisions of Kampala district and the staff of URA. The study revealed that 74% of the respondents say the current system is time wasting and unreliable. 26% of the respondents however tend to believe that the current system should stay. Due to the irregularity factor associated with the old system, the researchers investigated whether time saving was paramount. As shown in table 4.2, 76% of 370 of the respondents were affirmative of the time wastage in processing the driver license. While 26% of the 130 respondents were comfortable with the system in place since they had nothing to lose.

## CHAPTER FIVE

### SYSTEM ANALYSIS, DESIGN AND TESTING

#### 5.0 INTRODUCTION

This chapter will look at system analysis, design and testing. It will expound in details the facts under system analysis and design techniques for this new system. It will further explain the testing techniques used for this system

#### 5.1 SYSTEMS ANALYSIS

**System analysis** is a process of gathering and interpreting facts, diagnosing problems and the information to recommend improvements on the system. It is a problem solving activity that requires intensive communication between the system users and system developers. System analysis or study is an important phase of any system development process. The system is studied to the minutest detail and analyzed. The system analyst plays the role of the interrogator and dwells deep into the working of the present system. The system is viewed as a whole and the input to the system are identified. The outputs from the organizations are traced to the various processes. System analysis is concerned with becoming aware of the problem, identifying the relevant and decisional variables, analyzing and synthesizing the various factors and determining an optimal or at least a satisfactory solution or program of action.

A detailed study of the process must be made by various techniques like interviews, questionnaires etc. The data collected by these sources must be scrutinized to arrive to a conclusion. The conclusion is an understanding of how the system functions. This system is called the *existing system*. Now the existing system is subjected to close study and problem areas are identified. The designer now functions as a problem solver and tries to sort out the difficulties that the enterprise faces. The solutions are given as proposals. The proposal is then weighed with the existing system analytically and the best one is selected. The proposal is presented to the user for an endorsement by the user. The

proposal is reviewed on user request and suitable changes are made. This is a loop that ends as soon as the user is satisfied with the proposal.

*Preliminary study* is the process of gathering and interpreting facts, using the information for further studies on the system. Preliminary study is problem solving activity that requires intensive communication between the system users and system developers. It does various feasibility studies. In these studies, a rough figure of the system activities can be obtained, from which the decision about the strategies to be followed for effective system study and analysis can be taken.

## **5.2 EXISTING SYSTEM**

In the existing system the transactions are done only manually but in proposed system we have to computerize all the Driver License transaction using the software Driver License Management System.

### **PROBLEMS WITH EXISTING SYSTEM**

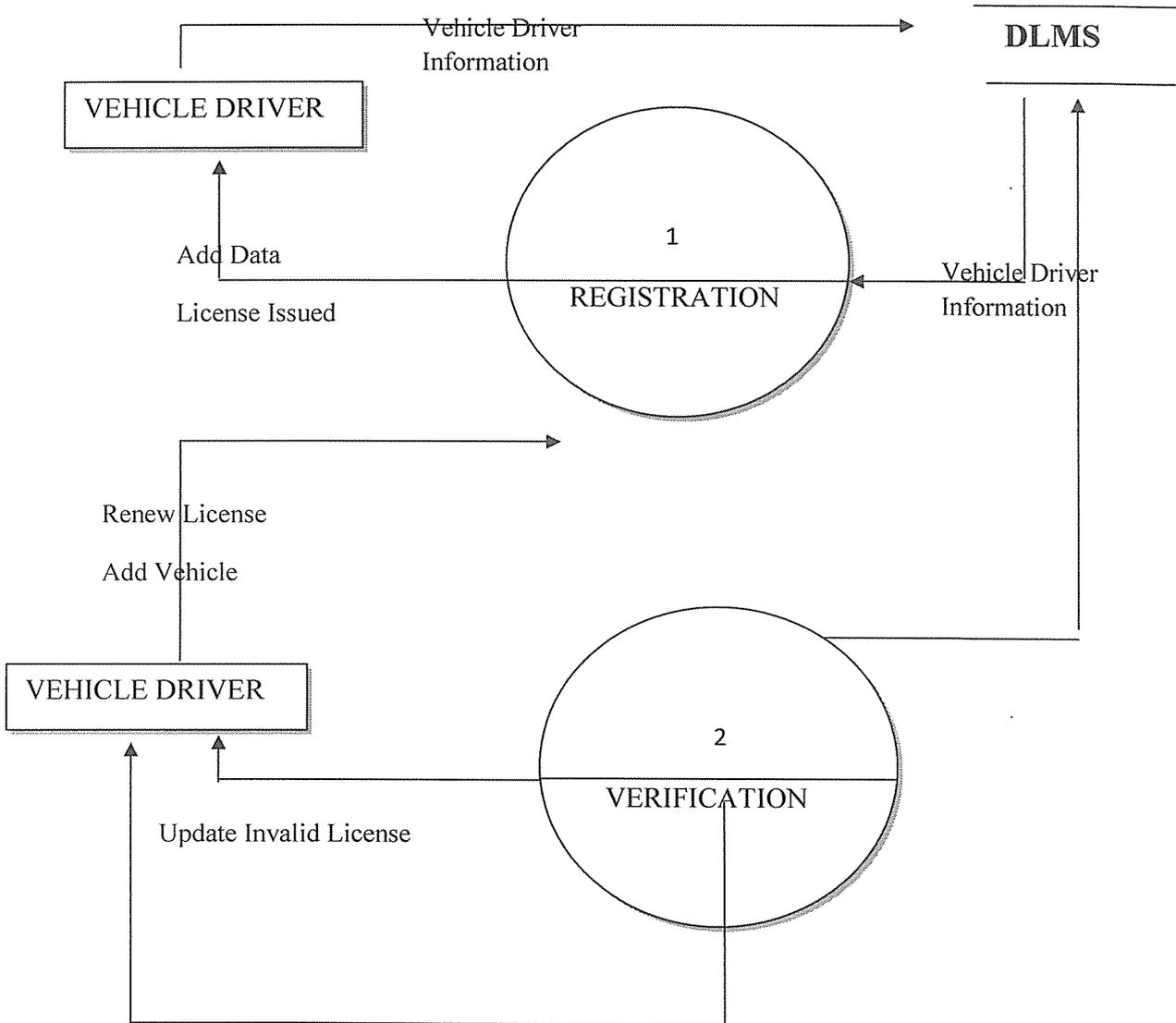
- Lack of security of data.
- More man power.
- Time consuming.
- Consumes large volume of paper work.
- Needs manual calculations.
- No direct role for the higher officials.

To avoid all these limitations and make the working more accurately the system needs to be computerized.

## **5.3 PROPOSED SYSTEM**

The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome all the limitations of the existing system. The system provides proper security and reduces the manual work.

# DRIVER LICENCE MANAGEMENT SYSTEM



License Renewed, Vehicle Added

Figure 5:1 DFD of driver license management system

## **ADVANTAGES OF THE PROPOSED SYSTEM**

The system is very simple in design and to implement. The system requires very low system resources and the system will work in almost all configurations. It has got following features

- Security of data.
- Ensure data accuracy's.
- Proper control of the higher officials.
- Reduce the damages of the machines.
- Minimize manual data entry.
- Minimum time needed for the various processing.
- Greater efficiency.
- Better service.
- User friendliness and interactive.
- Minimum time required.

## **5.4. FEASIBILITY STUDY**

Feasibility study is made to see if the project on completion will serve the purpose of the organization for the amount of work, effort and the time spent on it. Feasibility study lets the developer foresee the future of the project and the usefulness. A feasibility study of a system proposal is according to its workability, which is the impact on the organization, ability to meet their user needs and effective use of resources. Thus when a new application is proposed it normally goes through a feasibility study before it is approved for development.

This document provides the feasibility of the project that is being designed and lists various areas that were considered very carefully during the feasibility study of this project such as Technical, Economic and Operational feasibilities. The following are its features:

#### **5.4.1. TECHNICAL FEASIBILITY**

The system must be evaluated from the technical point of view first. The assessment of this feasibility must be based on an outline design of the system requirement in terms of input, output, programs and procedures. Having identified an outline system, the investigation must go on to suggest the type of equipment, required method of developing the system, of running the system once it has been designed.

Technical issues raised during the investigation are:

- Is the existing technology sufficient for the suggested one?
- Can the system expand if developed?

The project should be developed such that the necessary functions and performance are achieved within the constraints. The project is developed within latest technology. Though the technology may become obsolete after some period of time, due to the fact that newer version of the same software supports older versions, the system may still be used. So there are minimal constraints involved with this project. The system has been developed using Visual studio 2008, it is therefore technically feasible for further development.

#### **5.4.2. ECONOMIC FEASIBILITY**

The developing system must be justified by cost and benefit. Criteria to ensure that effort is concentrated on project, which will give best, return at the earliest. One of the factors, which affect the development of a new system, is the cost it would require.

The following are some of the important financial questions asked during preliminary investigation:

- What is the cost of conducting a full system investigation?
- What is the cost of the hardware and software required?
- Are there benefits in the form of reduced costs or fewer costly errors?

Since the system was developed as part of project work, there was no manual cost to spend for the proposed system. Also all the resources were already available, it gave an indication of the system being economically possible for development.

#### **5.4.3. BEHAVIORAL FEASIBILITY**

This includes the following questions:

- Is there sufficient support for the users?
- Will the proposed system cause harm?

The system was tested and implemented; users were later trained on how to use the new system. The new system posed no harm to the users or its environment because it wasn't some kind of explosive or a nuclear weapon that properly would draw concern.

The project was beneficial because it satisfied the objectives when developed and installed. All behavioral aspects were considered carefully and concluded that the project was behaviorally feasible.

### **5.5 SYSTEM DESIGN**

#### **5.5.1 INTRODUCTION**

Design is the first step into the development phase for any engineered product or system. Design is a creative process. A good design is the key to effective system. The term "design" is defined as "the process of applying various techniques and principles for the purpose of defining a process or a system in sufficient detail to permit its physical realization". Software design sits at the technical kernel of the software engineering process and is applied regardless of the development paradigm that is used. The system design develops the architectural detail required to build a system or product. As in the case of any systematic approach, this software too has undergone the best possible design phase fine tuning all efficiency, performance and accuracy levels. The design phase is a transition from a user oriented document to the programmers or database personnel. System design goes through two phases of development: Logical and Physical Design.

### 5.5.2 LOGICAL DESIGN:

The logical flow of a system and define the boundaries of a system. It includes the following steps:

- Reviews the current physical system – its data flows, file content, volumes, frequencies etc.
- Prepares output specifications – that is, determines the format, content and frequency of reports.
- Prepares input specifications – format, content and most of the input functions.
- Prepares edit, security and control specifications.
- Specifies the implementation plan.
- Prepares a logical design walk through of the information flow, output, input, controls and implementation plan.
- Reviews benefits, costs, target dates and system constraints.

### DATABASE TABLES

**Table: registration2** (First Name, Other Names, Gender, Nationality, Vehicle Group, Vehicle Restriction, Driver Restriction, Licensing, Date Issued, Validity, Number Plate, DOB, Hometown, Homophone, Email Address, Passport No, Occupation, Marital Status, Medical records, Registered by, DateofRegistration)

**Table: login** (UserName, Password)

### 5.5.3 PHYSICAL DESIGN:

Physical system produces the working systems by defining the design specifications that tell the programmers exactly what the candidate system must do. It includes the following steps.

- Design the physical system.
- Specify input and output media.
- Design the database and specify backup procedures.
- Design physical information flow through the system and a physical design Walk through.
- Plan system implementation.
- Prepare a conversion schedule and target date.
- Determine training procedures, courses and timetable.
- Devise a test and implementation plan and specify any new hardware/software.
- Update benefits , costs , conversion date and system constraints

**Table: registration2**

Column Name	Data Type	Allow Nulls
FirstName	Varchar(50)	No
OtherNames	Varchar(50)	No
Gender	Text	No
Nationality	Text	No
Vehicle group	Text	No
VehiclerRestriction	Text	No
DriverRestriction	Text	No
<u>LicenceNo</u>	Varchar(50)	No
DateIssued	Varchar(50)	No
Validity	Varchar(50)	No
NumberPlate	Varchar(50)	No
Dob	Varchar(50)	No
HomeTown	Varchar(50)	Yes
HomePhone	Varchar(50)	Yes
MobilePhone	Varchar(50)	Yes
Emailaddress	Varchar(50)	Yes
PassportNo	Varchar(50)	Yes
Occupation	Varchar(50)	Yes
MaritalStatus	Text	Yes
MedicalRecords	Text	Yes
CriminalRecords	Text	Yes
Registeredby	Text	No
DateofRegistration	Varchar(50)	No

**Table 5:1** showing the database table for registration

**Table: login**

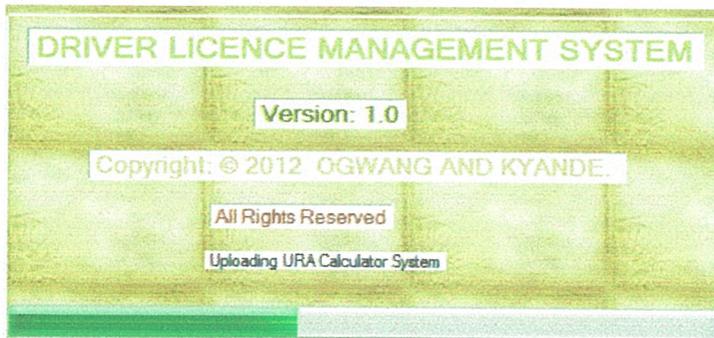
Column Name	Data Type	Allow Nulls
UserName	Varchar(50)	No
<u>Password</u>	Varchar(50)	No

**Table 5:2** showing the database login table

## 5.5.4 USER INTERFACE:

### SCREEN SHORTS

#### SPLASH FORM



**Figure 5:2** Showing Splash Screen

It loads the first form describing the name, version and the copy right of the application.

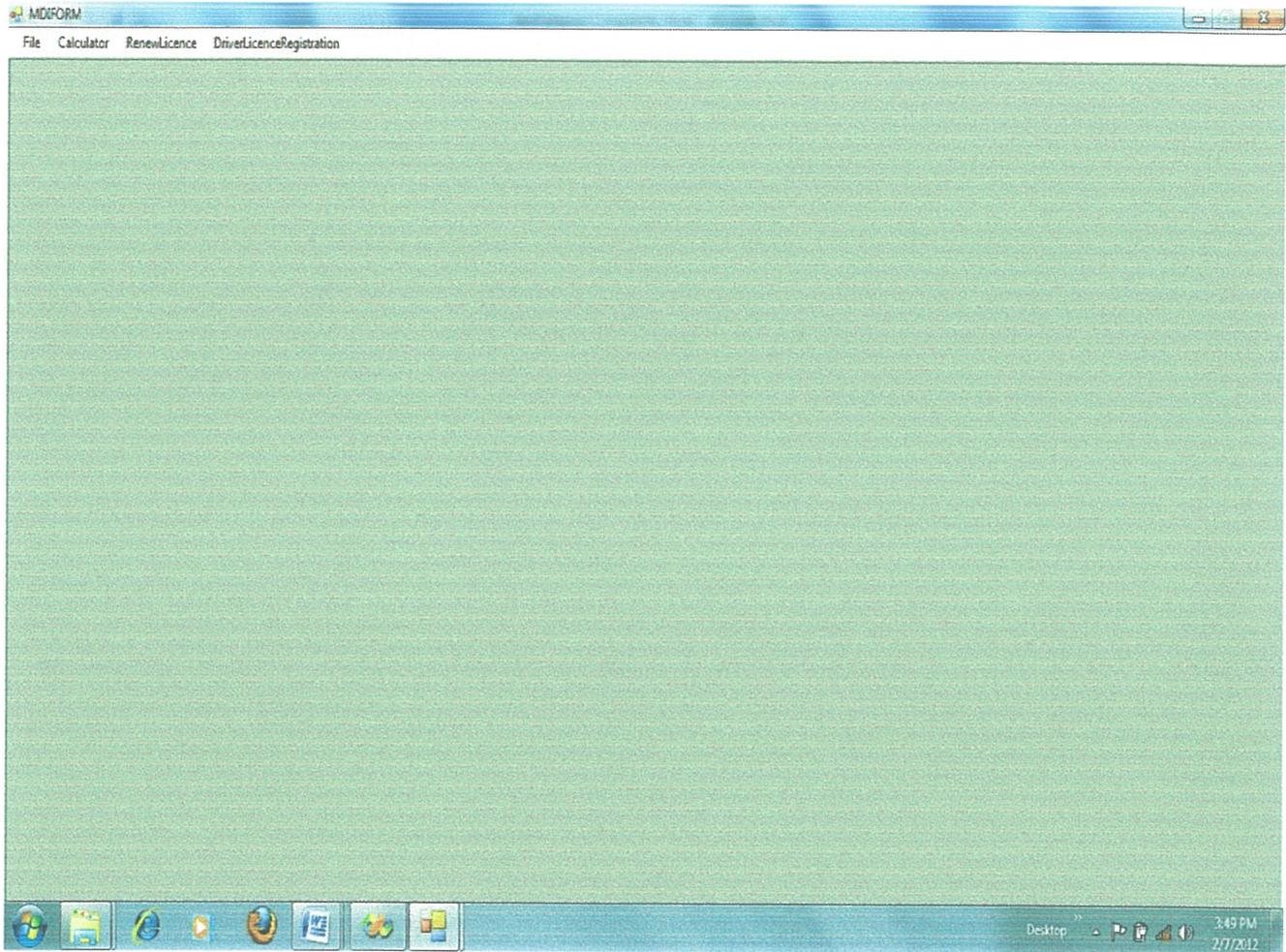
#### LOGIN FORM



**Figure 5:3** Showing Login Form

This form is loaded immediately by the splash screen form. It is used to control user access to the system. Only users who have their user names and passwords will be in position to access the application and operate it.

## MDI FORM



**Figure 5:4** Showing MDI Form

This figure shows all child forms in the application. It operates as the main form

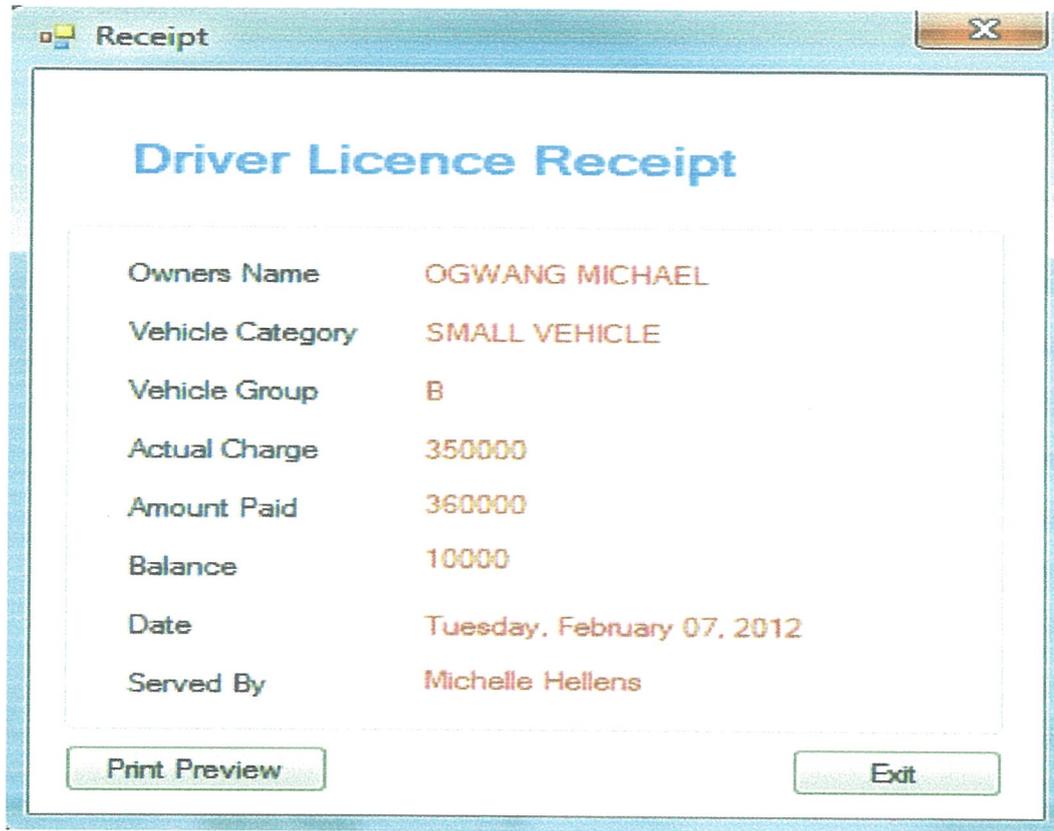
## CALCULATOR FORM

The screenshot shows a window titled 'calculator' with a form titled 'ACCOUNTS DETAILS'. The form is divided into two main sections: 'Select Vehicle Category' and 'Bearer's Particulars'. The 'Select Vehicle Category' section has a list of vehicle types with checkboxes: Motor Cycle, Small Vehicle (checked), Medium Vehicle, Bus, Trailer, Tractor, and Excuvator. The 'Bearer's Particulars' section has several text boxes: Owners Name (OGWANG MICHAEL), Vehicle Category (SMALL VEHICLE), Vehicle Group (B), Actual Charge (350000), Amount Paid (360000), Balance (10000), Date (Tuesday, February 07, 2012), and Served By (Michelle Hellens). On the right side of the form, there is a vertical stack of buttons: Calculate, Add Items, Clear, Preview, and Exit.

**Figure 5:5** Showing the Calculator Form

This form is used for calculating the details of the transaction carried out. It is able to provide the actual charge, the balance and the vehicle category as you can see.

## RECEIPT FORM



The screenshot shows a software window titled "Receipt" with a close button in the top right corner. The main content area is titled "Driver Licence Receipt" in blue text. Below the title is a table of transaction details. At the bottom of the window are two buttons: "Print Preview" and "Exit".

Owners Name	OGWANG MICHAEL
Vehicle Category	SMALL VEHICLE
Vehicle Group	B
Actual Charge	350000
Amount Paid	360000
Balance	10000
Date	Tuesday, February 07, 2012
Served By	Michelle Hellens

**Figure 5:6** Showing Driver Receipt

This is the output derived from the calculator form. It has the ability to print preview and print the final receipt signifying that you have registered from Uganda Revenue Authority.

## FORM REGISTRATION

The screenshot shows a software application window titled "frmRegistration2" with a "DRIVER LICENCE REGISTRATION" form. The form is titled "REGISTRATION PART" and contains the following fields:

Field	Value
First Name	KALIISA
Other Names	PETER
Gender	MALE
Nationality	UGANDAN
Vehicle Category	EXCUVATOR
Vehicle Group	G
Vehicle Restriction	AUTOMATIC
Driver Restriction	NONE
Licence No	123
Date Issued	TUESDAY, FEBRUARY 07, 2012
Validity	MONDAY, JANUARY 07, 2013
Number Plate	UAR
DOB	WEDNESDAY, JANUARY 01, 1986
Home Town	KALISIZO
Home Phone	(256) 11-893
Mobile Phone	(088) 293-873
Email Address	KYANDAAUGUSTINE@YAHOO.CO
PassPort No	322-494998284-22
Occupation	FARMER
Marital Status	MARRIED
Medical Records	NO CHRONIC DISORDERS
Criminal Records	MORE THAN ONCE
Registered by	TERY MARKSON
Date of Registration	TUESDAY, FEBRUARY 07, 2012

Buttons on the right side: ADD NEW, SAVE, DELETE.

Buttons at the bottom: FIRST, PREVIOUS, NEXT, LAST, EXIT.

**Figure 5:7** Showing Registration Form

This is the form that captures the registration details of the driver information before it can be added to the database using the save button.

## DATAGRID VIEW

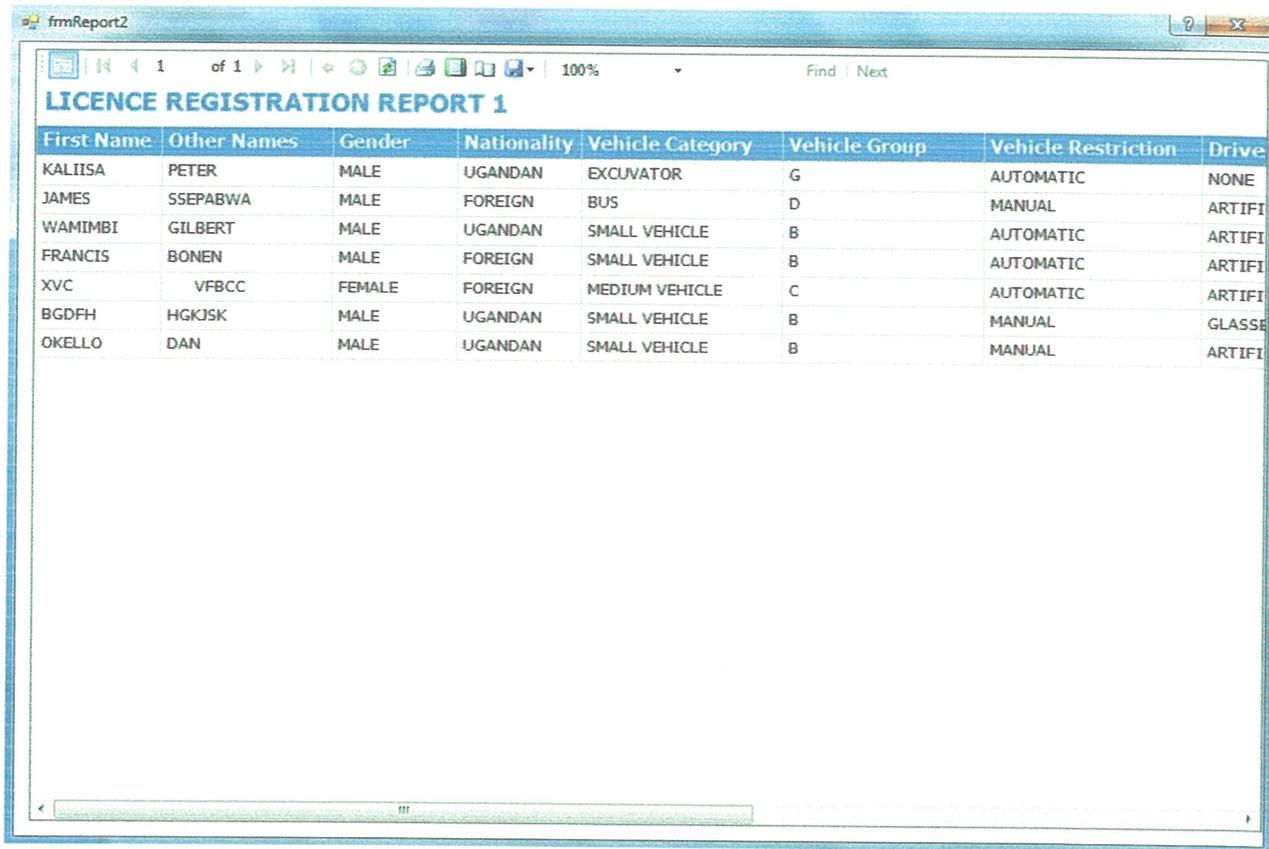
The screenshot shows a software application window titled "frmRegistration2" with a "DRIVER LICENCE REGISTRATION" header. Below the header, there are two tabs: "LICENCE REGISTRATION" and "DATAGRID VIEW". A search field labeled "Enter LicenceNo" is followed by "SEARCH" and "REFRESH" buttons. A table displays driver registration data with columns: FirstName, OtherNames, Gender, Nationality, VehicleCategory, VehicleGroup, VehicleRestriction, and DriverRestriction. The table contains eight rows of data, with the first row highlighted. Below the table is a large empty area marked with an asterisk (\*). At the bottom, there are buttons for "REPORT 1", "REPORT 2", and "EXIT".

FirstName	OtherNames	Gender	Nationality	VehicleCategory	VehicleGroup	VehicleRestriction	DriverRestriction
KALIISA	PETER	MALE	UGANDAN	EXCUVATOR	G	AUTOMATIC	NONE
JAMES	SSEPABWA	MALE	FOREIGN	BUS	D	MANUAL	ARTIFICIAL LI
WAMIMBI	GILBERT	MALE	UGANDAN	SMALL VEHICLE	B	AUTOMATIC	ARTIFICIAL LI
FRANCIS	BONEN	MALE	FOREIGN	SMALL VEHICLE	B	AUTOMATIC	ARTIFICIAL LI
XVC	VFBC	FEMALE	FOREIGN	MEDIUM VEHICLE	C	AUTOMATIC	ARTIFICIAL LI
BGDFH	HGKJSK	MALE	UGANDAN	SMALL VEHICLE	B	MANUAL	GLASSES
OKELLO	DAN	MALE	UGANDAN	SMALL VEHICLE	B	MANUAL	ARTIFICIAL LI

**Figure 5:8** Showing Datagrid View

Datagrid view has the ability to show the user the progress of the registration process. It displays all the information of the drivers inline with their particulars.

## REPORT



1 of 1 100% Find | Next

### LICENCE REGISTRATION REPORT 1

First Name	Other Names	Gender	Nationality	Vehicle Category	Vehicle Group	Vehicle Restriction	Drive
KALIISA	PETER	MALE	UGANDAN	EXCUVATOR	G	AUTOMATIC	NONE
JAMES	SSEPABWA	MALE	FOREIGN	BUS	D	MANUAL	ARTIFI
WAMIMBI	GILBERT	MALE	UGANDAN	SMALL VEHICLE	B	AUTOMATIC	ARTIFI
FRANCIS	BONEN	MALE	FOREIGN	SMALL VEHICLE	B	AUTOMATIC	ARTIFI
XVC	VFBCC	FEMALE	FOREIGN	MEDIUM VEHICLE	C	AUTOMATIC	ARTIFI
BGDFH	HGKJSK	MALE	UGANDAN	SMALL VEHICLE	B	MANUAL	GLASSE
OKELLO	DAN	MALE	UGANDAN	SMALL VEHICLE	B	MANUAL	ARTIFI

**Figure 5:9** Showing Driver Licence Report

Shows the driver information in a report format and can be printed.

## LICENCE RENEWAL FORM

The screenshot shows a web browser window titled "FormAddItems" with a "Renew Driver Licence" form. The form has a search bar for the licence number and a list of input fields for personal and vehicle information. A photo of a woman is displayed on the right side of the form, with an "ADD IMAGE" button below it. At the bottom of the form are buttons for "ADD ITEMS", "CLEAR", "PREVIEW", "UPDATE", and "EXIT".

Renew Driver Licence	
ENTER LICENCE NO	<input type="text"/>
	<input type="button" value="SEARCH"/>
First Name	<input type="text" value="KALIISA"/>
Other Names	<input type="text" value="PETER"/>
Gender	<input type="text" value="MALE"/>
Nationality	<input type="text" value="UGANDAN"/>
Vehicle Category	<input type="text" value="EXCUVATOR"/>
Vehicle Group	<input type="text" value="G"/>
Vehicle Restriction	<input type="text" value="AUTOMATIC"/>
Driver Restriction	<input type="text" value="NONE"/>
Licence No	<input type="text" value="123"/>
Date Issued	<input type="text" value="Tuesday , February 07, 2012"/>
Validity	<input type="text" value="Monday , January 07, 2013"/>

**Figure 5:10** Showing Licence Renewal Form

This form is used for updating driver information incase the driver licence validity is expired.

## DRIVING PERMIT

	<b>UGANDA REVENUE AUTHORITY</b> <b>DRIVER LICENCE</b>																							
	<table><tr><td>First Name</td><td>KALIISA</td></tr><tr><td>Other Names</td><td>PETER</td></tr><tr><td>Gender</td><td>MALE</td></tr><tr><td>Nationality</td><td>UGANDAN</td></tr><tr><td>Vehicle Category</td><td>EXCUVATOR</td></tr><tr><td>Vehicle Group</td><td>G</td></tr><tr><td>Vehicle Restriction</td><td>AUTOMATIC</td></tr><tr><td>Driver Restriction</td><td>NONE</td></tr><tr><td>Licence No</td><td>123</td></tr><tr><td>Date Issued</td><td>Tuesday, February 07, 2012</td></tr><tr><td>Validity</td><td>Monday, January 07, 2013</td></tr></table>	First Name	KALIISA	Other Names	PETER	Gender	MALE	Nationality	UGANDAN	Vehicle Category	EXCUVATOR	Vehicle Group	G	Vehicle Restriction	AUTOMATIC	Driver Restriction	NONE	Licence No	123	Date Issued	Tuesday, February 07, 2012	Validity	Monday, January 07, 2013	
First Name	KALIISA																							
Other Names	PETER																							
Gender	MALE																							
Nationality	UGANDAN																							
Vehicle Category	EXCUVATOR																							
Vehicle Group	G																							
Vehicle Restriction	AUTOMATIC																							
Driver Restriction	NONE																							
Licence No	123																							
Date Issued	Tuesday, February 07, 2012																							
Validity	Monday, January 07, 2013																							
<a href="#">Print Preview</a>		<a href="#">Exit</a>																						

**Figure 5:11** Showing driver permit

This is the final driver permit with the picture and all the particulars of the driver.

## 5.6 SYSTEM TESTING AND IMPLEMENTATION

### 5.6.1 SYSTEM TESTING

Software Testing is the process of executing software in a controlled manner, in order to answer the question - Does the software behave as specified? Software testing is often used in association with the terms verification and validation. Validation is the checking or testing of items, includes software, for conformance and consistency with an associated specification. Software testing is just one kind of verification, which also uses techniques such as reviews, analysis, inspections, and walkthroughs. Validation is the process of checking that what has been specified is what the user actually wanted.

Validation : Are we doing the right job?

Verification : Are we doing the job right?

Software testing should not be confused with debugging. Debugging is the process of analyzing and localizing bugs when software does not behave as expected. Although the identification of some bugs will be obvious from playing with the software, a methodical approach to software testing is a much more thorough means for identifying bugs. Debugging is therefore an activity which supports testing, but cannot replace testing. Other activities which are often associated with software testing are static analysis and dynamic analysis. Static analysis investigates the source code of software, looking for problems and gathering metrics without actually executing the code.

Dynamic analysis looks at the behavior of software while it is executing, to provide information such as execution traces, timing profiles, and test coverage information.

Testing is a set of activity that can be planned in advance and conducted systematically. Testing begins at the module level and work towards the integration of entire computers

based system. Nothing is complete without testing, as it is a vital success of the system testing objectives.

Testing is a process of executing a program with the intent of finding an error. A good test case is one that has high possibility of finding an undiscovered error. A successful test is one that uncovers an undiscovered error.

If testing is conducted successfully according to the objectives as stated above, it would uncover errors in the software. Testing also demonstrate that the software function appear to be working according to the specification, that performance requirement appear to have been met.

There are three ways to test program.

- For correctness
- For implementation efficiency
- For computational complexity

Test for correctness are supposed to verify that a program does exactly what it was designed to do. This is much more difficult than it may at first appear, especially for large programs.

### **TEST PLAN**

A test plan implies a series of desired course of action to be followed in accomplishing various testing methods. The Test Plan acts as a blue print for the action that is to be followed. The software engineers create a computer program, its documentation and related data structures. The software developers are always responsible for testing the individual units of the programs, ensuring that each performs the function for which it was designed. There is an independent test group (ITG) which is to remove the inherent problems associated with letting the builder to test the thing that has been built. The specific objectives of testing should be stated in measurable terms. So that the mean time to failure, the cost to find and fix the defects, remaining defect density or frequency of occurrence and test work-hours per regression test all should be stated within the test plan.

The levels of testing include:

- Unit testing
- Integration Testing
- Data validation Testing
- Output Testing

## **UNIT TESTING**

Unit testing focuses on verification effort on the smallest unit of software design – the software component or module. Using the component level design description as a guide, important control paths are tested to uncover errors within the boundary of the module. The relative complexity of tests and uncovered scope established for unit testing. The unit testing is white-box oriented, and step can be conducted in parallel for multiple components. The modular interface is tested to ensure that information properly flows into and out of the program unit under test. The local data structure is examined to ensure that data stored temporarily maintains its integrity during all steps in an algorithm's execution. Boundary conditions are tested to ensure that all statements in a module have been executed at least once. Finally, all error handling paths are tested.

Tests of data flow across a module interface are required before any other test is initiated. If data do not enter and exit properly, all other tests are moot. Selective testing of execution paths is an essential task during the unit test. Good design dictates that error conditions be anticipated and error handling paths set up to reroute or cleanly terminate processing when an error does occur. Boundary testing is the last task of unit testing step. Software often fails at its boundaries.

Unit testing was done in DLMS System by treating each module as separate entity and testing each one of them with a wide spectrum of test inputs. Some flaws in the internal logic of the modules were found and were rectified.

## **INTEGRATION TESTING**

Integration testing is systematic technique for constructing the program structure while at the same time conducting tests to uncover errors associated with interfacing. The objective is to take unit tested components and build a program structure that has been dictated by design. The entire program is tested as whole. Correction is difficult because isolation of causes is complicated by vast expanse of entire program. Once these errors are corrected, new ones appear and the process continues in a seemingly endless loop.

After unit testing in DLMS System all the modules were integrated to test for any inconsistencies in the interfaces. Moreover differences in program structures were removed and a unique program structure was evolved.

## **VALIDATION TESTING OR SYSTEM TESTING**

This is the final step in testing. In this the entire system was tested as a whole with all forms, code, modules and class modules. This form of testing is popularly known as Black Box testing or System testing.

Black Box testing method focuses on the functional requirements of the software. That is, Black Box testing enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program.

Black Box testing attempts to find errors in the following categories; incorrect or missing functions, interface errors, errors in data structures or external data access, performance errors and initialization errors and termination errors.

## **OUTPUT TESTING OR USER ACCEPTANCE TESTING**

The system considered is tested for user acceptance; here it should satisfy the firm's need. The software should keep in touch with perspective system; user at the time of developing and making changes whenever required.

This system was accepted by users because it came as the solution which they had been long waiting for. It was able to display the output as per the user requirement specifications.

### **5.6.2 SYSTEM PERFORMANCE**

The system performance was tested against work accomplished compared to the time and resources used. The following findings were noted as important:

- Short response time for a given piece of work
- High throughput (rate of processing work)
- Low utilization of computing resource(s)
- High availability of the computing system or application

### **5.6.3 DATABASE CONNECTIVITY**

The system was able to connect and communicate with the database as fast as possible.

This is because the database is not heavy and takes only a shorter time to respond to any queries that are necessary.

## **5.7 SYSTEM IMPLEMENTATION**

Implementation is the state in the project where the theoretical design is turned into a working system. By this, the users get the confidence that the system will work effectively. The system can be implemented only after thorough testing.

The systems personnel checked the feasibility of the system. The actual data were inputted to the system and the working of the system was closely monitored. The master option was selected from the main menu and the actual data were input through the corresponding input screens. The data movement was studied and found to be correct query options and these contained various reports. Implementation walkthroughs ensure that the completed system actually solves the original problem. This walkthrough occurs just before the system goes into use, and it should include careful review of all manuals, training materials and system documentation

### **5.7.1 SYSTEM CONVERSION**

This is the process of transferring the existing data into the new database and converting any existing applications to run on the new database.

The driver information that was manually kept in files and selves were entered into the system successfully. The hardware requirements of 40 GB, processor speed of 2.0 GHZ and RAM size of 2GB were met and the system was successfully incorporated.

### **5.7.2 IMPLEMENTATION TECHNIQUES**

There are three types of implementation techniques which include: parallel, phase and direct conversion. This system used direct conversion technique.

#### **DIRECT CONVERSION**

With this method of implementation the users stop using the manual system and start using the computer system from a given date.

The advantage of this method is that it is less costly in effort and time than any other method of implementation. The disadvantage of this method is that if problems occur the

users do not have any alternative apart from returning to a manual system which may prove difficult if it has been discontinued.

#### **5.7.2.1 HARDWARE CONVERSION**

The computers required to run this system were installed and configured and were found to respond in accordance to user specifications. The hardware minimum requirements of hard drive of 40GB, processor speed of 1.86GZ, and RAM of 128 GB were met.

#### **5.7.2.2 SOFTWARE CONVERSION**

The software used for this DBMS was visual studio 2008, sql server 2005, sql management studio express, and windows operating system. The DLMS was installed and configured and its performance and conformance was excellent.

#### **5.7.3 USER TRAINING**

Once the system is successfully developed the next important step is to ensure that the administrators are well trained to handle the system. This is because the success of a system invariably depends on how they are operated and used. The implementation depends upon the right people being at the right place at the right time. Education involves creating the right atmosphere and motivating the user. The administrators are familiarized with the run procedures of the system, working through the sequence of activities on an ongoing basis.

#### **5.7.4 SYSTEM MAINTENANCE (AUDITING AND EVALUATION)**

System audits were performed to verify conformance to standards through review of objective evidence. Audits are essential to verify the existence of objective evidence showing conformance to required processes, to assess how successfully processes have been implemented, for judging the effectiveness of achieving any defined target levels, providing evidence concerning reduction and elimination of problem areas and are a

hands-on management tool for achieving continual improvement in an organization. This system was audited and evaluated and was found to satisfy the above performance.

### 5.7.5 SYSTEM CONTROL

Systems control is the control and implementation of a set of functions that:

- prevent or eliminate degradation of any part of the system,
- initiate immediate response to demands that are placed on the system,
- respond to changes in the system to meet long range requirements, and
- may include various subfunctions, such as
  - continuous control of equipment performance,
  - development of procedures for immediate repair, restoration, or replacement of facilities and equipment,
  - continuous liaison with system users and with representatives of other systems, and
  - The provision of advice and assistance in system use.

### 5.7.6 SYSTEM BACKUP

In information technology, a **backup** or the process of **backing up** is making copies of data which may be used to *restore* the original after a data loss event. Backups have two distinct purposes. The primary purpose is to recover data after its loss, be it by data deletion or corruption. The secondary purpose of backups is to recover data from an earlier time, according to a user-defined data retention policy, typically configured within a backup application for how long copies of data are required. This system is configured through the sql server objects using the backup device. It is configured to backup after every one day to the sql server directory disk.

### **5.7.7 ACCESS CONTROL**

The primary method used to protect data is limiting access to the data. This can be done through

Authentication, authorization, and access control. These three mechanisms are distinctly different but usually used in combination with a focus on access control for granularity in assigning rights to specific objects and users. This system uses some form of authentication, such as username and password, to restrict access to the system.

Further, most users are authorized or assigned defined privileges to specific resources. Access control further refines the process by assigning rights and privileges to specific data objects and data sets. Within a database, these objects usually include tables, views, rows, and columns.

### **5.7.8 SYSTEM SECURITY**

Database security concerns the use of a broad range of information security controls to protect databases (potentially including the data, the database applications or stored functions, the database systems, the database servers and the associated network links) against compromises of their confidentiality, integrity and availability. It involves various types or categories of controls, such as technical, procedural/administrative and physical.

The new system has the following security measures in place:

- Personnel Identification (authentication)
- Establishment of strong passwords
- Installation of antivirus protection
- Regular updates of programs
- Secure laptops
- Regular Backup
- Diligent system Monitoring

## **5.8 CONCLUSION**

System analysis in this study was defined as a process of gathering and interpreting facts, diagnosing problems and information to recommend improvements on the system. Preliminary study on the other hand is a problem solving activity that requires intensive communication between the system users and system developers. Design was seen as the first step into the development phase for any engineered product or system. A number of system designs were studied among which include: Logical and Physical design. Software Testing was defined as the process of executing software in a controlled manner, in order to answer the question - Does the software behave as specified? Software testing was often used in association with the terms verification and validation. A number of testing techniques were studied which include among others the following: unit testing, integration testing, and data validation testing and output testing. Implementation was defined as the state in the project where the theoretical design is turned into a working system. By this, the users get the confidence that the system would work effectively. This system was implemented only after thorough testing. Direct implementation technique was used as a means of transformation to the new system. User training, auditing and evaluation, backup and access control were looked at broadly.

## **CHAPTER SIX**

### **FINDINGS, CONCLUSION AND RECOMMENDATIONS**

#### **6.1 INTRODUCTION**

This chapter will cover in details the findings of this project, the necessary conclusions and the recommendations for the new system.

#### **6.2 RESEARCH FINDINGS**

The researchers tested if URA uses a computerized driver license management system, and 100% of the 500 respondents revealed that URA does not use computerized DLMS. This may be due to fears that computerized DLMS is expensive to manage and ineffective in delivery. It also may be because the URA staff fear for their jobs since the computerized system would automate most of the activities that used to be done manually by a number of employees. This study also investigated the best option for driver license management system. This was in light with the traditional paper work at URA. The data was collected using observations, interviews, and review of existing documents. This chapter presents the results of the analysis. The data collected was presented in tabular format showing responses on traditional paperwork system, basing on the observations, and interviews conducted with sampled drivers from the 5 divisions of Kampala district and the staff of URA. The study revealed that 74% of the respondents say the current system is time wasting and unreliable. 26% of the respondents however tend to believe that the current system should stay. However it was concluded that a new computerized system was the only way to go.

#### **6.3 RESEARCH CONCLUSIONS**

The research problem of paper work was finally solved by computerizing the system; hence it became fast and secure to perform driver data transaction. The objectives to this study were achieved and storage of driver license information for future retrieval was

successful, the software and hardware resources needed for the system were implemented accordingly and their operation was as good as per user requirement specification. The significance of this study was seen in the effectiveness and motivation of the workers since there was ease and conduciveness in the working arena. The scope of the study was achieved since the area of jurisdiction of the researchers, the sample population and the time allotted was observed and followed promptly. Computerization was defined as a means to support (1) Working towards making the system paperless or minimizing the paper work and to provide, (2) Give pace to the Business, (3) To create the data base for analysis (4) Fast Reporting & Queries. Data storage was defined as the place (RAM and Hard disk) where data is held in an electromagnetic or optical form for access by a computer processor. Data security on the other hand was seen as the protection of data from unauthorized users through authentication, authorization, encryption, and access control. Simplicity was justified as a quality that is frequently sought by both users and technologists, although, as users frequently attest, it is not always found. Research design used for this study was a cross-sectional survey design which enabled data collected to make inferences about a population of interest. The sample population was 700 but only 500 participants were registered. The sampling technique used was stratified sampling technique which helped to sample drivers and staff of URA interviewees. The research instruments used were questionnaires, interviews, and review of existing documents. The waterfall model was used as the life cycle model of the new software with work breakdown structure as the preliminary development schedule. Both the hardware and software tools used were highlighted and limitation to the study sited. The researchers tested if URA uses a computerized driver license management system, and 100% of the 500 respondents revealed that URA does not use computerized DLMS. The data collected was presented in tabular format showing responses on traditional paperwork system, basing on the observations, and interviews conducted with sampled drivers from the 5 divisions of Kampala district and the staff of URA. The study revealed that 74% of the 500 respondents say the current system is time wasting and unreliable. 26% 500 of the respondents however tend to believe that the current system should stay. System analysis in this study was defined as a process of gathering and interpreting facts,

diagnosing problems and information to recommend improvements on the system. System design was seen as the first step into the development phase for any engineered product or system. Software Testing was defined as the process of executing software in a controlled manner, in order to answer the question - Does the software behave as specified? A number of testing techniques were studied which include among others the following: unit testing, integration testing, and data validation testing and output testing. Implementation was defined as the state in the project where the theoretical design is turned into a working system. By this, the users get the confidence that the system would work effectively. This system was implemented only after thorough testing. Direct implementation technique was used as a means of transformation to the new system. User training, auditing and evaluation, backup and access control were looked at broadly.

### **6.3 RECOMMENDATIONS**

This new database management system has the following recommendations for it to be maintained and operated successfully:

#### **System Requirements**

##### **1. Supported Operating Systems**

- Microsoft Windows XP
- Microsoft Windows Server 2003
- Windows Vista

##### **2. Hardware Requirements**

- Minimum: 1.6 GHz CPU, 384 MB RAM, 1024x768 display, 5400 RPM hard disk
- Recommended: 2.2 GHz or higher CPU, 1024 MB or more RAM, 1280x1024 display, 7200 RPM or higher hard disk
- On Windows Vista: 2.4 GHz CPU, 768 MB RAM

- Sql server 2005, sql management studio express, visual studio 2008.
3. User training. The system needs the users operating it to familiarize with its functionalities. This would in turn improve efficiency of the system. Employment of system administrator to maintain the system is also necessary.

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APPENDICES

APPENDIX A: TIME SCHEDULE

Feasibility study					
Data collection					
Proposal writing and acceptance					
Design and implementation					
Report writing and presentation					
2011-2012	July	August	September	January-February	March

## APPENDIX B: RESEARCH INSTRUMENT

### QUESTIONNAIRE FOR SAMPLED DRIVERS AROUND THE FIVE DIVISIONS OF KAMPALA DISTRICT

Ogwang Michael and Kyanda Augustine, students of Kampala International University, pursuing bachelor's degree in Information Technology are conducting a research that aims at improving drivers licencing system at Uganda Revenue Authority. We kindly request you to answer these questions to the best of your knowledge, and we affirm that your response will be treated with the highest degree of confidentiality.

#### SECTION A

#### BACKGROUND INFORMATION

Please tick the most appropriate box

1. Age

- a) 15-19
- b) 20-25
- c) 26-30
- d) 31-35
- e) 36-40
- f) 41-45
- g) 46-50
- h) 51-55
- i) 56-60

2. Gender

Male

Female

**SECTION B (other information)**

1. What type of car do you drive?.....

2. Are your licensing processes computerized?

Yes

No

3. If no, what methods do they use for processing your licence?

.....  
.....

4. Describe the licence registration process at URA

.....  
.....  
.....  
.....

5. How would you prefer the registration process to be carried out?

.....  
.....  
.....  
.....

6. What communication challenges do you get with the employees of URA?

.....  
.....

7. Is the driver information readily available during licence renewal?

.....  
.....  
.....

8. Is the time factor non problematic during the whole licence acquisition process?

.....  
.....  
.....

9. What challenges do you encounter as a driver during licensing process?

.....  
.....  
.....  
.....  
.....

10. Are there areas of weaknesses that you have cited in the operation of licensing system at URA?

Yes

No

11. If yes, suggest in your own words solutions to such short comings.

.....  
.....  
.....  
.....  
.....

12. Would you recommend a computerized system to replace the manual system of licensing at URA? Give reasons for your suggestion

.....  
.....  
.....  
.....  
.....

\*\*\*\*\*END\*\*\*\*\*

## QUESTIONNAIRE FOR STAFF MEMBERS OF URA

Ogwang Michael and Kyanda Augustine, students of Kampala International University, pursuing bachelor's degree in Information Technology are conducting a research that aims at improving drivers' licensing system at Uganda Revenue Authority. We kindly request you to answer these questions to the best of your knowledge, and we affirm that your response will be treated with the highest degree of confidentiality.

### SECTION A

#### BACKGROUND INFORMATION

Please tick the most appropriate box

1. Age

j) 15-19

k) 20-25

l) 26-30

m) 31-35

n) 36-40

o) 41-45

p) 46-50

q) 51-55

r) 56-60

2. Gender

Male

Female

**SECTION B (other information)**

1. How does it feel to work at URA?

.....  
.....  
.....

2. Are your licensing processes computerized?

Yes

No

3. If no, what licensing mechanism is currently in place?

.....  
.....  
.....

4. How efficient is the current system in terms of processing speed, information availability and data security?

.....  
.....  
.....  
.....  
.....

5. Does the current system make your work simple and professional?

.....  
.....  
.....  
.....

6. What challenges do you face as a result of operating the current licensing system?

.....  
.....  
.....  
.....

7. Any recommendation for a computerized system? If yes give reasons for your choice?

.....  
.....  
.....  
.....

\*\*\*\*\*END\*\*\*\*\*

**Thanks for your cooperation**

## APPENDIX C: SAMPLE CODES

### Splash Screen Coding

Public Class Welcome

```
Private Sub Timer1_Tick(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Timer1.Tick
    ProgressBar1.Increment(1)
    If ProgressBar1.Value = 1 Then
        Label5.Text = "Loading Licence Registration"
    End If
    If ProgressBar1.Value = 20 Then
        Label5.Text = "Setting Renew Licence"
    End If
    If ProgressBar1.Value = 40 Then
        Label5.Text = "Uploading URA Calculator System"
    End If
    If ProgressBar1.Value = 60 Then
        Label5.Text = "MDI Driver licence system"
    End If
    If ProgressBar1.Value = 80 Then
        Label5.Text = "Please Wait for User Login"
    End If
    If ProgressBar1.Value = 100 Then

        LoginLicence.Show()

        Me.Hide()

    End If
End Sub

Private Sub Welcome_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load
    Timer1.Start()
```

End Sub

```
Private Sub GroupBox1_Enter(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles GroupBox1.Enter
```

End Sub

End Class

## LOGIN CODING

```
Public Class LoginLicence
```

```
' TODO: Insert code to perform custom authentication using the provided username and password
```

```
' (See http://go.microsoft.com/fwlink/?LinkId=35339).
```

```
' The custom principal can then be attached to the current thread's principal as follows:
```

```
' My.User.CurrentPrincipal = CustomPrincipal
```

```
' where CustomPrincipal is the IPrincipal implementation used to perform authentication.
```

```
' Subsequently, My.User will return identity information encapsulated in the CustomPrincipal object
```

```
' such as the username, display name, etc.
```

```
Private Sub OK_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles OK.Click
```

```
Dim connection As New SqlConnection
```

```
Dim command As New SqlCommand
```

```
Dim adaptor As New SqlDataAdapter
```

```
Dim dataset As New DataSet
```

```
connection.ConnectionString = ("Data Source=.\SQLEXPRESS;AttachDbFilename=|DataDirectory|\Database1.mdf;Integrated Security=True;User Instance=True")
```

```
command.CommandText = " SELECT * FROM [Login] WHERE UserName= '" & UsernameTextBox.Text & "' AND Password='" & PasswordTextBox.Text & "';"
```

```
connection.Open()
```

```
command.Connection = connection
```

```
adaptor.SelectCommand = command
```

```
adaptor.Fill(dataset, "0")
```

```

Dim count = dataset.Tables(0).Rows.Count
If count > 0 Then
    MDIFORM.Show()
    Me.Hide()

Else
    MsgBox("Incorrect Login, Please check UserName or PassWord",
MsgBoxStyle.Critical)
    UsernameTextBox.Clear()
    PasswordTextBox.Clear()
End If

End Sub

Private Sub Cancel_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Cancel.Click
    Me.Close()
End Sub

Private Sub Timer1_Tick(ByVal sender As System.Object, ByVal e As
System.EventArgs)

End Sub

Private Sub LoginLicence_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load
    UsernameTextBox.Focus()

    Me.Hide()

End Sub
End Class

```

## REGISTRATION FORM CODING

```
Public Class frmRegistration2
```

```
Private Sub Button21_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles cmdDelete.Click
```

```
    ' Dim ButtonDialogResult As DialogResult
```

```
    ' If ButtonDialogResult = Windows.Forms.DialogResult.OK Then
```

```
        'MessageBox.Show("Are you sure you wish to delete this record?", "Confirm Delete", MessageBoxButtons.OK)
```

```
Dim result As DialogResult _
```

```
    = MessageBox.Show("You Are About to Delete this Record." & _  
        " Delete?", "Delete Mode", _
```

```
        MessageBoxButtons.OKCancel, MessageBoxIcon.Warning)
```

```
If result = Windows.Forms.DialogResult.Cancel Then
```

```
    DialogResult = Windows.Forms.DialogResult.Cancel
```

```
Else
```

```
    Me.Validate()
```

```
    Me.Registration2BindingSource.RemoveCurrent()
```

```
    Me.TableAdapterManager1.UpdateAll(Me.LicenceDataSet)
```

```
    MessageBox.Show("Record Deleted", "Action Successful",  
        MessageBoxButtons.OK, MessageBoxIcon.Asterisk)
```

```
End If
```

```
End Sub
```

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click
```

```
    Me.Close()
```

```
End Sub
```

```
Private Sub Button16_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button16.Click
```

```
    Me.Registration2BindingSource.AddNew()
```

```
Registration2.Show()  
End Sub
```

```
Private Sub frmRegistration2_Load(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles MyBase.Load
```

'TODO: This line of code loads data into the 'LicenceDataSet.Registration2' table.  
You can move, or remove it, as needed.

```
Me.Registration2TableAdapter.Fill(Me.LicenceDataSet.Registration2)
```

'TODO: This line of code loads data into the 'LicenceDataSet.Registration2' table.  
You can move, or remove it, as needed.

```
Me.Registration2TableAdapter.Fill(Me.LicenceDataSet.Registration2)
```

```
End Sub
```

```
Private Sub Button17_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles Button17.Click
```

```
    If txtGender.Text = String.Empty Then  
        MsgBox("Gender Required")  
    ElseIf txtNationality.Text = String.Empty Then  
        MsgBox("Nationality Required")  
    ElseIf txtVehicleCategory.Text = String.Empty Then  
        MsgBox("VehicleCategory Required")  
    ElseIf txtVehicleGroup.Text = String.Empty Then  
        MsgBox("vehicleRestriction Required")  
    ElseIf txtDriverRestriction.Text = String.Empty Then  
        MsgBox("DriverRestriction Required")  
    ElseIf txtLicenceNo.Text = String.Empty Then  
        MsgBox("LicenceNo Required")  
    ElseIf txtDateIssued.Text = String.Empty Then  
        MsgBox("DateIssued Required")  
    ElseIf txtValidity.Text = String.Empty Then  
        MsgBox("ValidityDate Required")  
    ElseIf txtDOB.Text = String.Empty Then  
        MsgBox("DateofBirth Required")  
    ElseIf txtHomeTown.Text = String.Empty Then  
        MsgBox("HomeTown Required")  
    ElseIf txtMobilePhone.Text = String.Empty Then  
        MsgBox("MobilePhone Required")  
    ElseIf txtEmailAddress.Text = String.Empty Then
```

```

    MsgBox("EmailAddress Required")
ElseIf txtOccupation.Text = String.Empty Then
    MsgBox("occupation Required")
ElseIf txtMaritalStatus.Text = String.Empty Then
    MsgBox("MaritalStatus Required")
ElseIf txtMedicalRecords.Text = String.Empty Then
    MsgBox("MedicalRecord Required")
ElseIf txtCriminalRecords.Text = String.Empty Then
    MsgBox("CriminalRecord Required")
ElseIf txtRegisteredBy.Text = String.Empty Then
    MsgBox("Registereby Required")
ElseIf txtDateofRegistration.Text = String.Empty Then
    MsgBox("Registration Date Required")

Else
    Me.Validate()

    Me.Registration2BindingSource.EndEdit()
    Me.TableAdapterManager1.UpdateAll(Me.LicenceDataSet)
    MessageBox.Show("Record Added", "Action Successful",
    MessageBoxButtons.OK, MessageBoxIcon.Asterisk)
End If
End Sub

Private Sub Button11_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button11.Click
    Me.Registration2BindingSource.MoveFirst()

End Sub

Private Sub Button12_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button12.Click
    Me.Registration2BindingSource.MovePrevious()

End Sub

Private Sub Button13_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button13.Click
    Me.Registration2BindingSource.MoveNext()

```

End Sub

```
Private Sub Button14_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button14.Click  
    Me.Registration2BindingSource.MoveLast()
```

End Sub

```
Private Sub Button4_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)  
    frmReport2.Show()
```

End Sub

```
Private Sub cmdExit_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)  
    Me.Close()
```

End Sub

```
Private Sub Button3_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)  
    FormReport2.Show()
```

End Sub

```
Private Sub REPORT1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles REPORT1.Click  
    frmReport2.Show()
```

End Sub

```
Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button2.Click  
    REPORT.Show()
```

End Sub

```
Private Sub cmdSearch_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles cmdSearch.Click
```

```
    Me.Registration2BindingSource.Filter = "[LicenceNo]=" & Me.TextBox1.Text & "
```

```
End Sub
```

```
Private Sub cmdrefresh_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles cmdrefresh.Click
```

```
    Me.Registration2TableAdapter.Fill(Me.LicenceDataSet.Registration2)
```

```
End Sub
```

```
Private Sub txtFirstName_TextChanged(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles txtFirstName.TextChanged
```

```
End Sub
```

```
Private Sub txtNationality_TextChanged(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles txtNationality.TextChanged
```

```
End Sub
```

```
Private Sub Button5_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button5.Click
```

```
    Me.Close()
```

```
End Sub
```

```
End Class
```

## CALCULATOR FORM CODING

```
Public Class caculator
```

```
Private Sub cmdCalculate_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles cmdCalculate.Click
```

```
Dim actualcharge As Integer
```

```
Dim amountpaid As Integer
```

```
Dim balance As Integer
```

```
If txtOwnersName.Text = String.Empty Then
```

```
    MessageBox.Show("Owner's Name Missing", "Invalid Operation",  
    MessageBoxButtons.OK, MessageBoxIcon.Asterisk)
```

```
ElseIf txtVehicleCategory.Text = String.Empty Then
```

```
    MsgBox("Vehicle Category Missing")
```

```
ElseIf txtVehiclegroup.Text = String.Empty Then
```

```
    MessageBox.Show("Vehicle Group Missing", "Data Missing",  
    MessageBoxButtons.OK, MessageBoxIcon.Warning)
```

```
ElseIf txtActualCharge.Text = String.Empty Then
```

```
    MessageBox.Show("Actual Charge Missing", "Data Missing",  
    MessageBoxButtons.OK, MessageBoxIcon.Warning)
```

```
ElseIf txtAmountPaid.Text = String.Empty Then
```

```
    MessageBox.Show("Amount paid missing", "Invalid operation",  
    MessageBoxButtons.OK, MessageBoxIcon.Warning)
```

```
ElseIf ComboBoxServedby.Text = String.Empty Then
```

```
    MessageBox.Show("Name of Data clerk missing", "Data Missing",  
    MessageBoxButtons.OK, MessageBoxIcon.Warning)
```

```
Else
```

```
    actualcharge = Integer.Parse(txtActualCharge.Text)
```

```
    amountpaid = Integer.Parse(txtAmountPaid.Text)
```

```
    balance = txtAmountPaid.Text - txtActualCharge.Text
```

```
    txtBalance.Text = balance
```

```
End If
```

```
End Sub
```

```

Private Sub cmdClear_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles cmdClear.Click
    txtOwnersName.Clear()
    txtVehicleCategory.Clear()
    txtVehiclegroup.Clear()
    txtActualCharge.Clear()
    txtAmountPaid.Clear()
    txtBalance.Clear()

```

End Sub

```

Private Sub cmdAddItems_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles cmdAddItems.Click
    If txtOwnersName.Text = String.Empty Then
        MsgBox("Name Missing")
    ElseIf txtVehicleCategory.Text = String.Empty Then
        MsgBox("Vehicle Category Missing")
    ElseIf txtVehiclegroup.Text = String.Empty Then
        MsgBox("Vehicle group Missing")
    ElseIf txtActualCharge.Text = String.Empty Then
        MsgBox("Actual Charge Missing")
    ElseIf txtAmountPaid.Text = String.Empty Then
        MsgBox("Amount Paid Missing")
    ElseIf txtBalance.Text = String.Empty Then
        MsgBox("Balance is Missing")
    ElseIf DateTimePickerDate.Text = String.Empty Then
        MsgBox("Date Missing")
    ElseIf ComboBoxServedby.Text = String.Empty Then
        MsgBox("Staff Name Missing")

```

Else

```

Receipt.txtOwnersName.Text = Me.txtOwnersName.Text
Receipt.txtVehicleCategory.Text = Me.txtVehicleCategory.Text
Receipt.txtVehiclegroup.Text = Me.txtVehiclegroup.Text
Receipt.txtActualCharge.Text = txtActualCharge.Text
Receipt.txtAmountPaid.Text = Me.txtAmountPaid.Text
Receipt.txtBalance.Text = Me.txtBalance.Text
Receipt.txtDate.Text = Me.DateTimePickerDate.Text
Receipt.txtServedby.Text = ComboBoxServedby.Text

```

```
        MessageBox.Show("Record Added", "Action successful",  
        MessageBoxButtons.OK, MessageBoxIcon.Asterisk)  
    End If  
End Sub
```

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles Button1.Click  
    Receipt.Show()  
End Sub
```

```
Private Sub cmdExit_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles cmdExit.Click  
    Me.Close()  
  
End Sub
```

```
Private Sub CheckBox1_CheckedChanged(ByVal sender As System.Object, ByVal e  
As System.EventArgs) Handles CheckBox1.CheckedChanged  
    If CheckBox1.Checked = True Then  
        txtVehicleCategory.Text = "MOTOR CYCLE"  
        txtVehiclegroup.Text = "A"  
        CheckBox2.Checked = False  
        CheckBox3.Checked = False  
        CheckBox4.Checked = False  
        CheckBox5.Checked = False  
        CheckBox6.Checked = False  
        CheckBox7.Checked = False  
    End If  
End Sub
```

```
Private Sub CheckBox2_CheckedChanged(ByVal sender As System.Object, ByVal e  
As System.EventArgs) Handles CheckBox2.CheckedChanged  
    If CheckBox2.Checked = True Then  
        txtVehicleCategory.Text = "SMALL VEHICLE"  
        txtVehiclegroup.Text = "B"  
        CheckBox1.Checked = False  
        CheckBox3.Checked = False  
        CheckBox4.Checked = False  
        CheckBox5.Checked = False  
        CheckBox6.Checked = False
```

```
    CheckBox7.Checked = False
End If
End Sub
```

```
Private Sub CheckBox3_CheckedChanged(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles CheckBox3.CheckedChanged
    If CheckBox3.Checked = True Then
        txtVehicleCategory.Text = "MEDIUM VEHICLE"
        txtVehiclegroup.Text = "C"
        CheckBox2.Checked = False
        CheckBox1.Checked = False
        CheckBox4.Checked = False
        CheckBox5.Checked = False
        CheckBox6.Checked = False
        CheckBox7.Checked = False
    End If
End Sub
```

```
Private Sub CheckBox4_CheckedChanged(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles CheckBox4.CheckedChanged
    If CheckBox4.Checked = True Then
        txtVehicleCategory.Text = "BUS"
        txtVehiclegroup.Text = "D"
        CheckBox2.Checked = False
        CheckBox3.Checked = False
        CheckBox1.Checked = False
        CheckBox5.Checked = False
        CheckBox6.Checked = False
        CheckBox7.Checked = False
    End If
End Sub
```

```
Private Sub CheckBox5_CheckedChanged(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles CheckBox5.CheckedChanged
    If CheckBox5.Checked = True Then
        txtVehicleCategory.Text = "TRAILER"
        txtVehiclegroup.Text = "E"
        CheckBox2.Checked = False
        CheckBox3.Checked = False
        CheckBox4.Checked = False
    End If
End Sub
```

```
    CheckBox1.Checked = False
    CheckBox6.Checked = False
    CheckBox7.Checked = False
End If
End Sub
```

```
Private Sub CheckBox6_CheckedChanged(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles CheckBox6.CheckedChanged
    If CheckBox6.Checked = True Then
        txtVehicleCategory.Text = "TRACTOR"
        txtVehiclegroup.Text = "F"
        CheckBox2.Checked = False
        CheckBox3.Checked = False
        CheckBox4.Checked = False
        CheckBox5.Checked = False
        CheckBox1.Checked = False
        CheckBox7.Checked = False
    End If
End Sub
```

```
Private Sub CheckBox7_CheckedChanged(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles CheckBox7.CheckedChanged
    If CheckBox7.Checked = True Then
        txtVehicleCategory.Text = "EXCUVATOR"
        txtVehiclegroup.Text = "G"
        CheckBox2.Checked = False
        CheckBox3.Checked = False
        CheckBox4.Checked = False
        CheckBox5.Checked = False
        CheckBox6.Checked = False
        CheckBox1.Checked = False
    End If
End Sub
```

```
Private Sub txtVehiclegroup_KeyPress(ByVal sender As Object, ByVal e As
System.Windows.Forms.KeyPressEventArgs) Handles txtVehiclegroup.KeyPress
    If Asc(e.KeyChar) < 65 Or Asc(e.KeyChar) > 90 _
And Asc(e.KeyChar) < 97 Or Asc(e.KeyChar) > 122 Then
        e.Handled = True
        MessageBox.Show("You can only input letters!")
    End If
End Sub
```

```

        txtVehiclegroup.Clear()
    End If
End Sub

Private Sub txtVehiclegroup_TextChanged(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles txtVehiclegroup.TextChanged

End Sub

Private Sub txtVehicleCategory_KeyPress(ByVal sender As Object, ByVal e As
System.Windows.Forms.KeyPressEventArgs) Handles txtVehicleCategory.KeyPress
    If Asc(e.KeyChar) < 65 Or Asc(e.KeyChar) > 90 _
And Asc(e.KeyChar) < 97 Or Asc(e.KeyChar) > 122 Then
        e.Handled = True
        MessageBox.Show("You can only input letters!")
        txtVehicleCategory.Clear()
    End If
End Sub

Private Sub txtVehicleCategory_TextChanged(ByVal sender As System.Object, ByVal
e As System.EventArgs) Handles txtVehicleCategory.TextChanged

End Sub

Private Sub txtActualCharge_KeyPress(ByVal sender As Object, ByVal e As
System.Windows.Forms.KeyPressEventArgs)
    If Asc(e.KeyChar) < 48 Or Asc(e.KeyChar) > 57 Then
        e.Handled = True
        MessageBox.Show("You can only enter a number")
        txtActualCharge.Clear()

    End If
End Sub

Private Sub txtActualCharge_TextChanged(ByVal sender As System.Object, ByVal e
As System.EventArgs)

End Sub

Private Sub txtAmountPaid_TextChanged(ByVal sender As System.Object, ByVal e
As System.EventArgs)

```

End Sub

```
Private Sub txtBalance_TextChanged(ByVal sender As System.Object, ByVal e As System.EventArgs)
```

End Sub

```
Private Sub txtActualCharge_KeyPress1(ByVal sender As Object, ByVal e As System.Windows.Forms.KeyPressEventArgs) Handles txtActualCharge.KeyPress
```

```
    If Asc(e.KeyChar) < 48 Or Asc(e.KeyChar) > 57 Then
```

```
        e.Handled = True
```

```
        MessageBox.Show("You can only enter a number")
```

```
        txtActualCharge.Clear()
```

```
    End If
```

End Sub

```
Private Sub txtActualCharge_TextChanged_1(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles txtActualCharge.TextChanged
```

```
    Dim Character As String
```

```
    Dim NNN As Integer
```

```
    Dim NumOfPeriods As Integer = 0
```

```
    Dim NumOfMinus As Integer = 0
```

```
    Dim OtherChar As Boolean = False
```

```
    For NNN = 1 To Len(txtActualCharge.Text)
```

```
        Character = Mid(txtActualCharge.Text, NNN, 1)
```

```
        If Character = "." Then NumOfPeriods = NumOfPeriods + 1
```

```
        If (Character < "0" OrElse Character > "9") AndAlso Character <> "." Then
```

```
OtherChar = True
```

```
    Next NNN
```

```
    If NumOfPeriods < 2 And OtherChar = False Then
```

```
        'do nothing
```

```
    Else
```

```
        'Not a Valid number
```

```
        MessageBox.Show(txtActualCharge.Text & " is not a valid number.", "Be aware", MessageBoxButtons.OK, MessageBoxIcon.Information)
```

```
        txtActualCharge.Text = ""
```

```
    End If
```

End Sub

```
Private Sub txtAmountPaid_KeyPress1(ByVal sender As Object, ByVal e As System.Windows.Forms.KeyPressEventArgs) Handles txtAmountPaid.KeyPress
    If Asc(e.KeyChar) < 48 Or Asc(e.KeyChar) > 57 Then
        e.Handled = True
        MessageBox.Show("You can only enter a number")
        txtAmountPaid.Clear()
    End If
End Sub
```

```
Private Sub txtAmountPaid_TextChanged_1(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles txtAmountPaid.TextChanged
    Dim Character As String
    Dim NNN As Integer
    Dim NumOfPeriods As Integer = 0
    Dim NumOfMinus As Integer = 0
    Dim OtherChar As Boolean = False
    For NNN = 1 To Len(txtAmountPaid.Text)
        Character = Mid(txtAmountPaid.Text, NNN, 1)
        If Character = "." Then NumOfPeriods = NumOfPeriods + 1
        If (Character < "0" OrElse Character > "9") AndAlso Character <> "." Then
            OtherChar = True
        End If
    Next NNN
    If NumOfPeriods < 2 And OtherChar = False Then
        'do nothing
    Else
        'Not a Valid number
        MessageBox.Show(txtAmountPaid.Text & " is not a valid number.", "Be aware",
            MessageBoxButtons.OK, MessageBoxIcon.Information)
        txtAmountPaid.Text = ""
    End If
End Sub
```

```
Private Sub txtBalance_KeyPress1(ByVal sender As Object, ByVal e As System.Windows.Forms.KeyPressEventArgs) Handles txtBalance.KeyPress
    If Asc(e.KeyChar) < 48 Or Asc(e.KeyChar) > 57 Then
        e.Handled = True
        MessageBox.Show("You can only enter a number")
    End If
End Sub
```

```
txtBalance.Clear()
```

```
End If  
End Sub
```

```
Private Sub txtBalance_TextChanged_1(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles txtBalance.TextChanged
```

```
End Sub
```

```
Private Sub caculator_Load(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles MyBase.Load
```

```
End Sub  
End Class
```

## LICENCE RENEWAL FORM CODING

```
Public Class FormAddItems
```

```
Private Sub cmdExit_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles cmdExit.Click  
Me.Close()
```

```
End Sub
```

```
Private Sub cmdClear_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles cmdClear.Click  
txtfirstname.Clear()  
txtOthernames.Clear()  
txtVehicleGroup.Clear()  
txtlicenceno.Clear()
```

```
End Sub
```

```
Private Sub cmdAddImage_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles cmdAddImage.Click  
Me.OpenFileDialog1.FileName = Nothing  
Me.OpenFileDialog1.ShowDialog()  
If Not Me.OpenFileDialog1.FileName = Nothing Then
```

```
Me.PictureBox1.ImageLocation = Me.OpenFileDialog1.FileName
```

```
End If  
End Sub
```

```
Private Sub ComboBox3_KeyDown(ByVal sender As Object, ByVal e As  
System.Windows.Forms.KeyEventArgs) Handles ComboBox3.KeyDown
```

```
    If e.KeyData = Keys.Return Then  
3:        txtVehicleGroup.Focus() ' The Next textbox to select  
4:    End If  
End Sub
```

```
Private Sub ComboBox3_KeyPress(ByVal sender As Object, ByVal e As  
System.Windows.Forms.KeyPressEventArgs) Handles ComboBox3.KeyPress
```

```
    If Asc(e.KeyChar) < 65 Or Asc(e.KeyChar) > 90 _  
And Asc(e.KeyChar) < 97 Or Asc(e.KeyChar) > 122 Then  
        e.Handled = True  
        MessageBox.Show("You can only input letters!", "Invalid Operation",  
MessageBoxButtons.OK, MessageBoxIcon.Stop)
```

```
End If  
End Sub
```

```
Private Sub ComboBox3_SelectedIndexChanged(ByVal sender As System.Object,  
ByVal e As System.EventArgs) Handles ComboBox3.SelectedIndexChanged
```

```
    If ComboBox3.Text = "MOTOR CYCLE" Then  
        txtVehicleGroup.Text = "A"  
    ElseIf ComboBox3.Text = "SMALL VEHICLE" Then  
        txtVehicleGroup.Text = "B"  
    ElseIf ComboBox3.Text = "MEDIUM VEHICLE" Then  
        txtVehicleGroup.Text = "C"  
    ElseIf ComboBox3.Text = "BUS" Then  
        txtVehicleGroup.Text = "D"  
    ElseIf ComboBox3.Text = "TRAILER" Then  
        txtVehicleGroup.Text = "E"  
    ElseIf ComboBox3.Text = "TRACTOR" Then  
        txtVehicleGroup.Text = "F"  
    ElseIf ComboBox3.Text = "EXCUVATOR" Then  
        txtVehicleGroup.Text = "G"
```

```
End If  
End Sub
```

```
Private Sub cmdAddItems_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles cmdAddItems.Click  
If txtfirstname.Text = String.Empty Then  
    MsgBox("First Name Missing")  
End If  
Print.txtfirstname.Text = Me.txtfirstname.Text  
Print.txtOtherNames.Text = Me.txtOthernames.Text  
Print.txtGender.Text = Me.ComboBoxGender.Text  
Print.txtNationality.Text = Me.ComboBoxNationality.Text  
Print.txtVehicleCategory.Text = Me.ComboBox3.Text  
Print.txtVehiclegroup.Text = Me.txtVehicleGroup.Text  
Print.txtVehicleRestriction.Text = Me.ComboBoxVehicleRestriction.Text  
Print.txtDriverRestriction.Text = Me.ComboBoxDriverRestriction.Text  
Print.txtLicenceNo.Text = Me.txtlicenceno.Text  
Print.txtDateIssued.Text = Me.DateTimePickerDateIssued.Text  
Print.txtValidity.Text = Me.DateTimePickerValidity.Text  
Print.PictureBox1.Image = Me.PictureBox1.Image  
MessageBox.Show("Record Added", "Action Successful", MessageBoxButtons.OK,  
MessageBoxIcon.Asterisk)
```

```
End Sub
```

```
Private Sub ComboBoxGender_KeyPress(ByVal sender As Object, ByVal e As  
System.Windows.Forms.KeyPressEventArgs) Handles ComboBoxGender.KeyPress  
If Asc(e.KeyChar) < 65 Or Asc(e.KeyChar) > 90 _  
And Asc(e.KeyChar) < 97 Or Asc(e.KeyChar) > 122 Then  
    e.Handled = True  
    MessageBox.Show("You can only input letters!", "Invalid Operation",  
MessageBoxButtons.OK, MessageBoxIcon.Stop)
```

```
End If  
End Sub
```

```
Private Sub ComboBoxGender_SelectedIndexChanged(ByVal sender As  
System.Object, ByVal e As System.EventArgs) Handles  
ComboBoxGender.SelectedIndexChanged
```

End Sub

```
Private Sub ComboBoxNationality_KeyDown(ByVal sender As Object, ByVal e As
System.Windows.Forms.KeyEventArgs) Handles ComboBoxNationality.KeyDown
    If e.KeyData = Keys.Return Then
3:     ComboBox3.Focus() ' The Next textbox to select
4: End If
End Sub
```

```
Private Sub ComboBoxNationality_KeyPress(ByVal sender As Object, ByVal e As
System.Windows.Forms.KeyPressEventArgs) Handles ComboBoxNationality.KeyPress
    If Asc(e.KeyChar) < 65 Or Asc(e.KeyChar) > 90 _
And Asc(e.KeyChar) < 97 Or Asc(e.KeyChar) > 122 Then
        e.Handled = True
        MessageBox.Show("You can only input letters!", "Invalid Operation",
MessageBoxButtons.OK, MessageBoxIcon.Stop)
```

End If  
End Sub

```
Private Sub ComboBoxNationality_SelectedIndexChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
ComboBoxNationality.SelectedIndexChanged
```

End Sub

```
Private Sub txtVehicleGroup_KeyDown(ByVal sender As Object, ByVal e As
System.Windows.Forms.KeyEventArgs) Handles txtVehicleGroup.KeyDown
    If e.KeyData = Keys.Return Then
3:     ComboBoxVehicleRestriction.Focus() ' The Next textbox to select
4: End If
End Sub
```

```
Private Sub TextBoxVehicleGroup_KeyPress(ByVal sender As Object, ByVal e As
System.Windows.Forms.KeyPressEventArgs) Handles txtVehicleGroup.KeyPress
    If Asc(e.KeyChar) < 65 Or Asc(e.KeyChar) > 90 _
And Asc(e.KeyChar) < 97 Or Asc(e.KeyChar) > 122 Then
        e.Handled = True
        MessageBox.Show("You can only input letters!", "Invalid Operation",
MessageBoxButtons.OK, MessageBoxIcon.Stop)
```

```
End If
End Sub
```

```
Private Sub TextBoxVehicleGroup_TextChanged(ByVal sender As System.Object,
ByVal e As System.EventArgs) Handles txtVehicleGroup.TextChanged
```

```
End Sub
```

```
Private Sub ComboBoxVehicleRestriction_KeyDown(ByVal sender As Object, ByVal
e As System.Windows.Forms.KeyEventArgs) Handles
ComboBoxVehicleRestriction.KeyDown
```

```
    If e.KeyData = Keys.Return Then
3:         ComboBoxDriverRestriction.Focus() ' The Next textbox to select
4:     End If
End Sub
```

```
Private Sub ComboBoxVehicleRestriction_KeyPress(ByVal sender As Object, ByVal
e As System.Windows.Forms.KeyPressEventArgs) Handles
ComboBoxVehicleRestriction.KeyPress
```

```
    If Asc(e.KeyChar) < 65 Or Asc(e.KeyChar) > 90 _
And Asc(e.KeyChar) < 97 Or Asc(e.KeyChar) > 122 Then
        e.Handled = True
        MessageBox.Show("You can only input letters!", "Invalid Operation",
MessageBoxButtons.OK, MessageBoxIcon.Stop)
```

```
End If
End Sub
```

```
Private Sub ComboBoxVehicleRestriction_SelectedIndexChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
ComboBoxVehicleRestriction.SelectedIndexChanged
```

```
End Sub
```

```
Private Sub ComboBoxDriverRestriction_KeyDown(ByVal sender As Object, ByVal e
As System.Windows.Forms.KeyEventArgs) Handles
ComboBoxDriverRestriction.KeyDown
```

```
    If e.KeyData = Keys.Return Then
3:         txtlicenceno.Focus() ' The Next textbox to select
```

```
4: End If
End Sub
```

```
Private Sub ComboBoxDriverRestriction_KeyPress(ByVal sender As Object, ByVal e As System.Windows.Forms.KeyPressEventArgs) Handles ComboBoxDriverRestriction.KeyPress
    If Asc(e.KeyChar) < 65 Or Asc(e.KeyChar) > 90 _
    And Asc(e.KeyChar) < 97 Or Asc(e.KeyChar) > 122 Then
        e.Handled = True
        MessageBox.Show("You can only input letters!", "Invalid Operation",
        MessageBoxButtons.OK, MessageBoxIcon.Stop)
    End If
End Sub
```

```
Private Sub ComboBoxDriverRestriction_SelectedIndexChanged(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles ComboBoxDriverRestriction.SelectedIndexChanged
```

```
End Sub
```

```
Private Sub txtlicenceno_KeyDown(ByVal sender As Object, ByVal e As System.Windows.Forms.KeyEventArgs) Handles txtlicenceno.KeyDown
    If e.KeyData = Keys.Return Then
3:     DateTimePickerDateIssued.Focus() ' The Next textbox to select
4: End If
End Sub
```

```
Private Sub TextBoxlicenceno_TextChanged(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles txtlicenceno.TextChanged
```

```
End Sub
```

```
Private Sub cmdPrintPreview_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles cmdPrintPreview.Click
    Print.Show()
```

```
End Sub
```

```

Private Sub txtfirstname_KeyDown(ByVal sender As Object, ByVal e As
System.Windows.Forms.KeyEventArgs) Handles txtfirstname.KeyDown
    If e.KeyData = Keys.Return Then
3:     txtOthernames.Focus() ' The Next textbox to select
4:     End If
End Sub

```

```

Private Sub txtfirstname_TextChanged(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles txtfirstname.TextChanged

End Sub

```

```

Private Sub txtOthernames_TextChanged(ByVal sender As System.Object, ByVal e
As System.EventArgs) Handles txtOthernames.TextChanged

End Sub

```

```

Private Sub DateTimePickerDateIssued_KeyDown(ByVal sender As Object, ByVal e
As System.Windows.Forms.KeyEventArgs) Handles
DateTimePickerDateIssued.KeyDown
    If e.KeyData = Keys.Return Then
3:     DateTimePickerValidity.Focus() ' The Next textbox to select
4:     End If
End Sub

```

```

Private Sub DateTimePickerDateIssued_ValueChanged(ByVal sender As
System.Object, ByVal e As System.EventArgs) Handles
DateTimePickerDateIssued.ValueChanged

End Sub

```

```

Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
    Me.Registration2BindingSource.Filter = "[LicenceNo]='" & Me.TextBox1.Text & "
    "
End Sub

```

```

Private Sub FormAddItems_Load(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles MyBase.Load

```

'TODO: This line of code loads data into the 'LicenceDataSet.Registration2' table.  
You can move, or remove it, as needed.

```
Me.Registration2TableAdapter.Fill(Me.LicenceDataSet.Registration2)
```

```
End Sub
```

```
Private Sub Button2_Click(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles Button2.Click
```

```
Me.Validate()
```

```
Me.Registration2BindingSource.EndEdit()
```

```
Me.TableAdapterManager1.UpdateAll(Me.LicenceDataSet)
```

```
MessageBox.Show("Record Updated", "Action Successful",  
MessageBoxButtons.OK, MessageBoxIcon.Asterisk)
```