Web-based Portal for Vehicle Licensing Management

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Abstract—**Vehicle registration is a mandatory exercise which all vehicle owners are expected to undertake with the relevant government agencies in order to be able to drive the cars freely. The process is laden with a wide range of checklists and steps which must all be followed. These multi agency processes often times result in applicants bypassing some of the stages or resorting to the use of agents and touts for the entire registration process. This has led to incomplete and sometimes inaccurate documentation of the registration. The Vehicle registration involves the payment of a stipulated fee determined by the engine size of the vehicle and also the vehicle type and use. All vehicles are uniquely identified by their vehicle identification number but registered vehicles are identified and attached to vehicle registration certificates. The maintenance of registers of users and vehicles is currently a manual process and it is prone to errors and also very cumbersome to update and time consuming. This work presents a web based portal for vehicle licensing management. The system offers a number of advantages among which are the ease of registration and renewal of licenses, the elimination of third party agents or touts among other benefits. This paper reports the design framework for a client-server distributed database system for vehicle administration to improve the performance and efficiency of the system. The system was designed using PHP scripting, HTML, MySQL server and Macromedia Dreamweaver.**

Index Terms— **Automobiles, HTML, Licensing, Registration, SQL server.**

I. INTRODUCTION

EVERY automobile within any nation must be registered under a state government before a license plate is issued. Some countries automobile registration plates often have the state written at the top and a group of three letters at the right hand side, indicating the district of registration followed by their main town to aid in tracing and identifying location of the automobile.

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License plates serve to help law enforcement, motor vehicle authorities and others identify a vehicle. Apart from the identification and revenue-generating component of an effective vehicle registration system, authorities also make use of it as a tool for collection of vital data for planning purposes [1].

The registration process enables the authorized agencies of government to collect information such as the weight class, the country, state and government in which the vehicle is registered; use restrictions (private or commercial), age and engine capacity. In addition, some license plates show whether the owner of the vehicle is a member of a special organization or group such as the police force etc. Moreover proof of ownership certificates are issued by the issuing authority to owners of automobiles, on payment of a certain fee.

Apart from other advantages, web based vehicle management will replace the manual process of registering vehicle, issuing license, renewing expired licenses, as well as vehicle change of ownership. The ICT-driven mode of operation is more flexible and guarantees accurate record keeping. It also ensures accuracy in planning, monitoring and decision making. This method of operation will ensure swift retrieval of necessary information to the police for urgent need such as road accident.

Web based vehicle management and licensing system is a process that is still not common in many developing countries unlike in the developed countries [2]. In a densely populated developing country an efficient vehicle licensing system will address all the challenges being faced with the manual registration process. The major problems of safety, easy retrieval in record management which leads to files/records being misplaced, damaged or lost irreparably will be minimized under the new system.

It is very important to deploy an effective transportation management system to support the physical infrastructures and help the government fulfill the mandate of providing welfare and security to its citizens.

However all these can only be achieved by having a good record of the vehicles on the roads and the drivers behind the wheels. In response to this need, this work is a step towards developing a 100% effective vehicle licensing/registration system. The design involves a client-server distributed database system. The system was designed using PHP scripting, HTML, MySQL server and Macromedia Dreamweaver.

II. DESIGN REQUIREMENTS

The design requirement is divided into three phases and the objective of each phase is stated below:
1. To design an input format that will enable the system to capture all the necessary data and vehicle details of the owner.
2. To design a database system that will store all the information.
3. To design a well formatted output that will present information to owner and government agencies in a meaningful format.

The three phases are:

A. Input Analysis

The input forms are designed based on the data supplied into the system. The data are captured through the keyboard and stored in the database. The new system is composed mainly of vehicle and owner inputs.

B. Process Analysis

Once the inputs are collected, the obtained data are processed and sorted into the appropriate classes for effective use and easy retrieval. The processed data is stored in the database as information for subsequent use.

C. Output Analysis

The output from the system designed is generated from the systems inputs and displays in the database. This involves the resultant documentation generated after processing of data supplied to the database. The outputs can be generated as softcopy or printed in hardcopy documents such as registered vehicles, customer's details, registration details, change of ownership details, renewal details etc. The system can also be integrated into other automated monitoring systems for tracking vehicles and real-time identification of vehicles and their owners.

III. SYSTEM MODELLING

Figure 1 shows the system flowchart diagram of the vehicle license and registration system.

The input data into the registration module in figure 2 includes: Registration Identity, vehicle type, Engine number, chassis number, manufacturer, state of registration, date of registration etc. In this segment, data entered by a user who fills the vehicle registration form on the web page generates a report with an output that flows into the administrator's sub-system. Processing of the request occurs in the Administrator sub-system.

The input data to figure 3 includes: Registration Identity, Issuing officer's name, state of registration, etc. In this, data entered by a user who fills the license renewal form on the web page generates a report with an output that flows into the administrator's sub-system were the request shall be processed and approved.
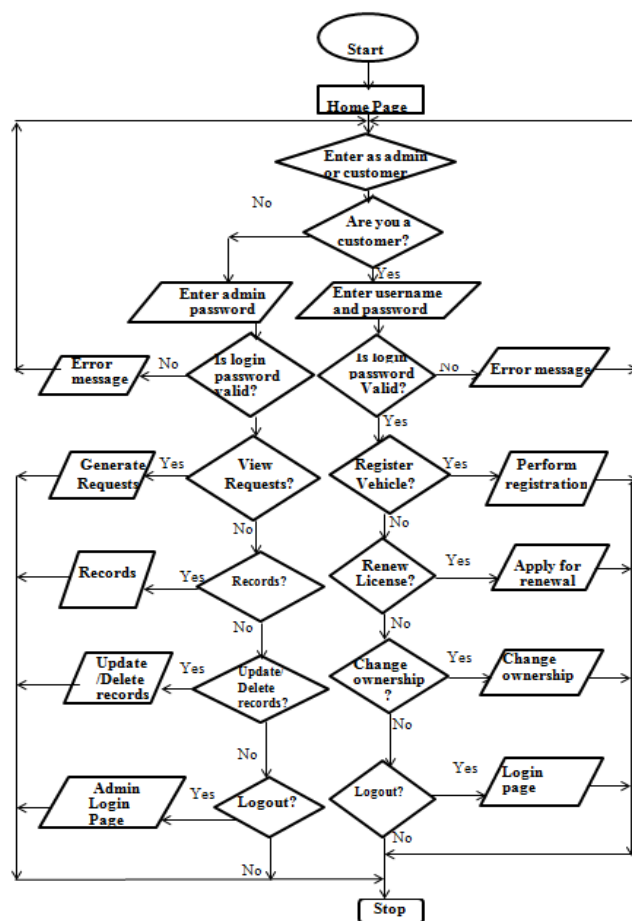

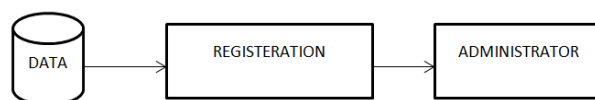Fig. 1. System Flowchart.

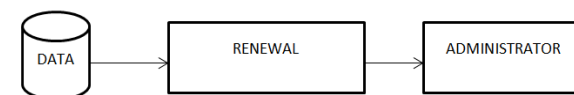Fig. 2. Overview model of registration module.

Fig. 3. Overview model of renewal module.

Fig. 4. Overview model of change of ownership module.

The input data into figure 4 includes: the registration Identity, first name, last name, state of origin; address etc. data entered by a user who wants to change ownership of the vehicle generates a report which generates an output that flows into the administrator sub-system and processing occurs.

IV. DEVELOPMENTAL STAGE

This section highlights the programming language used, the server used and the data structures for transmitting information.

A. Hypertext Markup Language (HTML)

Hypertext Markup Language (HTML) is the standard text-formatting language for documents on the interconnected computing network known as the World Wide Web. HTML documents are text files that contain two parts: the content that is meant to be rendered on a computer screen; and markup or tags, encoded information that directs the text format on the screen and is generally hidden from the user.

B. SQL Server

MySQL is a popular choice of database for use in web applications. MySQL is the database construct that enables PHP and Apache to work together to access and display data in a readable format to a browser. It is a Structured Query Language server designed for heavy loads and processing of complex queries. As a relational database system, MySQL allows many different tables to be joined together for maximum efficiency and speed.

C. Google Chrome

It is an application that showcases the websites which is a collection of web pages. Web pages are documents created using the HTML code.

D. Macromedia Dreamweaver

Macromedia Dreamweaver CS5 integrates with Adobe Browser Lab, one of the new CS Live online services, which provides a fast and accurate solution for cross-browser compatibility testing. With Browser Lab you can preview web pages and local content using multiple viewing and comparison tools. Dreamweaver lets you build everything from basic data-driven websites to powerful online stores. Dreamweaver CS5 includes updated and simplified CSS starter layouts.

E. PHP scripting language

PHP is a server-side scripting language that allows your Web site to be truly dynamic. PHP stands for Hypertext Preprocessor. Its flexibility and relatively small learning curve (especially for programmers who have a background in C, Java, or Perl) make it one of the most popular scripting languages around.

V. SYSTEM TESTING AND RESULTS

This software has been tested with data in order to evaluate its compliance with the specified requirement. This was done through the use of properly selected input data to ensure reliability and accuracy of output. The test data consists of formulated customer's personal details and car details. The respective user names and passwords were used to login to the database. All these varying data used in testing the system's performance gives the assurance that the new system will achieve its purpose and objectives. There is a link between this system and the designated bank involved in this process. The bank issues a certain Registration ID (Reg. ID) and PIN that would be generated by the Vehicle Licensing Company anytime a user pays to

the bank. No same Reg. ID or PIN can be issued to same users. These details are given to the user by the bank to be used to login on the web page. Error message is displayed if the user name and password are incorrect. Figures 5 to 9 shows the web pages of the website undergoing different stages of testing.
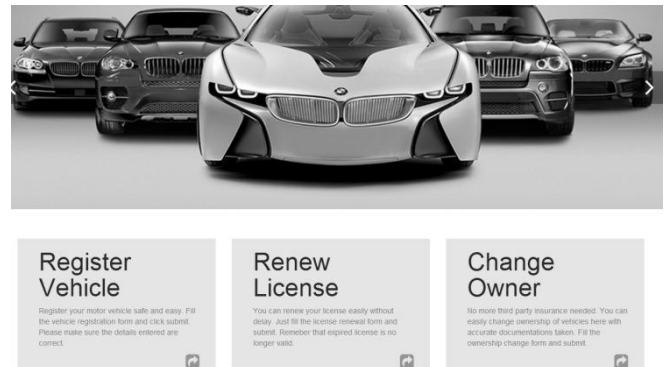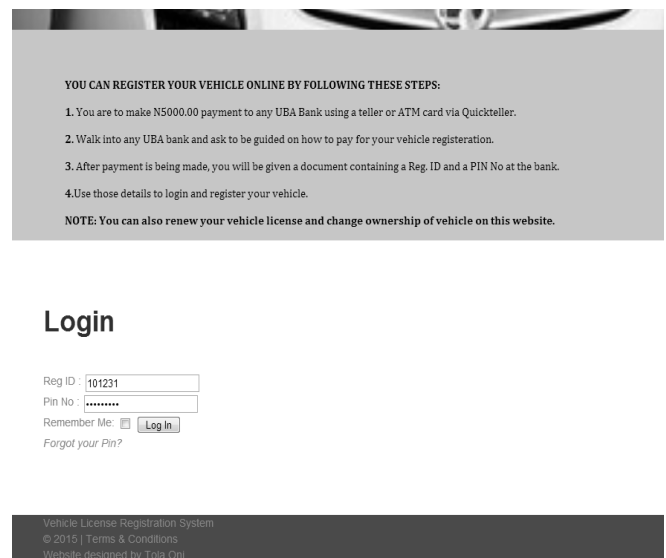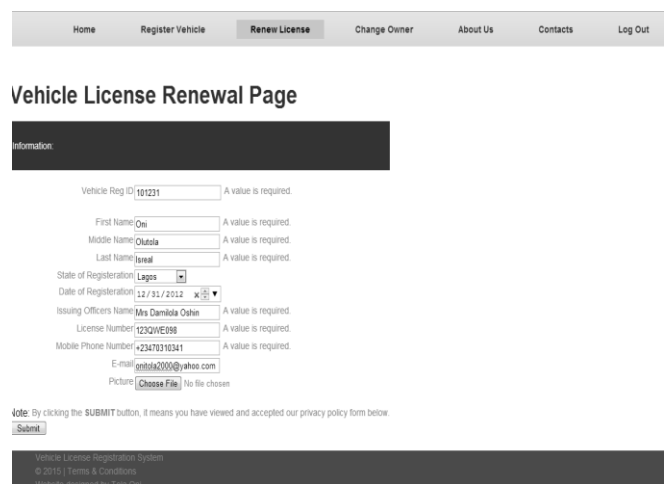

Fig. 5. Portal Home page.

Fig. 6. Portal Login page.

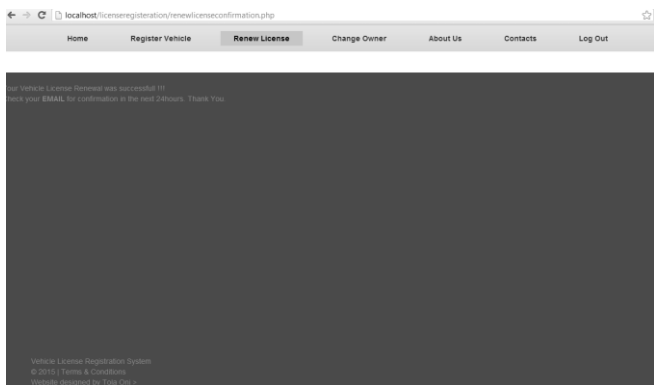

Fig. 7. Vehicle license renewal form.

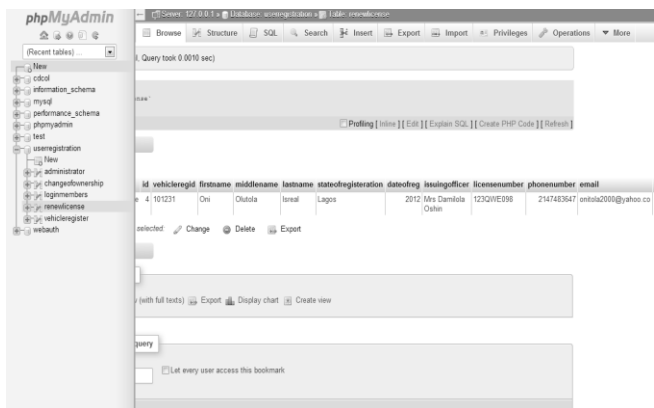Fig. 8. Vehicle registration confirmation message.

Fig. 9. Data base receives information filled.

VI. CONCLUSION

The benefits of an efficient and strictly controlled vehicle licensing/registration portal in a society cannot be overemphasized. It contributes significantly to the growth of such societies as it impacts positively on security, transportation, planning as well as general urbanization among many other benefits. This work is a step towards developing a robust portal adoptable by the relevant authorities for the stated purpose.

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