Design and Implementation of Vehicle Management System

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Abstract. With the rise of computer technology, the tremendous work is expected to perform by computer. With the increasing maturity of the programming language that desire can be realized easily, at present the growing number of vehicles has increased this invisible vehicle workload to managers, so the development of a vehicle management system is necessary, the java language-based program under the SSH framework and mysql database are applied in the system. Mysql backend connection is simple, easy to use, easy to understand. The intensity of the work and the tedious workflow to managers will be reduced with the use of the vehicle management system, general operation of the vehicle drivers and managers is involved in the system, this system is not very perfect and there is still space for improvement, It is believed that it will be fully used in the future.

1. Introduction
With the rapid development of national economy, the application of computer is very wide. Practical problems in various fields have begun to be solved with computers. The latest research shows that China has become one of the highest car ownership countries in the world resulting in the development of Vehicle management system problems. Therefore, the development of the vehicle management system has become the primary task for vehicle managers to explore efficient work.

Under the background of information big data, the efficiency and labor cost of vehicle management can be improved by the vehicle management system. Which can help managers find necessary information from a vast amount of information. Therefore, the development of the vehicle management system conforms to the trend of the era and is another important application of computer technology in the background of current information big data.

2. B/S structure introduction
B/S is the abbreviation of Brower/Server, with the rise of Internet technology, the C/S structure of a change or improved structure[1]. In this structure, the user interface through the WWW browser to achieve, part of the transaction logic in the front-end implementation, but the main transaction logic in the server-side implementation, the formation of the so-called 3-tier structure. The B/S architecture uses a star topology to build an enterprise's internal communications network or use the Internet Virtual Private Network (VPN). As long as the client installs a browser, such as Fire Fox or Internet Explorer, the server installs a database such as Oracle, Sybase, Informix, or SQL Server. The browser interacts with the database through the Web Server. B/S biggest advantage is that user can operate anywhere without having to install any specialized software. As long as there is a computer can access the Internet, the client zero maintenance. System expansion is very easy, as long as the Internet, and then by the system

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administrator to assign a user name and password, you can use. Or even online application, through
the company’s internal security certification (such as CA certificate), do not need people to participate
in the system can be automatically assigned to the user an account into the system.

2.1. Introduction to MyEclipse
Due to the system is cross-platform, open source development is the best choice. MyEclipse can be
easily developed javaweb programe, the development process without any restrictions: MyEclipse can
provide support for the relevant javaee has a powerful function to complete the web project
development[2].

2.2. JavaScript Language
Javascript is a web scripting language that is a dynamic type with built-in support type[3]. A web page
that uses the dynamic functionality of a web page, which widely apply to the client. Javascript has its
own data type to handle different data, text, and information processing. Javascript is also a cross-
platform language is gradually used to write server-side program, javascript is much favored for its
security.

2.3. JSP Technology
JSP full name Java Server Pages, a simplified Servlet design, is similar to ASP technology[4]. Combined with
the actual process, due to JSP cross-platform, so the JSP technology is needed for the preparation of
the system, Java Servlet is the technical basis of JSP. Which is widely used in large project and in the
usual development, object-oriented Contact the database. It is easy and convenient to realize various
functions.

2.4. SSH Framework
It is well known that in the current rapid development of programming technology today. A single
programming language has been difficult to meet the growing needs of people, people need to be able
to carry out data storage and operation of the program; so the programming language is usually used to
connect with the database. But now the situation is that all databases are relational databases and
people usually use the advanced programming language but it is the object-oriented programming
language, how to use the object-oriented programming language to operate the database has become a
big problem!
Fortunately, with the program developers in the unremitting efforts. The SSH framework was finally
born for our follow-up development and paved the way. SSH refers to the framework of struts +
Hibernate + spring[5].

Struts:
Struts application development process is completed by the request response, that is from the browser-
side request from the configuration file in the struts call the corresponding Action method and the
corresponding jsp page and feedback to the browser side shows the results people want to show.
Hibernate:
Hibernate is one of the ORM frameworks, and ORM is an abbreviation for object/relational database mapping. ORM is a normative implementation of the main role is that developers can object-oriented programming language to operate on the database, although developers believe that in the near future relational database will be replaced by the object-oriented database, but in the current mainstream development developer still use the ORM tool to operate on the database.

Spring:
Spring framework is now one of the important means of javaEE development, it extracted from the actual development of the framework in which a lot of common steps. The use of spring framework can simplify the development of cumbersome steps, can improve the efficiency of development.

Figure 1. Struts framework workflow

Figure 2. Spring framework of the 7 modules
2.5. Tomcat
With Server, developers mainly use Tomcat. Because it is the most widely used, open source server. Tomcat is used by almost all developers at the beginning of the contact programming, so there is a wide base. Second, this is a free server is very suitable for use in small programs; at the same time Tomcat is very easy to maintain, running and less memory footprint. These are the reasons why developers use Tomcat as a program server.

3. Demand analysis
Demand analysis refers to the self-analysis before the problem is solved, to clarify the requirements of the problem, demand analysis is a hard and difficult work, only to do a clear need for analysis to be able to carry out the next step to better write code work[6]. It is reported that the current vehicle management, there are still using the old manual accounting and paper files. It is time-consuming, time-consuming way, this approach is not easy to save and very easy to make mistakes. The purpose of the design of the system is to make the vehicle management transparent, easy to operate and easy to manage. The feature of vehicle management information processing, extensive data management, related information, can solve the problem of query and statistical methods, resulting in unnecessary trouble. In the management process of the situation is unpredictable to achieve our goal to the vehicle management system the vehicle manager must use the development of the computer to achieve the dividend, the effective way to achieve the purpose of timely management of vehicles, then vehicle manager must use it.

3.1. System Use Case Diagram
Vehicle management is mainly on the management of vehicles, including the add vehicle, delete vehicle, change vehicle, query vehicle and other operations.

![Vehicle module use case diagram](image)

**Figure 3.** Vehicle module use case diagram

3.2. System Function Analysis
The administrator has the highest authority to process the status of all vehicles, administrators, drivers, and vehicles.
3.3. Database Structure Design

The Mysql database has all the advantages of a relational database and can be compatible with popular development languages. So this is a good choice, the system database using Mysql database, the system database name for the db_cheliangsys, respectively, given the data table below the main data table structure.

The following table is a table of the table that reflects the primary key of each table and the nature of each data in the table, in the following table is reflected in the MYSQL database bulletin board, student table, coach table and other major 10 primary key; The primary key is the key in the database that identifies the attribute, and there is only one primary key in each table. The primary key is the link between the table to ensure that the uniqueness of the data will not produce redundant data; each database table can reflect any number of relational graphs, create different relationships to make different parts of the database visual emphasis design Different aspects, for any database, can be more common database diagram.

![System background function chart](image)

**Figure 4.** System background function chart
4. System detailed design and implement

4.1. Build the Development Environment
Operating system: Windows 7/Windows 10
Software: MyEclipse10/MySQL
Server Software: Tomcat 6.0
Browser: IE/360/Firefox/Google
All the code will be provided in the attachment!
4.2. System Implementation

The vehicle management system is mainly composed of login and background, the different operation authorities are given by different login object background.

![Login flowchart](image)

Figure 6. Login flowchart

When the users log in, entered login and password are transferred to the backend database for authentication. If the users do not pass the verification, "login error, account or password is wrong" will be shown on the browser. When verified, the struts module will call the corresponding code to perform, at the same time call the response to the JSP page incoming browser. The Main interface will be shown in front of the users when it login successfully. This is the working principle for the SSH framework to log. After the success of the other operations are similar to the operation of the login operation, so it will not repeat them. All the code for this system will be provided in the attachment.

5. Summary

The vehicle management system meets the needs of vehicle managers for efficient management of vehicles under the information age. It is another successful combination of computer technology and practical problems. The vehicle management system frees people from complex repetitive work and saves human resource costs. From this point, the vehicle management system is very necessary. Due to the reasons for the time the system can not reach the perfect, but the basic function has been fully realized.

6. References

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