

Design and Implementation of Enterprise Personnel Information Management System

Simin Feng^{1,2,3}, Ke Yang^{1,2,3}

¹Shaanxi Provincial Land Engineering Construction Group Co., Ltd., Xi'an, Shaanxi, China

²Institute of Land Engineering and Technology, Shaanxi Provincial Land Engineering Construction Group Co., Ltd., Xi'an, Shaanxi, China

³Land Engineering Quality Testing of Shaanxi Land Engineering Construction Group Co., Ltd.

Abstract: This paper mainly takes small and medium-sized enterprises as the object, through the research on the human resource needs of local individual small and medium-sized enterprises, and takes the actual needs of the current personnel management system as the starting point. In the early stage of exploration, firstly, the current situation at home and abroad was reviewed and analyzed, secondly, the requirements were comprehensively analyzed and integrated in combination with the current production scenario, and finally the function was realized according to the analysis and design results. This time, the personnel information management system includes There are 6 modules, namely: system management, attendance management, financial management, report management, employee management, training management functions. Combined with the actual needs and architecture of the enterprise, the scheme architecture of the system is formulated, such as B/S architecture, MVC layered design mode, and the integration of mobile terminals facilitates enterprise personnel to access the system from browsers, mobile phones, and iPads at any time, taking into account the amount of data in the future. Increase and storage speed, the system uses ORACLE as the data storage container, which fully meets the current use after functional testing, has been put into production, and has received good feedback.

Keywords: Personnel management system, MVC, B/S.

1. Introduction

At present, human beings have entered the era of knowledge economy with information technology as the core. With the continuous and rapid development of the Internet, information resources have become as important strategic resources as materials and energy, and have also become a decisive factor for the competitiveness of enterprises [1]. The realization of informatization will profoundly change the way of production and operation of enterprises. An important sign to test work efficiency and competitiveness is the ability to respond quickly to information processing. The realization of enterprise informatization and the establishment of enterprise and departmental information networks are not only social needs, but also the needs of enterprises to adapt to the market and promote their own development. With the deepening of enterprise reform and the development of information technology, enterprise management is changing to innovation management. In order to adapt to the reform of modern enterprise management, it is necessary to strengthen the innovation and construction of enterprise informatization [2].

In order to ensure the maximization of enterprise interests and the coordination between personnel, more detailed management and division of personnel is required. Therefore, the management of personnel work is an important part of optimizing enterprise development. In the current environment, the main role of the personnel management system is to assist Enterprises carry out personnel planning and establish perfect personnel information. At the same time, the personnel management after informatization not only saves costs for enterprises, but also improves work efficiency. With the continuous development of information technology and the continuous improvement of enterprise human resource management, there are already In the current enterprise application of the personnel management system,

there are mainly problems such as backward structure selection, lack of mobile device applications, and unilateral management of personnel leaders.

Therefore, the personnel management system of this study is based on making up for these shortcomings. It is mainly aimed at the personnel management needs of small and medium-sized enterprises. Based on the actual business, it is very important to design a personnel management system with a wide range of applications and powerful functions.

2. Personnel Information Management System Design

2.1. Architecture Design

In order to cope with the current complex network environment and analysis based on the current situation of the enterprise, this personnel management system is mainly based on the B/S architecture, and is implemented by using the three-layer model of the SpringMVC framework, which are:

(1). View (view): responsible for the display of the user interface.

(2). Controller: Responsible for interacting with the View layer, that is, receiving user requests and returning data to the corresponding view.

(3). Model: Provide the data to be displayed, including the communication between the main business logic and the database.

2.2. System Module

The main functions of the personnel management system are shown in Figure 1:

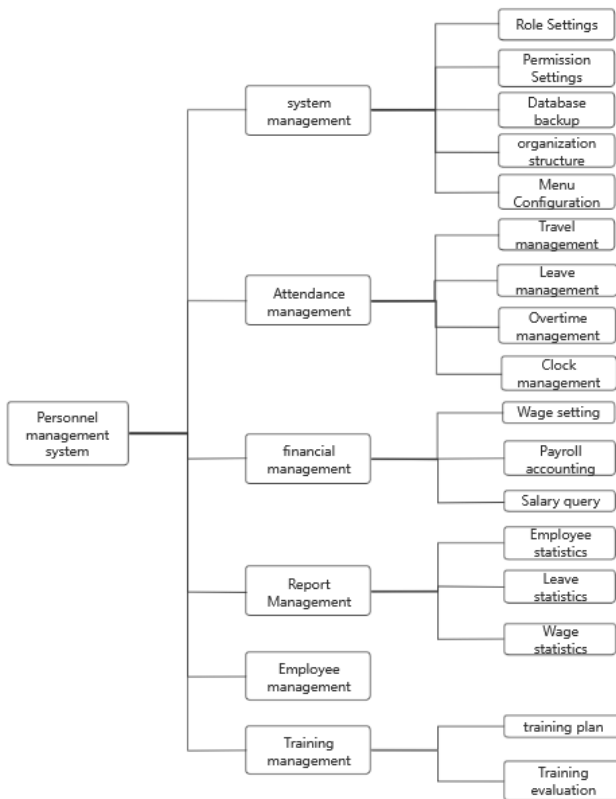


Figure 1. Overall system block diagram

2.3. System Detailed Design

2.3.1. System Login Module Design

In the system login interface, the user determines whether the user is legal and the user's authority by entering the user name and user password. If the user name and password are found in the data table of the database, it indicates that the login is successful, and the user can log in to the main interface of the system. , otherwise it is required to log in again. For users who log in successfully, the system reads the user permissions and displays the user's home page and menu.

2.3.2. Attendance Management Module Design

The attendance management module is mainly used by the personnel management department. The main function is to view attendance and export,

The specific functions of each module are as follows

- (1). Check attendance: You can check the attendance information of all employees on the current day, month and year.
- (2). Attendance export: export statistical content to excel for archive.

2.3.3. Payroll Management Module Design

Salary management is a function used by the personnel department, and realizes the basic information and salary setting of personnel, salary accounting, and salary query functions according to user requirements.

The specific functions of each module are as follows

- (1). Salary setting: Managers set basic salary, post salary, seniority salary, meal allowance, attendance bonus and other information.
- (2). Payroll accounting: Calculate employee wages monthly based on attendance.
- (3). Salary query: provide query on salary table, employees can query by serial number, name and ID number.

2.3.4. Report Management Module Design

Statistical reports include: leave statistics, overtime statistics, employee salary statistics, and employee information statistics.

The specific functions of each module are as follows

- (1). Employee information statistics: Statistics are carried out according to the entry time, department and age group.
- (2). Leave statistics: Statistics are made according to the leave time and department.
- (3). Overtime statistics: Statistics are made according to overtime hours and departments.
- (4). Employee wages: Statistics are carried out monthly and annually.

2.3.5. Employee Management Module Design

The employee management module is provided for enterprise managers to maintain the basic information of employees and share and query the internal personnel information of the enterprise. When the managers log in, they can add, edit, and delete all personnel information, and employees can only modify their own information when they log in.

The specific functions are as follows

- (1). New employee: When a new employee joins the job, the administrator needs to log in to the system to enter the basic information of the new employee to realize employee information management
- (2). Modify employee: When the employee information is changed, the administrator can synchronize the latest information after the change through this operation
- (3). Delete employee: After the employee leaves, the employee information can be deleted in time through this operation.

(4). The color permission table has a foreign key association, so it can only be logically deleted when deleting, not physical deletion.

Query employees: Administrators can query personnel file information at any time, and can also query employee information through condition filtering

2.3.6. Training Plan Module Design

The training administrator can set a training plan for employees, generate a training implementation plan from the training plan, record the implementation of the training in detail, and record the training evaluation, and record the evaluation information of the employees in each training.

The specific functions of each module are as follows

- (1). Training plan: Add training for managers, set configuration time, training teachers, training departments, training projects and other information.
- (2). Training evaluation: After the training is completed, the evaluator, evaluation time, training opinions and suggestions can be recorded.

3. Function Realization and Testing of Personnel System

3.1. Main Function

3.1.1. System Login

After the user knows that the administrator has created the assigned account and password, he can log in by entering his own account and password on the system login page. This login design considers the following points in terms of security:

- (1). In order to prevent hackers from achieving batch login

through robots and causing server downtime, a number/letter verification code is set;

(2). The password strength is more than 8 digits, including uppercase and lowercase characters, special symbols and numbers. The password is encrypted with SHA-256 for 1001+ account name length times, and does not use ordinary md5 encryption;

(3). If you log in for 3 consecutive times, the system will lock the account, and the system will automatically unlock it within 5 minutes;

(4). Log in to multiple clients with the same account. After the client logged in later successfully logs in, the browser of the client logged in before will automatically log out the user and return to the login page, and receive the IP address and login time of the subsequent login;

(5). Clients that are not on the whitelist cannot be accessed. The system login interface is shown in Figure 2 :



Figure 2. System login example

3.1.2. Role Management

Role management is mainly for the addition, editing, deletion of system roles and the association of data permissions. The system defaults to a super administrator role, which cannot be modified or deleted. The rest can be divided into five types of system user roles according to enterprise needs and organizational relationships, namely: director, general manager, center director, department leader, employee.

3.1.3. Personnel Management

Personnel management mainly includes the management of the basic information of all employees of the enterprise. After the employee is officially hired, the personnel administrator logs in to the system to add new employee information, including: employee name, age, assigned position and other information, and creates a system login account and password for them. After assigning role permissions, it is convenient for employees to use.

3.1.4. Department Management

Department management is an important part of the main enterprise management system. According to the analysis of the enterprise structure, it can be basically determined into five categories: the general manager's office, the finance department, the general department, the engineering department, and the project department.

3.1.5. Business Trip Management

When the employee needs to leave the unit to go out to work due to the business needs of the company, the employee can fill in the business trip application, log in directly to the

system or log in with the mobile APP, open the business trip application on the attendance management page, and fill in the information such as the destination city, the start and end time of the business trip, the reason for the business trip, etc. After submitting the approval to the leader, you can wait for the approval result, which is convenient for checking during monthly salary calculation or annual assessment.

3.1.6. Leave Management

During normal working days, if employees need to ask for leave due to some special circumstances, they can log in directly to the system or use the mobile APP to open the leave application on the attendance management page. There is also an electronic archive for easy access during monthly attendance and payroll accounting.

3.1.7. Attendance Management

Attendance management is one of the means for enterprises to assess and regulate employees. Employees must punch in and sign in every day when they go to and from get off work. For field work and business trips, they must use their mobile phones to punch in field cards and fill in the reasons for field work. If they are late, leave early, or miners, the system will record them as The abnormal attendance of the day will be notified to the parties and the HR department. If it is an advance leave request or a supplementary leave request form, the system will automatically change the abnormal card to leave. If it is for special reasons, you need to apply to eliminate the abnormality, and you can fill in the work certificate after approval by the leader. Change to normal attendance, otherwise it will affect the assessment of monthly performance and annual performance.

3.1.8. Payroll Management

The salary management module is mainly divided into three functions, namely: the setting of basic data, which is to maintain the basic salary, post salary, meal allowance, social security base and other information of each employee. This function is set by the personnel department. Salary accounting is a function that the system realizes automatic calculation. According to the set basic data and the statistical results of monthly attendance, the salary calculation formula is used to calculate the monthly salary of each month. Salary query: employees can log in to the system to view their monthly salary slips within 3 years.

3.2. System Test

3.2.1. Test Meaning

In order to determine whether the quality and performance of a system program before it goes live is in line with the design intent at that time, system testing steps are essential. Testers design common test cases according to the requirements document and the overall design document, and use the designed use cases to Test the software to find out the bugs that are missed or generated in the software development process, so as to avoid affecting the use of normal users after the software is officially launched.

3.2.2. Test Environment

System: windows11
 CPU: AMD Ryzen 7 PRO 4750U with Radeon Graphics
 1.70 GHz
 Motherboard: LENOVO
 Memory: 16G
 Hard disk: 500g
 Network card: RTL8161/8111 PCI-E

3.2.3. Specific Test Cases and Test Results

3.3. Login Test Case

Use Case No	CS001	Use Case Name	Login Test	Test Method	Black Box Test
Input Expected	Result Actual		Result	Result	
Username:001 Passwod:Y56486 Verification code:Vscp	login successfully		login successfully	passed	
Username:002 Passwod:L89156 Verification code:fers	Username or password is incorrect		Username or password is incorrect	passed	
Username:003 Passwod:123456 Verification code:ffff	Verification code error		Verification code error	passed	

3.3.1. Test Results

Through the multi-faceted testing of the personnel management system, it can meet the requirements of the enterprise in terms of functionality, performance efficiency, reliability, etc., and can be officially put into use.

4. In Conclusion

This paper mainly expounds the whole process of the enterprise personnel management system, and studies from the current domestic and foreign related theories and specific applications, the analysis of the current situation of the enterprise and the current mainstream development technology, and designs this set of personnel management in line with modern enterprises. The system has received unanimous praise from the leaders and employees of the enterprise in terms of its operability, compatibility and convenience. In particular, the convenience of the mobile app application and the fluency of the system page have been well received by the employees of the enterprise. The effect of this makes the modern application of personnel management system to a new level.

Through the design and development during this period, the following work has been completed in general:

(1). This paper studies and analyzes the current situation and significance of the enterprise personnel management system, analyzes the advantages of the B/S architecture platform, finds out the defects of the existing personnel management system, and designs the system requirements according to the defects and the current situation of the enterprise.

(2). Propose the overall design idea of the personnel management system, and determine the overall structure of

the system construction.

(3). According to the overall structure of the system, the database design of the system is realized.

(4). The development environment is built and implemented according to each function of the design document, and rigorous testing is performed from different perspectives using test cases.

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