Design and Implementation of Personnel Management System Based on MFC

Nuanyang Chen

School of Computer and Software, Chengdu Jincheng University, Chengdu, Sichuan 611731, China

Abstract: ***Personnel management is the foundation and essential aspect of managing a company or department. In the era of informatization, the elimination of paper-based personnel list management has become inevitable, and the informatization of personnel management has become an inevitable trend. The personnel management system will also become one of the essential systems for companies. There are various types of personnel management systems in the current market with complete functions, but they are not practical for some small businesses or departments, and the cost is relatively high. The personnel management system designed and implemented in this article is based on the MFC library, using a local MySQL database and a locally built server, with low cost being the biggest advantage. Due to both the database and server being local, there is no need for network transmission, and security is greatly guaranteed.***

Keywords: Management system; MFC; C++; MySQL.

1. INTRODUCTION

In the era of informatization, various system platforms have entered the market and been put into use. It can be said that people's lives are inseparable from information system platforms. However, the cost of purchasing or hiring software development companies to customize system platforms is too high, and some small start-up companies and departments cannot afford it, while also facing the risk of information leakage. The personnel management system designed and developed in this article has greatly solved the problems of cost and information security, targeting small start-up companies and departments.

2. INTRODUCTION TO DEVELOPMENT ENVIRONMENT

MFC (Microsoft Foundation Classes) is a framework centered around Windows interface applications. MFC is a C++ class library built on the foundation of APIs. It classifies the API functions, data structures, and various controls provided by Windows according to their functions, encapsulates them in different classes using object-oriented technology, and organizes these classes together through inheritance. It not only encapsulates API functions into easy-to-use classes, but also provides a framework for building Windows applications and various components for building applications, simplifying the difficulty of Windows program design [1].

MySQL is a relational database management system (RDBMS) and one of the best RDBMS application software in web applications. Due to its small size, fast speed, reliability, ease of use, open source code, and support for multithreading and multi-user, it is widely used as a website database in many small and medium-sized websites. My SQL uses the standardized database access language SQL, which has good support for PHP [2].

This article mainly uses MySQL to design databases and develop stored procedures, using data operations from front-end and back-end communication. MFC is used as the main framework for developing the graphical interface of this system.

3. MAIN FUNCTION DESCRIPTION

This management system is mainly divided into six modules and six interfaces. They are login, homepage, employee management, formal employee management, informal employee management, and departing employee management. After successful login, enter the homepage. The homepage and other interfaces can be accessed by clicking the exit button to return to the login interface, or by clicking on the buttons in the menu section to navigate between interfaces. The interfaces for managing current employees, formal employees, informal employees, and departing employees all have query and refresh buttons, which can be used to query and refresh the corresponding lists. After successfully logging in, you will enter the homepage, which mainly displays personnel statistics information, such as the number of current employees and the number of formal employees.

The on-the-job employee management interface displays the basic information of on-the-job employees (including formal and informal employees) - employee ID, name, gender, position, department, date of entry, and date of probation. The interface provides functions such as adding, modifying, resigning, querying, and refreshing; The formal employee management interface displays the basic information of employees who have been confirmed, and the page provides refreshing and querying options; The informal employee management interface displays the basic information of employees who have not yet been confirmed, and the interface provides a confirmation function; The resigned personnel management interface displays the basic information of resigned personnel, including job number, name, gender, department, position, date of entry, date of probation, and date of resignation.

4. INTERFACE DESIGN

The login interface mainly displays the input box for the user account, the input box for the user password, and the login button.

The other four interfaces have menu, operation, and list sections from top to bottom. The menu section includes five buttons for jumping between interfaces; The operation section includes input boxes, selection boxes, and refresh query buttons; The list section contains the corresponding list information for each interface, such as the list display of current employee information in the current employee management interface. On duty employee management interface, as shown in Figure 1.

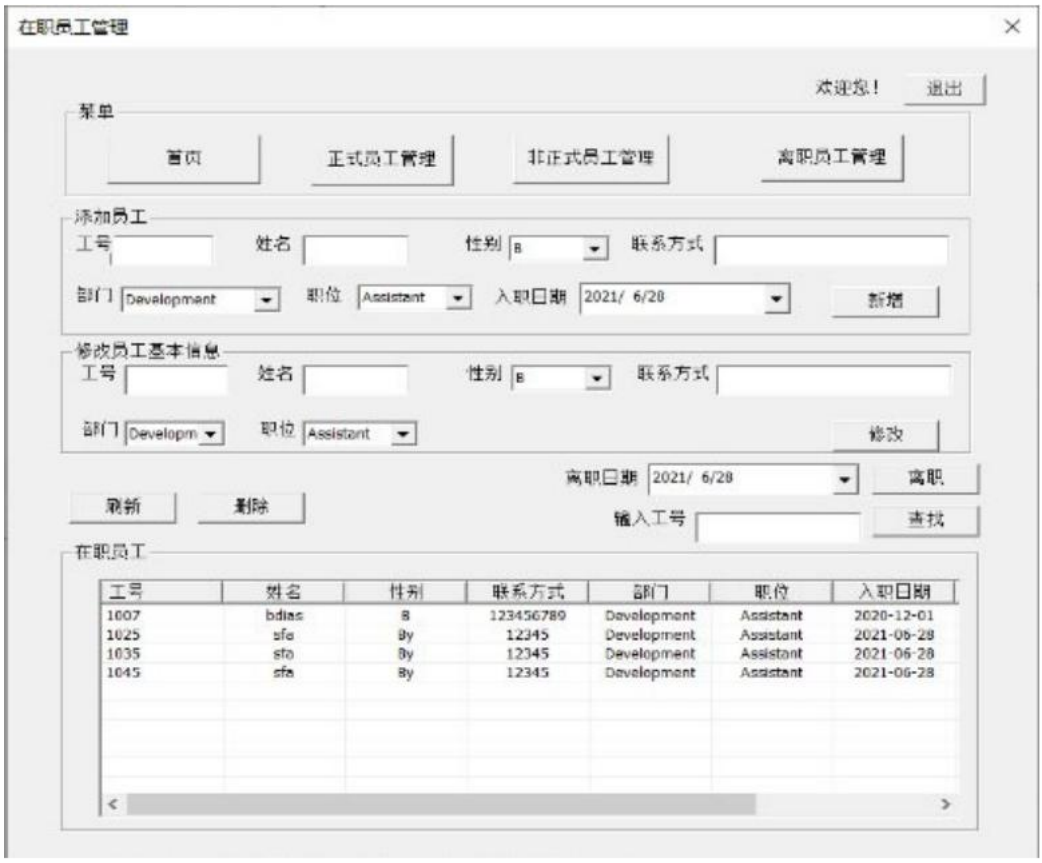

Figure 1: On the job employee management interface

5. DATABASE CONFIGURATION

5.1 Table

To establish a MySQL database company locally, only two tables are created in the database for unified and simple data management. The users table is used to store system user information, which includes fields such as ID, role, user account, and user password. The user account and password cannot be empty; The people table stores the basic information of company employees and departing personnel, including fields such as employee ID, gender,

name, position, department, date of entry, date of probation, and date of departure. The employee ID, name, and date of entry cannot be empty. In the people table, whether an employee is currently employed is determined by whether the date of resignation is empty, while in the current employee table, whether an employee is a regular employee is determined by whether the date of probation is empty.

5.2 Stored Procedures

In order to implement the various functions of adding, deleting, modifying, and querying in the system, 13 stored procedures including login have been written in the database, namely Sp add, sp_count, sp_del, sp_edit, sp_edit Positive, sp_edit Separation, sp_find By Name, sp_find By Num, sp_ login, sp_show ALL, sp _show Not Po sitive, sp_show Po sitive, sp_show Separation.

Splogin () is used for login, mainly by verifying whether the input account password matches the users table to achieve login functionality. Firstly, use the EXISTS function to check if the account password exists. If it does not exist, return -1. If it exists, return the user ID, name, and role. The code is shown in Figure 2. The front-end can determine whether the login is successful by parsing the return value.

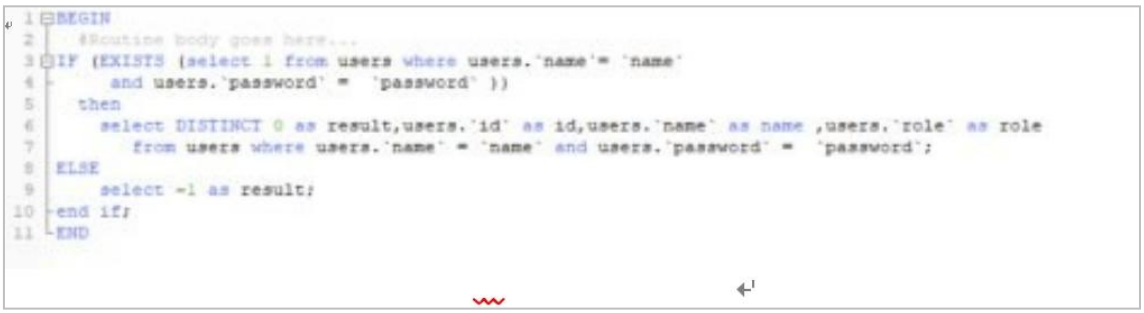

Figure 2: The Splogin() stored procedure

6. SERVER CONFIGURATION

Use local 127.0.0.1 server address and configure port 8080. Change the listening port number in the httpd.conf file in the Apache directory of WampServer to 8080 (or 8088, etc.). In the server configuration package, configure the sqljson file according to the stored procedures in the MySQL database. Set the server address in the config. json file to 127.0.0.1, the database name to company, and the database user account password.

7. FUNCTION IMPLEMENTATION

7.1 Login

In order to ensure the security of user passwords, the password input box on the login interface sets the password attribute value to true, so that users cannot see the password after entering it. Connect to the server through the curl_easy_stopt () function in the < curl / curl. H > library, send the concatenated JSON string to the server, call the Splogin() stored procedure in the database, and determine whether the account number and password are correct by receiving and parsing the JSON string returned by the server. When the account password is correct, use Home * newwindow = new Home (); newwindow - > Create (IDD_ DIALOG_Home); newwindow - > Show Window(true); newwindow - > Init (); // Initialize and jump to the homepage, and initialize the homepage to indicate successful login.

7.2 Homepage

Use the Set Extended Style () method of the List Control control to style the list, and the InsertColumn () method to initialize the header. Call the stored procedure Spcount () in the database, parse the returned data, perform type conversion on it, insert it into the list, and achieve the effect of displaying a list of personnel statistics information on the homepage.

By creating a corresponding window class in the click function of the menu button and calling the initialization function of the interface, it is possible to jump to the interface by clicking the menu button.

7.3 On the job personnel management

Use the Combo Box control to create dropdown menus for gender, department, and position. Use the Add String () method to set the options for the dropdown menu, and the Set Cur Sel () method to set the default options for the dropdown menu. Use the Date Time Picker control to create selection boxes for entry and exit dates. Use the Dlg Item Text () function to obtain the input value of the page and assign it to the corresponding variable, concatenate it into a JSON format string, and send it to the server. Call the stored procedures of the database, such as spa add (), spa edit (), spa del (), spa show ALL (), spa edit Separation (), and spa find By Name (), to obtain the server's return data and parse it. Implement functions such as adding, modifying, deleting, refreshing the list of current employees, resigning, and searching.

The implementation method for interface jump is the same as above.

7.4 Formal Employee Management

The formal employee management interface displays the list of formal employees by calling the stored procedure sp show Positive (). The implementation methods for functions such as querying, deleting, refreshing, and page jumping are the same as other pages.

7.5 Informal Employee Management

Call the stored procedure \ show Not Positive () to display the list of informal employees. This interface is equipped with a probation function. By obtaining the employee ID and selected probation date from the mouse click list data, the stored procedure Spedit Positive () is called to modify the employee's probation date, thereby achieving the effect of employee probation. The database and list are updated synchronously. The implementation methods for functions such as querying, deleting, refreshing, and page jumping are the same as other pages. Lyu et al. (2024) proposed optimized convolutional neural networks (CNNs) for rapid 3D point cloud object recognition, demonstrating enhanced efficiency in processing complex spatial data [1]. In the field of energy storage, Yin et al. (2024) utilized deep learning for crystal system classification in lithium-ion batteries, highlighting its potential to improve battery performance and design [2]. Meanwhile, Liu et al. (2024) explored the interplay between supply chain digitization and environmental technology development in G7 nations, emphasizing the role of inflation and consumption patterns [3]. Federated learning has also gained attention for its contribution to trustworthy AI, as Huang et al. (2024) investigated its role in ensuring responsible AI practices [4]. In graph theory, Yang et al. (2023) introduced HGMatch, a hyperedge-based approach for subgraph matching, which addresses challenges in hypergraph analysis [5]. Chen et al. (2023) proposed Octopus, a framework for in-network content adaptation to manage congestion in 5G networks, showcasing the integration of AI in telecommunications [6]. Peng et al. (2024) advanced 3D vision-language models with Gaussian splatting, offering new possibilities for multimodal data representation [7]. In finance, Bi and Lian (2024) demonstrated the application of deep learning in portfolio management, enhancing investment strategies through machine learning models [8]. Zhou et al. (2024) optimized garbage recognition models using ResNet-50 and weakly supervised CNNs, contributing to sustainable urban development [9]. Peng et al. (2025) integrated IoT data with reinforcement learning for adaptive macroeconomic policy optimization, showcasing the potential of AI in economic planning [10]. Fan et al. (2025) explored incremental learning for retrieval-augmented generation (RAG) models, improving their adaptability in dynamic environments [11]. Xu et al. (2025) developed AI-enhanced tools for cross-cultural game design, facilitating collaborative character conceptualization and sketching [12]. Lastly, Tian et al. (2024) improved brain tumor image segmentation using the GSConv module and ECA attention mechanism, advancing medical imaging techniques [13].

7.6 Resignation Management

Call the stored procedure \ show Separation () to display the list of resignations. Determine whether a person has resigned by checking if the resignation date field in the people table is empty. The implementation methods for functions such as querying, deleting, refreshing, and page jumping are the same as other pages.

8. TESTING AND CONCLUSION

After the completion of the project, the following functional tests and optimization summaries were conducted on the personnel management system.

We mainly tested the login function, menu jump function, search function, new employee function, modification of employee basic information function, resignation function, and regularization function.

During the testing process, the following issues were found: the interface was not aesthetically pleasing enough; When entering a new job number that matches the existing one in the database, the system will directly report an error; When the modified job number does not exist in the database, the system will directly report an error; When the resignation date is entered before the start date, the system does not report an error, which does not conform to conventional logic; When entering the date of probation before the date of employment, the system does not report an error, which does not conform to conventional logic.

The solution to the above problems is as follows: add a small icon for account and password and a background image on the login interface; Replace menu buttons with images or navigation bars in the management interface; Adding a magnifying glass icon to the search box provides users with a more intuitive experience; When adding an employee, first check if the job number already exists in the database. If it does, prompt the user that the job number already exists and re-enter the information; When modifying basic information, first check if the job number exists in the database. If it does not exist, prompt the user to search for the missing person and re-enter the information; Restricting the resignation date to not be earlier than the start date, first check whether the resignation date is earlier than the start date. If it is earlier, prompt the user to re-enter the information. If it is not earlier, insert it into the database and prompt the resignation is successful; Restricting the date of regularization to not be earlier than the date of employment. First, check whether the date of regularization is earlier than the date of employment. If it is earlier, prompt the user to re-enter the information. If it is not earlier, insert it into the database and prompt successful regularization.

9. CONCLUSION

This article introduces how to develop a local personnel management system using MFC and MySQL. The personnel management system has the characteristics of low cost, simple functions, and concise interface, but there are still many shortcomings compared to most mainstream management systems. Due to its low development cost, local deployment, and high security, it is very suitable for small businesses or departments to develop and use.

After testing, the basic functions of the personnel management system can be used normally, but there are still some details that need to be optimized. For example, the interface needs to be further optimized for aesthetics. When a new job number already exists, it should prompt the user that it already exists instead of reporting an error. When modifying a job number that does not exist, it should prompt the user instead of reporting an error. It should be set that the date of probation cannot be earlier than the date of employment, and the date of resignation cannot be earlier than both the date of probation and the date of employment. These issues still need further optimization.

REFERENCES

[1] Lyu, T., Gu, D., Chen, P., Jiang, Y., Zhang, Z., Pang, H., ... & Dong, Y. (2024). Optimized CNNs for Rapid 3D Point Cloud Object Recognition. arXiv preprint arXiv:2412.02855.

[2] Yin, Y., Xu, G., Xie, Y., Luo, Y., Wei, Z., & Li, Z. (2024). Utilizing Deep Learning for Crystal System Classification in Lithium - Ion Batteries. Journal of Theory and Practice of Engineering Science, 4(03), 199–206. https://doi.org/10.53469/jtpes.2024.04(03).19.

[3] Liu, H., Li, N., Zhao, S., Xue, P., Zhu, C., & He, Y. (2024). The impact of supply chain and digitization on the development of environmental technologies: Unveiling the role of inflation and consumption in G7 nations. Energy Economics, 108165.

[4] Huang, S., Liang, Y., Shen, F., & Gao, F. (2024, July). Research on Federated Learning's Contribution to Trustworthy and Responsible Artificial Intelligence. In Proceedings of the 2024 3rd International Symposium on Robotics, Artificial Intelligence and Information Engineering (pp. 125-129).

[5] Yang, Z., Zhang, W., Lin, X., Zhang, Y., & Li, S. (2023, April). HGMatch: A Match-by-Hyperedge Approach for Subgraph Matching on Hypergraphs. In 2023 IEEE 39th International Conference on Data Engineering (ICDE) (pp. 2063-2076). IEEE.

[6] Chen, Y., Tahir, A., Yan, F. Y., & Mittal, R. (2023, December). Octopus: In-Network Content Adaptation to Control Congestion on 5G Links. In 2023 IEEE/ACM Symposium on Edge Computing (SEC) (pp. 199-214). IEEE.

[7] Peng, Q., Planche, B., Gao, Z., Zheng, M., Choudhuri, A., Chen, T., ... & Wu, Z. (2024). 3d vision-language gaussian splatting. arXiv preprint arXiv:2410.07577.

[8] Bi, S., & Lian, Y. (2024). Advanced portfolio management in finance using deep learning and artificial intelligence techniques: Enhancing investment strategies through machine learning models. Journal of Artificial Intelligence Research, 4(1), 233-298.
[9] Zhou, Y., Wang, Z., Zheng, S., Zhou, L., Dai, L., Luo, H., ... & Sui, M. (2024). Optimization of automated garbage recognition model based on resnet-50 and weakly supervised cnn for sustainable urban development. Alexandria Engineering Journal, 108, 415-427.
[10] Peng, C., Zhang, Y., & Jiang, L. (2025). Integrating IoT data and reinforcement learning for adaptive macroeconomic policy optimization. Alexandria Engineering Journal, 119, 222-231.
[11] Fan, Y., Wang, Y., Liu, L., Tang, X., Sun, N., & Yu, Z. (2025). Research on the Online Update Method for Retrieval-Augmented Generation (RAG) Model with Incremental Learning. arXiv preprint arXiv:2501.07063.
[12] Xu, Y., Shan, X., Lin, Y. S., & Wang, J. (2025). AI-Enhanced Tools for Cross-Cultural Game Design: Supporting Online Character Conceptualization and Collaborative Sketching. In International Conference on Human-Computer Interaction (pp. 429-446). Springer, Cham.
[13] Tian, Q., Wang, Z., & Cui, X. (2024). Improved Unet brain tumor image segmentation based on GSConv module and ECA attention mechanism. arXiv preprint arXiv:2409.13626.