

Design and Implementation of Small and Medium-Sized Financial Management Software

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ABSTRACT

Currently, SMEs face challenges in financial software applications, such as high development difficulty, cost, closed system architecture, and limited scalability. To address these, we developed simple financial management software for SMEs using the Java programming language. We analyzed SMEs' financial processes and business needs to construct the system's interface framework and basic functional modules. The software's pages were designed and implemented using Java and MySQL database technology. Testing confirmed that the system is scientifically designed, fully functional, stable, and meets the practical financial needs of SMEs.

KEYWORDS

Financial management; Java; MySQL; SMEs

1. INTRODUCTION

Driven by global economic integration and digital reform, accelerating the digital transformation of enterprises, the application of financial management software is becoming more and more widespread. Currently, various types of financial management software are prevalent, powerful, but also quite expensive. For example, UFIDA, Kingdee, and other financial software. Purchase of this software is not only high cost, long cycle, and because of its closed system, not easy to expand, data confidentiality, and other issues, which to a certain extent limit the development and application of other software, making compatibility with other software difficult. More prominently, different enterprises need to carry out different designs, thus hindering the information management of small and medium-sized enterprises to a large extent. In response to these problems, this paper proposes a financial management software for small and medium-sized enterprises that is closer to the actual accounting needs of small and medium-sized enterprises, can be customized according to the specific needs of the user's functions, simplifies the complex operation process, making it more simple and practical, and can also be flexibly configured according to the different needs of enterprises. At the same time, this system adopts a low-cost development and operation mode to reduce enterprise costs, especially suitable for small and medium-sized enterprises to realize the informatization and intelligence of financial management in the case of limited budgets. This paper talks about elaborating the specific details of the software realization to provide reference for enterprise financial management software.

2. SYSTEM REQUIREMENT ANALYSIS

Through online searches or offline visits to a number of small and medium-sized enterprises (the number of people in the size of 50 people or less), we found that up to 80% of the people said that the traditional financial management software cost is too high. At the same time, 90% of people

clearly expressed the urgent need for low-cost and lightweight financial management software. Therefore, the system financial management software is a market demand.

For financial management system software, whether it is adapted to the needs of small and medium-sized enterprises, the key is whether the core functions of the software meet the requirements of the daily work of the enterprise. For example, the enterprise financial personnel need through the financial management system to conveniently generate, query and manage accounting documents, as well as accurate access to various types of financial data information, to provide strong support for the enterprise's financial decision-making.

In order to ensure that the financial management software developed can effectively meet the actual needs of small and medium-sized enterprises, it is necessary to first exhaustively analyze the financial processes of the enterprise. Then, it is very important to deeply understand the needs of the enterprise in the financial management system. On this basis, the characteristics of financial management can be further analyzed in order to design functions that can truly reflect the actual financial processes of the enterprise. By analyzing the businesses of small and medium-sized enterprises, the overall process design of this financial management system is formulated as shown in the figure.

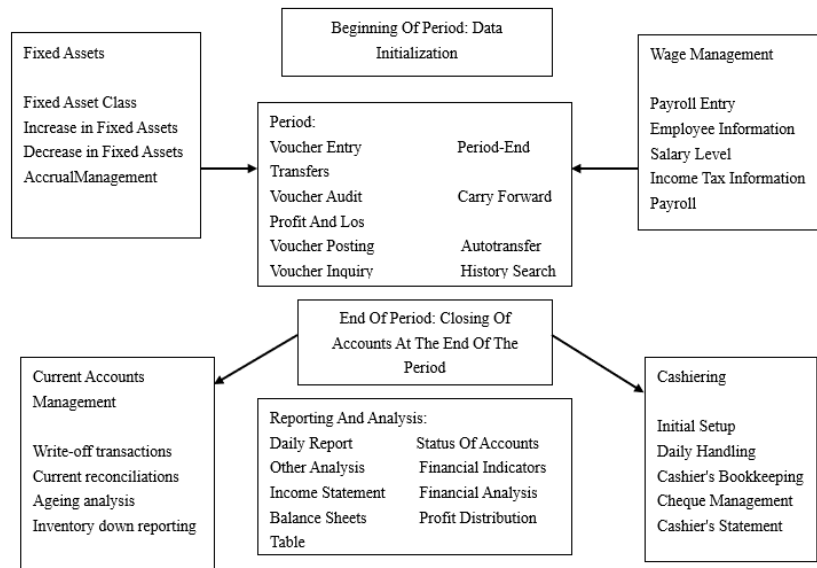


Figure 1. SME Business Process Analysis

3. SYSTEM ARCHITECTURE DESIGN

The mainstream framework of the current system architecture layout includes C/S and B/S mode, in which B/S mode is the two-tier architecture on top of the expansion of the C/S mode. B/S mode is simple and convenient for business expansion, as well as simple and convenient maintenance, strong sharing, and other advantages. However, C/S has fast response time, high security, and can realize complex functions, which is more suitable for applications in LAN. As tested, the average response time of C/S architecture in LAN is 120 ms, which is 65% higher than that of B/S architecture (350 ms), and it is more suitable for SMEs' requirement of real-time. Although its deployment cost is higher, it can meet the strict requirements of enterprises on system performance and security. Therefore, the use of C/S system architecture, the development platform also supports the B/S system, the future can be based on user demand open support. The advantages of the system using the C/S architecture are highly efficient local pre-processing, rich interface and operation, very simple data storage, and the client and server in the same machine (i.e., stand-alone use). Just simply install or copy the development of the core part of the basic platform and business logic components that have been developed and imported into the database backup. The system organization structure is shown in Figure.

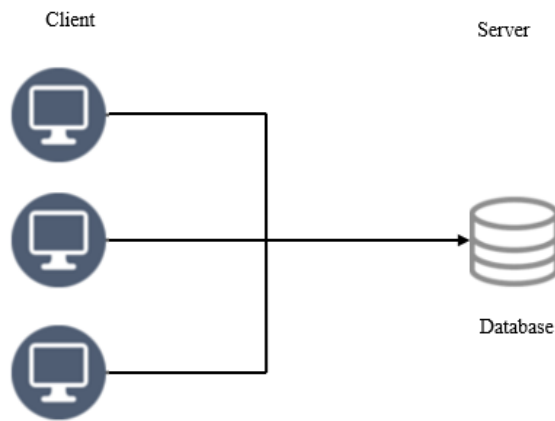


Figure 2. System Architecture

4. SYSTEM FUNCTIONAL DESIGN

The financial system is a core resource for all enterprises, and its importance has universal application regardless of the type of enterprise, whether it is a manufacturing or trading enterprise. Therefore, the financial management department is a very important department for an enterprise. And in an enterprise, the informationization of all departments is related to the informationization of the financial department. The financial management system is the core content of the capital flow. The enterprise, through the financial management system, can supervise and manage the finance, but also efficiently control the cost of the enterprise's financial business and operation, to maximize the profit to the enterprise, so that the enterprise can be better developed.

Through the investigation of small and medium-sized enterprises, the basic process is generally: bookkeeping, filling out accounting statements, settlement, and so on. According to the accounting process, small and medium-sized financial management software system modules mainly include: voucher entry, over the accounts, books, statement editing, closing, payroll accounting issued, system maintenance, and other modules.

The financial management software designed in this paper not only improves the efficiency of financial managers and reduces the errors of manual operation, but also improves the overall operational efficiency of the enterprise and maximizes the profit of the enterprise. The financial management system is divided into two different types of financial data management and data analysis management. By analyzing the main business processes, the functions of the system are divided into the following modules, as shown in the figure.

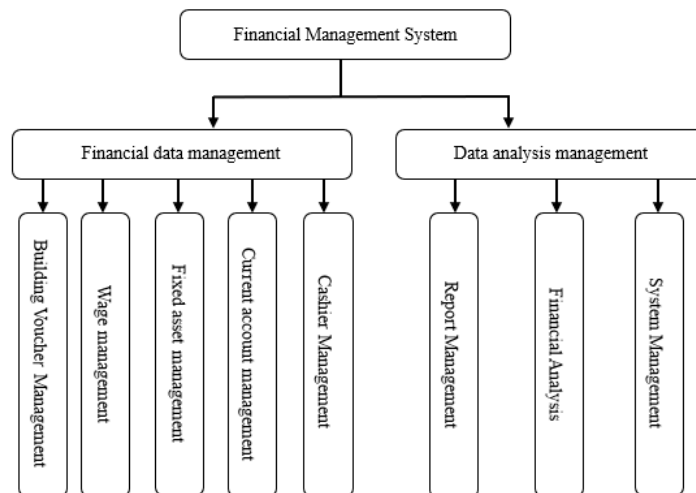


Figure 3. Overall framework of the financial management system

Through the functional design of the above figure, the system will be the overall function in accordance with the accounting business process; it will be divided into fixed asset management, statement management, transaction management, payroll management, financial analysis system management, and other functions. System management is mainly to maintain the daily data and work of the system, and at the same time, different roles in the system to assign the rights.

5. SYSTEM MODULE DESIGN

5.1. Login Module Design

As the entrance of the whole financial management software, the login module bears the important responsibilities of user authentication and system access control. By entering the corresponding user name and password, you can directly enter the corresponding functional system interface to complete the system login. The specific process is shown in the figure.

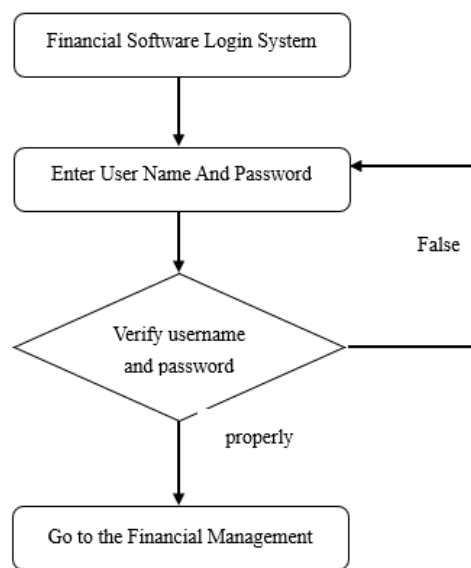


Figure 4. Login Flowchart

5.2. Voucher Management Module

In the design of financial management software, accounting vouchers are the original basis for accounting and basic data, and their accuracy and completeness are directly related to the correctness and reliability of subsequent financial accounting. Therefore, the voucher management module is added to the system, which can realize the system data audit and verification. When the verification is successful, the system will quickly generate synchronized data to ensure the accuracy of the system. The specific process is shown in the figure.

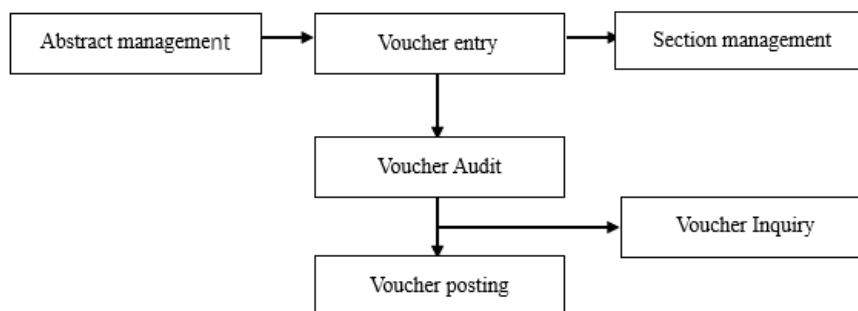


Figure 5. Voucher Management Flowchart

5.3. Fixed Asset Management Module

Fixed asset management in the enterprise's financial management occupies a pivotal position; it is the enterprise accounting in the most basic and one of the key modules; almost all of the financial management and accounting work cannot be separated from the management of fixed assets. Fixed assets usually include asset categories, fixed asset depreciation, card management, accrual management, fixed asset utilization, and so on. As shown in the figure.

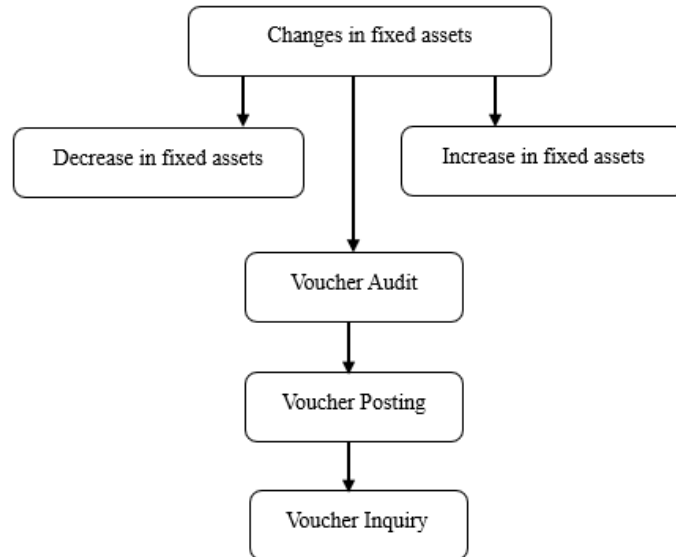


Figure 6. Fixed Asset Management Module Diagram

5.4. Current Account Management Module

Current account management is a special accounting function module of the accounting information system. Through the management module of the current account, real-time view of the current account between the enterprise and the customer. Company managers can have a real-time understanding of the substantive financial information of the current account. This can effectively protect the good operation of the enterprise, avoid problems such as broken capital chains, and effectively reduce the bad debt rate of the enterprise. As shown in the figure.

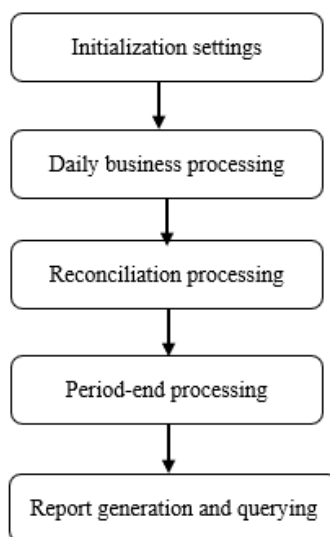


Figure 7. Current Accounts Management Module

5.5. Cashier Module Management Design

The cashier management module, is an important part of enterprise accounting and can manage the cash flow of the enterprise, so that the cashier staff can effectively record the dynamic direction of the flow of funds, but also to ensure the consistency and integrity of the data of the entire enterprise general ledger management module. Daily cashing work includes cashing tie-ups, check management, and cashing statements. As shown in the figure.

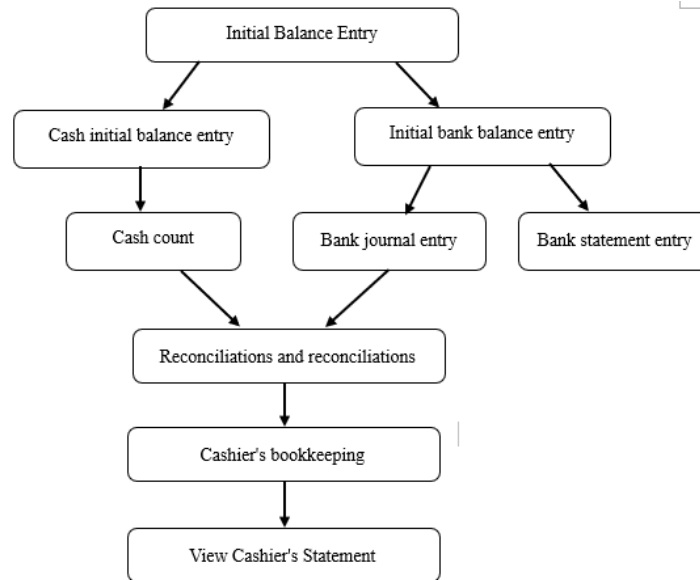


Figure 8. Cashier Management Module Diagram

6. SYSTEM IMPLEMENTATION

6.1. Operational Environment

In order to ensure the efficient and stable operation of the system, we configured the development environment of the system. The CPU size of the hardware part of the server is at least Intel or Riptide i5 or above. System memory (16G) to ensure that the system can run smoothly when users operate at the same time or a large amount of data processing. System hard disk size of 4T, for financial data storage and backup. In terms of software development, choose to install Java development tools, the database management system to choose MySQL database, the server operating system to choose Windows 11 in order to stably support the system operation.

6.2. User Login Interface

When financial administrators with different privileges need to access the entry screen of the management system, they enter the system by entering their user name and password. If the user name and password are entered incorrectly, the financial management system cannot be accessed. As shown in the figure, user login interface.

**Small and medium-sized
enterprise financial
management system**

username

password

Login

Figure 9. User login screen

The user login interface is designed to be simple and clean, and part of the code is programmed as follows:

```

<div class="form-group">
  <label for="username"> username </label>
  <input type="text" id="username" name="username" required>
</div>
<div class="form-group">
  <label for="password"> password </label>
  <input type="password" id="password" name="password" required>
</div>
<div class="error" id="errorMsg"> username or password! </div>
<button type="submit"> login </button>

```

6.3. Database Connection and Implementation

This system realizes the database connection and implementation of MySQL through the JDBC interface, using the URL, user name, and password to obtain the database connection object. This establishes the connection between the system and the database. The flowchart for creating the database is shown below.

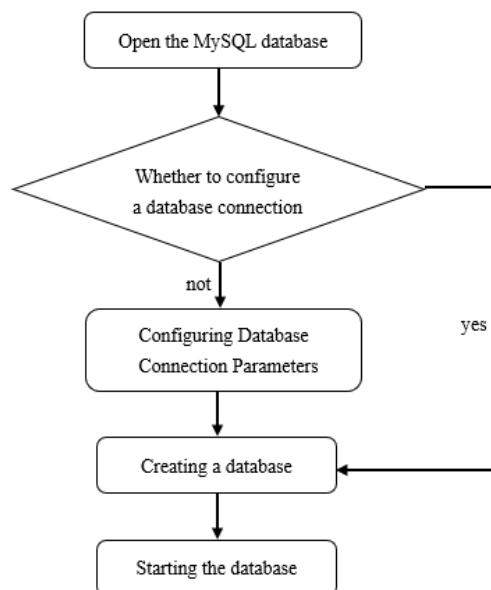


Figure 10. Database Creation Process

Its connection to the MySQL database part of the code is as follows:

```
try (Connection con = establishConnection(url, user, password)) {
    System.out.println("Database connection successful!");
    // Perform database operations...
} catch (SQLException e) {
    System.err.println("Database connection failed:" + e.getMessage());
}

private static Connection establishConnection(String url, String user, String password) throws
SQLException {
    Properties props = new Properties();
    props.setProperty("user", user);
    props.setProperty("password", password);
    return DriverManager.getConnection(url, props);}
}
```

6.4. Credential Management Interface

Voucher management is an important module in the finance department of small and medium-sized enterprises, and the standardization of voucher management provides convenience for subsequent financial inquiries and inspections. In the voucher management interface, different account types can be selected from the drop-down menu, and the vouchers are categorized into three parts, i.e., recording, receiving, and paying, which cover the types of vouchers in the daily financial operations of the enterprise. Through this interface, financial staff can efficiently enter, query, modify, and delete vouchers to ensure the timeliness and accuracy of financial data. The development interface of voucher management is shown in the figure.

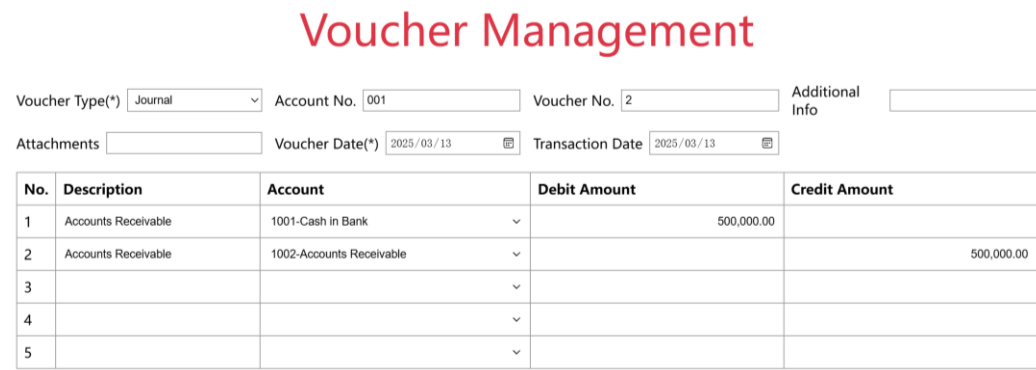


Figure 11. Credential Management Screen

7. CONCLUSION

This paper utilizes Java language to design financial management software for small and medium-sized enterprises, and, at the same time, realizes the basic functions of the software system by closely connecting with the MYSQL database, which has the characteristics of simple development, low cost, easy expansion, a simple and clear user interface, easy operation, etc. It is able to satisfy the daily small and medium-sized enterprise financial needs, and to provide reference for the informationization of the financial management of small and medium-sized enterprises. Provides a reference for the informationization of financial management of small and medium-sized enterprises.

Due to the short time of system development and the limitations of knowledge reserves, the various functional modules of the current system in the depth of functionality are still to be further improved, the interface design can also be more beautiful. But overall, this financial management software has the initial ability to solve the financial management pain points of small and medium-sized enterprises, and shows good application prospects.

REFERENCES

- [1] Kong Mingjiao. Research on the design and realization of financial management systems for electrical manufacturing enterprises [J]. Vitality, 2025, 43(01):55-57.
- [2] Liu Yumei. Computer-oriented financial management information system design and implementation [J]. Office Automation, 2024, 29(02):14-16.
- [3] Li Guo, Zhang Yu. Design and realization of accounting information systems in the context of computer technology [J]. Information and Computer (Theoretical Edition), 2024, 36(15):100-103+114.
- [4] Gong Yuqing. Design and realization of a Java-based engineering financial management system [D]. University of Electronic Science and Technology, 2021. DOI:10.27005/d.cnki.gdzku.2021.002672.
- [5] Yang Danqing, LI Shanru, QIAO Xiaohui, et al. Design and realization of a lightweight enterprise financial management system [J]. Electronic Production, 2022, 30(24):54-58+53. DOI:10.16589/j.cnki.cn11-3571/tn.2022.24.025.
- [6] Ji Yaxiong. Design of information management system for computer software development [J]. Information and Computer (Theoretical Edition), 2024, 36(09):112-114.
- [7] Lu Weiqian. Design of computer-aided diagnosis system based on C/S structure [J]. Industrial Control Computer, 2023, 36(09):118-119+122.
- [8] Li Xinyang. Design and Implementation of Java EE Backend Computer Software [J]. Electronic Technology, 2023(02):70-71.
- [9] Long Ling. Design and implementation of componentized financial management systems based on software architecture [J]. Computer Fan, 2018, (08):34.
- [10] Zhao Y. Design and Implementation of Financial Management System Based on Apriori Algorithm [C]//International Conference on Innovative Computing. Springer, Singapore, 2024. DOI:10.1007/978-981-97-4193-9_18.