Design and Implementation of Student Information Management System Based On Java

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ABSTRACT
In order to regulate the university student information management, improve work efficiency and quality management, using the popular Java technology, combining SQLServer2000 database, developed a platform independent student information management system. The system realizes the students and teachers of the relevant information to add, modify, delete and query functions, effectively improve the the quality of student information management.

CCS Concepts
• **Information systems.**

Keywords
Information management system; Java; SQLServer; database connection

1. INTRODUCTION
College enrollment expanding, pure manual to complete the student information management, not standardized, low efficiency, error prone, cannot satisfy the modern information management needs fast, update and management, also caused the human, material waste. Therefore, the information management system of digital computer to appear. With the popularization of the digital information management system achieve student information retrieval more quickly and find more convenient, reliable, more storage capacity, better secrecy. Thus the norms of student information management system, not only to reduce the management burden, improve work efficiency, avoid nonstandard operation, more conducive to grasp the College The students' information, strengthen the management of students, make the university students in the information management technology level will be higher, more scientific, more professional.

2. EXPERIMENTAL PROCEDURE
2.1 Development Tools
2.1.1 JBuilder
Java language is simple, stable, Java virtual machine successfully realized the program and platform independent, once developed, any platform operation, meet the network needs. Support multithreading, Java provides for thread management, coordination function, improve the efficiency of program execution mechanism of strong type.Java, does not support pointers, automatic collection unit. The exception handling mechanism makes the Java more secure and reliable.Java can easily capture and handle the error, when an error occurs, the error detection code directly throws an exception, do not need to manually capture. JBuilder is developed by Borland J AVA development tools, effective development of all kinds of Java applications, the core technology of VCL JBuilder, the Java program is clear, easy to write.JBuilder professional graphics interface, provides a powerful component library also provides the connection with database products, makes database development more efficient and effective.Developers are full of confidence in the prospect of Java, as shown in Figure 1.

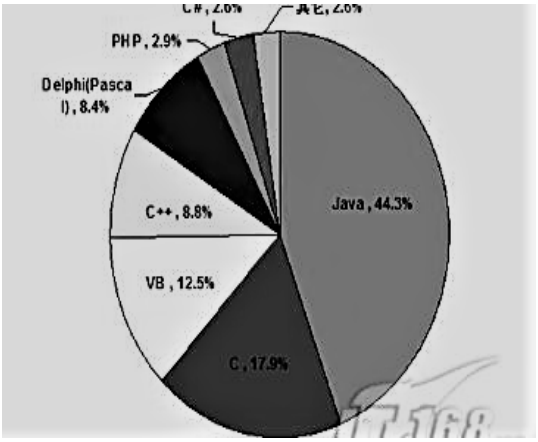

Figure 1. Use the first computer language map in your work.

2.1.2 SQLServer2000
SQLServer2000 is a client / server relational database management system, interactive computer organization and user client, the server is responsible for data processing, high performance design, advanced management system, support the local and remote system management and configuration of.SQLServer with scalability and high availability, support complex data processing, can manage multiple concurrent the user and generates less overhead, reduce memory requirements, improve the distribution of throughput of.SQLServer query can refer to different data sources, to protect the integrity of the distributed data updating. The client can separately or simultaneously to multiple S The QLServer server access to data, reduce the burden on a single server, improve the execution efficiency. In the Web application program includes a user-friendly query and powerful search function, e-commerce, allowing Internet users to access server.SQLServer data warehouse, enhanced in line business functions has very strong superiority.as shown in Figure 2.

ICISS '18, April 27–29, 2018, Jeju, Republic of Korea

ACM ISBN 978-1-4503-6421-8/18/04…$15.00
https://doi.org/10.1145/3209914.3226153

Figure 2. SQL Server 2000 software introduced.

3. ANALYSIS AND DISCUSSION

3.1 System Design

3.1.1 Demand analysis

According to the characteristics of higher education management, considering the practicality, the student information management, scientific, efficient and practical, the students completed the design of information management systems to achieve the objectives are: friendly interface design, beautiful appearance, convenient operation and convenient administrator, data entry, query function is powerful, flexible, realize the information of teachers and students increase, modify, delete, curriculum management including increase, modify, delete, increase, modify delete performance management, information query results. All kinds of information retrieval can be done efficiently. The system management module user permissions maintenance to ensure the safety and reliability of data. The help file Can provide real-time help for system use

3.1.2 System module

The student information management system is the management of students and teachers' information, including add, modify and delete the basic information of the teachers and students to add, modify and delete student learning courses, student achievement to add, modify and delete, query module of students, teachers, courses, examination results query in order to achieve the automation of the management of student information. This system includes five modules, the function structure shown in Table1.

Increase student information student information modify student information delete student information student information system management system from user maintenance help file of student information management system course management increase learning curriculum revision courses learning curriculum inquiry learning courses delete performance management to increase student achievement modify student achievement delete student achievement query student achievement teacher information increase teachers' information teacher information modify delete the teacher information query information teacher information query user login user information check Figure 1 student information management system function structure diagram

User login module: This module is used to check the administrator information, when the user name and password is correct, the successful landing. User name system, check whether the user exists. In the public method, define a variable of type String is used to generate the SQL query, and then define a public class variable, the variable getObjectRow (call) method to check whether the user exists. If the user exists, input the correct password, click "login", can enter the student information management system.

The student information module, teacher information module, course management module and performance management module: the module provides all kinds of information to add, modify, delete sub function. Each sub function has different data interface, add or modify data, the system tends to provide alternative controls allow the administrator operation, to avoid specification for data input. In these modules will operate on the data table, in order to ensure the accuracy of the data operation method, write a private, through the data table to determine whether the data add repeat.

The information query module: data retrieval plays an important role in the student information management system, the system for all queries are implemented by public class files. Public class by passing the query call the corresponding method, to meet the conditions of the query data. The following code is used to query the data which meet the conditions.

```
PublicVectorgetObjectRow (StringsqlStr) {
Vectorqdata=newVector ();
Con=CommonaJdbc.connection;
Try{
Cx=con.prepareStatement (sqlStr).ExecuteQuery ();
Cxquery=cx.getMetaData ();
While (cx.next ()) {
For (inti=1; i<=cxquery.getColumncount) (i++) {
Qdata.addElement (cx.getObject (I));
}catch (java.)
{Sql.printStackTrace (sql.SQLExceptionsql) ();
Returnnull;
}
Returnqdata;
}
```

3.1.3 System management module

User maintenance module can add, modify and delete can enter the student information management system and user account permissions. When the user of this system using the problem can also access the help file module access.

3.2 Swing Interface Design

The Swing component is an important window tool set Java, set up the appearance of style can be specified when the program is running. The MVC (Model-View-Controller) design pattern, model available to save the content, view the contents of the

Table 1. Student information management system function structure

Student information management system	User login	Check user information			
	Student information	Increase student information	Modify student information	Delete student information	
	Teacher information	Add teacher information	Modify teacher information	Delete teacher information	
	course management	Add learning courses	Modified learning course	Delete course	
	Achievement management	Increase student achievement	Modify student achievement	Delete student achievement	
	Information Service	Query student information	Query teacher information	Inquiry learning course	Inquiry learning performanc e
	system management	Book return system	User maintenance	Help file	

display, the controller is used to control the user input. The use of Swing components can design many powerful Java applications, and the appearance of and modify the behavior of the component can be easily operated. The student information management system based on Swing component development of user interface for Swing component is mostly written by the pure Java program Therefore, the student information management system can be cross platform use.

3.3 Database Design

The student information management system database design by the SQLServer2000 database, the database name is Stu data, including students, teachers, curriculum, Faculty achievement table, table, user table, table to help. The fields of the table in addition to the fall line. The primary key of the table in the database table structure is as follows: students (student number, name, gender, date of birth, photos, school number, home address, telephone number) teachers (job number, name, gender, title, resume) course (course number, course name, category, performance (credits) number, class number, grade, class and school number (), Name, phone number, contact) user (number, password) help (help information).

3.4 Database Connection

JDBC is a JavaAPI interface for executing SQL statements, the programmer can use pure Java language to connect to the SQLServer2000 database, and carry on the operation. Use JDBC to connect to the database, CON1 definition of static type variables to establish a database connection, connect the core code as follows:

```
PrivateConnectiongetCon () {

Try{

Class.forName
("com.microsoft.jdbc.sqlserver.SQLServerDriver");

}catch (java.lang.ClassNotFoundExceptionclassnotfound) {

Classnotfound.printStackTrace ();}

Catch (java.sql.SQLExceptionsql) {sql.printStackTrace ();
}

Returncon1;

}


Con1=                    DriverManager.getConnection
("jdbc:Microsoft:sqlserver://127.0.0.1:1433;
DatabaseName=Stu_data", "admin", "stu_db");
```

4. CONCLUSION

The student information system adopts humanized operation, convenient use, easy management and maintenance of data, the student information management,.Java program files and SQLServ database using ER independently, JDBC will use the two party, the combination of.Java and JDBC according to the number of retrieval in the library and realize the application of student information management system to automatically enter the SQL statement the Java program in the "write once, run anywhere", allowing the system to achieve high reliability and scalability. Through the demand analysis and test the encoding, the student information management system which conforms to the requirements of student management business process, to end Student information to add, update, query and other functions, plays a vital role in student management work.

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