

# Lingyun online examination system

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**Abstract:** Online examination system is a collection of modern test theory, methods and modern information technology mean intelligent online examination system, make full use of the school's existing computer software and hardware resources and network resources to achieve paperless examination to make up for the lack of traditional manual examination. I mainly develop the system of the background management subsystem, which includes the trial management, test questions, online volume, and test paper management, arrange exams, check the exam rankings, and check the test scores and other functions. This paper describes the development process of online examination system, using B-S mode, using SSH (Struts+Spring+Hibernate) framework, JavaScript, Servlet, Ajax and other major technologies, the use of Oracle database, MyEclipse development tools. This paper mainly introduces the development process of an online examination system, including requirements analysis, data flow analysis, functional design, database design, system implementation, system debugging and testing.

**Key words:** online exam, SSH framework, MyEclipse, Oracle 9i

## Chapter 1 Introduction

### 1.1 Development background

In today's information age, computer technology and network technology more and more widely used in various fields, changing people's learning, work, life and even thinking, but also caused significant changes in the field of education. The application of computer technology and network technology in modern higher education is the need of modern higher education development. It is also the necessary means to reform the education mode, improve the teaching effect and teaching efficiency of the school, and improve the level of scientific research and management. Therefore, the development of online examination system is an important issue in the construction of educational information, the purpose is to make full use of the school's existing computer software, hardware resources and network resources to achieve paperless examination to make up for the lack of traditional manual examination. Web-based online exam has become a general trend, compared with the traditional test mode, online exams into more technical aspects of the way to achieve security, the method also puts forward higher technical requirements, it is in the process of modernization of education Has a very important practical significance.

It is a long and complicated process that requires a lot of manpower and material resources in the traditional school teaching. It is necessary to carry out an examination, asks the teacher to test papers, print papers, arrange examinations, examinations, collect papers, evaluate papers, test papers and analyze papers. And the time of investment, has become increasingly suited to the school information construction and the needs of modern teaching. Especially in the remote network teaching, students are widely distributed, not easy to focus on the arrangements for the examination, to the school and the students brought a lot of inconvenience. The online examination system, not only can save a lot of time, manpower, material and financial resources, but also can greatly improve the examination results of the objectivity and impartiality. It is the product of information technology, it is an extension of the traditional examination room. It uses the Internet and local area network, anytime, anywhere on the students to test, to achieve an open paperless examination, greatly simplifying the traditional examination process.

### 1.2 Development significance

There are many drawbacks in the traditional teaching

examination, which brings many inconveniences to the development of modern higher education. The following are from the school, teachers, and students in three aspects of online examination system development significance.

As a school, you can maximize the use of teaching resources to achieve the standardization of teaching assessment, teaching quality and efficient, easy to teach the work!

The online examination system has greatly improved the flexibility of teaching, and now has a wide range of applications in many fields. The most influential case is the computerized examination of the GRE (American Graduate Entrance Examination) conducted by the ETS (US Educational Testing Center), which makes the examination the opportunity to take two exams from the original year to every workday Can take the exam. Through the initial test of the system, basically can meet the requirements of the school internal examination, you can achieve low-cost school investment, efficient office purposes.

Compared to the traditional examination methods, WEB-based online examination system, the main advantage is that on the one hand can dynamically manage a variety of test information, as long as the preparation of a large enough questions, you can automatically generate a variety of papers, The process is only input some simple parameters, the selection of questions entirely by the computer automatically completed, greatly saving manpower; the other hand, the test time is flexible, you can at any time within the specified time to take the exam; teachers and leaders even in the field Travel can also be easily accessible through the Internet to set the examination and approval examination office efficiency.

As a teacher, in the teaching process only takes a short time to follow the syllabus to work, test arrangements, improve their teaching efficiency and teaching quality.

To examine the student's learning situation, it is bound to carry out the examination. The traditional examination method from the volume to the printing, from the arrangement of the examination room to arrange the examination time, from the examination papers to the quality analysis, each step to spend a considerable part of the teacher energy. And with this WEB way of online examination system exam, the teacher has to do is set from the question bank in a group of papers, and then borrow a computer classroom can be completed. The system can automatically criticize the papers, reduce the batch time, improve the accuracy of the batch, the teacher's burdens have a great help; and,

by non-teachers, teachers or other non-teaching staff to roll, The separation of teaching and examination and impartiality, consistency has a special significance, but also the student's score can be classified, statistics, and deposited in each student's account. Corresponding to each student has an account, record the students every test and homework results, is conducive to grasp from the perspective of the students learning situation; and for each exam, the system can also be calculated out of the correct rate of each question Which is helpful for teachers to grasp the overall learning situation of class students from the point of view of knowledge points. This is greatly liberating the teachers' labor force, so that they have more time to study teaching materials, improve teaching quality.

As a student, you can use an efficient and practical tool. Comprehensive, systematic check their learning effect!

Personalized learning for students to provide flexible, convenient, scientific and fair individualized examination services, students can carry out the course exam anytime, anywhere. Both to reduce the burden, but also improve the efficiency.

## Chapter 2 Development Technology Overview

### 2.1 Option selection

#### 2.1.1 Solutions

Using the B/S development model, the use of SSH (Struts+Spring+Hibernate) framework, JavaScript, Servlet, Ajax technology, the use of MyEclipse development tools, Oracle database, the use of WebLogic server operating in the Windows operating system.

#### 2.1.2 B/S development mode

Along with the rapid development of Internet, computer technology is being transformed from application system based on C/S (client/Server) mode to B/S mode based application system. In the past, the development of network software using C/S (client/Server) mode, in this mode, the main business logic is focused on the client program, therefore, there are these problems: system installation, commissioning, maintenance and upgrade difficulties The Because the hardware configuration of the client may be different, the software functions are different. Therefore, when installing, each client must be configured separately. Similarly, the client should be processed separately when the software is upgraded. In the whole system, the business logic and user interface are focused on the client, will inevitably increase the security risks.

The B/S model does not exist with such a problem, but also brought a lot of benefits: development costs and maintenance costs. As the B/S architecture management software is only installed on the server (Server), that is, the application in the deployment, upgrade, maintenance, only need to configure the server on it, the network management staff only need to manage the server on the line, the user Interface main business logic in the server (Server) side completely through the WWW browser to achieve, very few parts of the transaction logic in the front (Browser) to achieve, all the client only browser, network managers only need to do hardware maintenance.

Good security, firewall technology can guarantee the security of the background database. All of the configuration work is focused on the server side and all client requests are through the DBMS to access the database, thus greatly reducing the risk of direct data exposure.

#### 2.1.3 Oracle database

Oracle is the first word of the English translation of the oracle bone inscriptions, which is the meaning of the oracle in English. It is the product of Oracle Co., Ltd. ORACLE is a large relational database based on Advanced Structured Query Language (SQL), which is commonly used to manipulate a large number of regular data sets in a language that facilitates logical management. Is one of the most

popular client/server (CLIENT/SERVER) architectures.

Oracle database has the following characteristics:

ORACLE7.X has introduced a shared SQL and multi-threaded server architecture. This reduces the resources of ORACLE, and enhances the ability of ORACLE, so that in the low-end hardware and software platform with fewer resources can support more users, and in the high-end platform can support hundreds of thousands of users. The following are the same as the '

Provides security management based on role (ROLE) division of labor. In the database management functions, integrity checks, security, and consistency have a good performance.

Support a large number of multimedia data, such as binary graphics, sound, animation and multi-dimensional data structure.

Provides a third generation of high-level language interface software PRO \* series, in C, C++ and other main languages embedded in SQL statements and process (PL/SQL) statements, the data in the database to manipulate. In addition, it has many excellent front desk development tools such as POWER BUILD, SQL \* FORMS, VISIA BASIC, etc., can quickly develop and generate applications based on the client PC platform, and has a good portability.

Provides a new distributed database capabilities. Can be more convenient through the network to read and write the remote database data, and symmetric replication technology.

#### 2.1.4 WebLogic server

BEA WebLogic Server has the performance, scalability, and high availability required to handle critical Web application system problems. For use with BEA WebLogic Commerce Server , BEA WebLogic Server provides a complete solution for deploying adaptive, personalized e-business applications. BEA WebLogic Server has a variety of features and benefits for developing and deploys mission-critical e-commerce Web applications, including:

##### Leading standards

Comprehensive support for a variety of standards in the industry, including EJB, JSB, JMS, JDBC, XML and WML, makes Web application implementation easier and protects investment, while making standards-based solutions easier to develop.

##### Unlimited scalability

BEA WebLogic Server is well known in the industry for its highly scalable architecture, including client-attached sharing, resource pooling, and dynamic web and EJB component clustering.

##### Rapid development

With EJB and JSP support, as well as BEA WebLogic Server's Servlet component architecture, can speed up the market speed. These open standards work with WebGain Studio to simplify development and leverage existing skills to deploy applications quickly.

##### Deployment is more flexible

BEA WebLogic Server is characterized by tight integration with leading databases, operating systems, and Web servers.

##### Key mission reliability

Its fault tolerance, system management and security performance have been proven in thousands of mission-critical environments around the world.

##### Architecture

BEA WebLogic Server is specifically developed for enterprise e-commerce applications. Enterprise e-business applications need to be developed quickly and require server-side components with good flexibility and security while supporting the necessary extensions, performance, and high availability for mission-critical tasks. BEA WebLogic Server simplifies the development of portable and scalable application systems and provides interoperability for other applications and systems.

## 2.2 Development framework technology

For framework technology, we use Struts+Spring+Hibernate integration, in fact, any kind of framework can complete our project, but we choose the combination of three frameworks because the three frameworks are good, we use their advantages to avoid Their shortcomings, make full use of Java technology in web applications.

#### 2.2.1 Struts is a more widely used application layer framework

Struts is an open source framework for developing an application architecture based on the Model-View-Controller (MVC) model, which is a very useful way to build Web applications using Servlet, JSP, and custom tag library technology. As Struts can fully meet the needs of application development, easy to use, quick and quick. It uses the service layer framework can be JavaBeans from the Jsp/Servlet separated, and the use of the presentation layer framework can Jsp remaining JavaBeans completely separate, this part of the JavaBeans is mainly responsible for displaying the relevant information, usually through the tag library (Taglib) , Different frameworks have their own tag library, Struts is a more widely used application layer framework.

Spring service layer framework is also an open source framework, created by Rod Johnson. It is to solve the complexity of enterprise application development and create. Spring uses basic JavaBeans to accomplish things that could only be done by EJBs. However, the use of Spring is not limited to server-side development. From the point of view of simplicity, testability, and loosely coupled, any Java application can benefit from Spring.

Objective: To solve the complexity of enterprise application development

Function: Use the basic JavaBean instead of EJB, and provide more enterprise application functionality

Scope: Any Java application

In simple terms, Spring is a lightweight control inversion (IoC) and face-oriented (AOP) container framework.

Hibernate through the persistence layer of the database storage from the service layer to separate

It is an implementation of O/R Mapping is currently in the JAVA community using a very wide range of O/R Mapping of an implementation, you can achieve a relational database and the mapping between objects. Used to develop a database system is very convenient, you can database and program design together. The separation of the presentation layer and the service layer is achieved through two frameworks. The rest is the persistence layer framework. It is the purpose of separating the database store from the service layer through the persistence layer framework. The persistence layer framework has two directions: Directly write their own JDBC and other SQL statements (such as Ibatis); use O/R Mapping technology to achieve the Hibernate and JDO technology; of course, EJB entity Bean technology. Hibernate works through the file to the value of the object and the database table to establish a mapping between, so that we only need to operate these values and Hibernate provide some of the basic class, you can achieve the purpose of using the database. For example, using Hibernate's query, you can directly return a list of objects that contain a value, rather than the traditional JDBC access to the same as the results of the data set to a value object, for our coding work saved A lot of labor. Hibernate provides HQL is a class of SQL language, is to provide object-oriented database query, but HQL in function and use are very close to the standard SQL.

## Chapter 3 Requirements Analysis and System Design

### 3.1 Requirements analysis

#### 3.1.1 Functional requirements overview

The online examination system mainly realizes the functions of account management, question bank management, online test, online examination, automatic delivery, candidate management, result query, test paper management, rights management, user management and view report, make full use of computer technology and network technology, change The traditional examination mode of operation, to achieve paperless examination mode.

I am mainly responsible for the following system function modules:

#### Figure 3-1

Question bank management: for the questions of the increase, delete, change, check and other basic maintenance. Questions add can be added individually or in bulk.

Test paper management: divided into two kinds of test methods: random test, manual group volume. Can be random test papers by adding, delete, change, check and manual test volume increase, delete, change, check and other basic maintenance.

Examination management: the examination of the distribution of papers, set the reference students, the equivalent of the process of arranging examinations. You can also check student rankings.

Account management: for the subjects of the increase, delete, change, check and other basic maintenance.

View the report: the Office of the staff can choose to view each class of each test results report.

Each module needs to complete the following functions:

#### Figure 3-2

Question maintenance: the questions on the type of questions to increase, delete, change, and check operation. The home page is automatically refreshed after the operation to update the information.

Subject maintenance: the subject of the subjects to increase, delete, change, check operation. The home page is automatically refreshed after the operation to update the information.

Question maintenance: the subject of the basic information to increase, delete, change, check operation. The home page is automatically refreshed after the operation to update the information.

Other maintenance: batch inquiries on the question information.

Random volume: the user only need to set the test questions can be the way the package.

Manual group: the way to make the user choose the test questions in the test questions.

Arrange for exams: Choose papers for exams, set up reference students, start exam, end time.

#### 3.1.2 Use case diagram

The following person is responsible for the system teacher's user role use case:

#### 3.1.3 Use case documentation

Table 3-1 Login Use Case Description

Use case name to log in

Use case number LY 001

Executor user

Preconditions Users want to enter the system

Subsequent conditions After the user logs in successfully, some related operations can be performed

The interests of the stakeholders only have a legitimate account of the user can operate

Basic path 1. The user enters the login interface, and the use

case starts.

2. The user enters the login information
3. The system checks the information entered by the user
4. Login successful, enter the main interface.
5. End of use case.

Extension 2a. User login information is entered incorrectly

1. The system prompts the user for an error and needs to re-enter it.

2. The user re-enters.
  3. The system re-verifies until the login is successful and.
- Field list account, password, and user type  
Design rules account only  
Unresolved problem

Use case name to batch entry

Use case number LY 002

Executive teacher

Pre-qualification questions need to add questions, teacher registration success

The post condition system records the entry information correctly

Stakeholders only with the relevant authority of the user can operate

Basic path 1. Teacher enters the batch entry topic interface, the use case begins.

2. The teacher chooses the subject name to be entered
3. Teachers choose the subject storage path, click on the entry.
5. The system prompts for successful entry.
6. End of use case.

Extensions 3a. Teacher selected topic storage file format is wrong

1. The system prompts for an error message
2. Teachers re-select the subject storage path
3. Until the format is correct, the entry is successful.

Field List Account ID, Single Title, Option A, Option B, Option C, Option D, Correct Answer, Score

Design Rule Title ID unique

Unresolved problem

Use case name Single entry title

Use case number LY 003

Executive teacher

Pre-qualification questions need to add questions, teacher registration success

The post condition system records the entry information correctly

Stakeholders only with the relevant authority of the user can operate

Basic path 1. The teacher enters a single entry topic interface, starting with the use case.

2. The teacher chooses the subject name to be entered  
3. Enter the interface information correctly and click on the entry.

5. The system prompts for successful entry.
6. End of use case.

Extensions 3a. Interface information input is incomplete

1. The system prompts you to enter the information completely.
2. Instructors enter one by one until they are complete

Field List Account ID, Single Title, Option A, Option B, Option C, Option D, Correct Answer, Score

Design Rule Title ID unique

Unresolved problem

Use the name of the manual to manually test the volume

Use case number LY 004

Executive teacher

Prerequisite Teacher Login Successful

The post condition system correctly records the manual paper information

The interests of the stakeholders only have the relevant authority of the telecommunications personnel can operate the internal

Basic path 1. Teachers enter the manual group roll interface, use cases to start.

2. The teacher chooses the subject name to be entered
3. Select the title you want to enter and click Save.
5. The system prompts the package to be successful.
6. End of use case.

Extended

Field List Manual Exam ID, Test Paper Name, Total Score, Team Invoice, Test Paper Date

Design Rules Manual Paper ID Unique

Unresolved problem

Use case name random package

Use case number LY 005

Executive teacher

Prerequisite Teacher Login Successful

The post-condition system correctly records the random test paper information

The interests of the stakeholders only have the relevant authority to operate the user

Basic path 1. The teacher enters the random test roll interface, starting with the use case.

2. The teacher chooses the subject name to be entered  
3. Then enter the number of questions, scores, click Add strategy.

4. The interface displays the newly added strategy, the teacher clicks to save.

5. The system prompts the package to be successful.
6. End of use case.

Extended

Field list random test file ID, test paper name, test questions total score, group of people, the date of the package

Design Rules Random Test Paper ID Unique

Unresolved problem

Use case name to arrange exams

Use case number LY 006

Executive teacher

Prerequisite Teacher Login Successful

The post condition system correctly records the examination schedule information

The interests of the stakeholders only have the relevant authority of the telecommunications personnel can operate the internal

Basic path 1. Teacher enters the arrangement examination interface, use case begins.

2. Teachers choose the name of the test paper, select the reference number.

3. Set the test valid time, add reference students, click Save.
5. The system prompts the examination to be successful.

6. End of use case.

Extended

Field list test arrangement ID, test length, test paper name,

allow the number of times, test effective start time,

Exam time, test paper type  
Design Rule Exam ID Unique  
Unresolved problem

### 3.2.1 Database design

According to the system needs and examination needs, set up the following database table:

1) Database E-R diagram

Figure 4-1 ER diagram

2) Database table structure

Table 4-1 User Table Description

Field name Description Data type and length Whether the primary key is empty

StudentNum student number VARCHAR2 (10) whether PK  
StudentPwd password VARCHAR2 (20) No  
Class VARCHAR2 (10) No yes  
Major professional VARCHAR2 (20) No Yes  
JoinYear year of enrollment VARCHAR2 (20) No Yes  
StudentName Real name VARCHAR2 (20) No Yes  
StudentSex Gender VARCHAR2 (6) No Yes  
StudentAge age NUMBER No Yes  
StudentPhone phone number NUMBER No Yes  
StudentEmail E-mail VARCHAR2 (40) No Yes

Table Description: Student information table, which is used to store student information.

User Information Table (UserInfo) Number: 02

Table Description: User information table, which is used to store user information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

UserID User ID NUMBER Yes No PK  
UserName account VARCHAR2 (20) No No  
UserPassword Password VARCHAR2 (20) No No  
RealName Real Name VARCHAR2 (20) No No  
UserSex Gender VARCHAR2 (4) No Yes  
UserAge Age NUMBER No Yes  
UserPhone phone number NUMBER No Yes  
UserEmail Email VARCHAR2 (40) No Yes  
UserType User Type VARCHAR2 (10) No Yes

Subject Information Table (SubjectInfo) Number: 03

Table Description: Account type table, which is used to store account type information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

SubjectID Subject ID NUMBER Yes No PK  
SubjectName Account name VARCHAR2 (20) No Yes  
Principal Responsible person VARCHAR2 (20) No Yes

04 Single choice information table (SingleQuestionsInfo) Number:

Table Description: Single-choice information table, the table used to store single-choice information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

SingleQuestionID single topic ID NUMBER whether PK  
SubjectID Subject ID NUMBER No Yes FK  
SingleTitle single topic VARCHAR2 (200) No yes  
SingleA option contents A VARCHAR2 (160) No Yes  
SingleB option contents B VARCHAR2 (160) No Yes  
SingleC option contents C VARCHAR2 (160) No Yes  
SingleD option contents D VARCHAR2 (160) No Yes  
Answer the correct answer VARCHAR2 (10) No Yes  
Score score NUMBER (4,2) No Yes

Exam schedule information sheet (ExamPlanInfo) Number: 05

Table Description: Exam arrangement information table, which is used to store exam arrangement information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

ExamPlanID Exam ID NUMBER Yes No PK  
ExamTotalTime Exam length NUMBER No Yes  
TestPaperName Test Template Name VARCHAR2 (60) No Yes  
AnswerMakeNumber allowed attending NUMBER No Yes  
ExamBeginTime Test Valid Start Time Date No Yes  
ExamEndTime test expiry date  
TestPaperType Test Paper Type VARCHAR2 (10) No Yes

Manual

random

Manual Exam Information Table (HandWorkTestPaperInfo) Number: 06

Table Description: Manual paper information table, the table is used to store manual test paper information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

HandWorkTestPaperID Manual Exam ID NUMBER Yes No PK  
TestPaperName File name VARCHAR2 (30) No Yes  
TotalScore total score NUMBER No Yes  
Principal group of people VARCHAR2 (10) No Yes  
AddPaperDate Package Date Date No Yes

Manual Test Title Table (HandWorkTestPaperQuestionInfo) Number: 07

Table Description: This table is used to store manual test questions.

Field Description:

Field name Description Data type and length Whether the primary key is empty

HwTestPaperQuestionID Relationship ID NUMBER Yes No PK

HandWorkTestPaperID Manual Exam ID NUMBER No No FK  
SingleQuestionID single topic ID NUMBER No No FK  
QuestionScore Title Score NUMBER (4,2) No Yes

08 Random test information table (RandomTestPaperInfo) number: \_\_\_\_\_

Table Description: Random papers information table, the table used to store random test paper information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

RandomTestPaperID Random Exam ID NUMBER Yes No PK  
 TestPaperName File name VARCHAR2 (30) No Yes  
 TotalScore Total Questions NUMBER No Yes  
 Principal group of people VARCHAR2 (10) No Yes  
 AddPaperDate Package Date Date No Yes

Random Test Title List (RandomTestPaperQuestionInfo) Number: 09

Table Description: This table is used to store random test title information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

RTestPaperQuestionID Relationship ID NUMBER Yes No PK  
 RandomTestPaperID Random Exam ID NUMBER No No FK  
 SubjectID Subject ID NUMBER No No FK  
 QuestionScore Title Score NUMBER (4,2) No Yes  
 QuestionNum Question NUMBER No Yes

Exam Reference Student List (ExamReferenceStudentsInfo) Number: 10

Table Description: Exam Refer to the student information sheet, which is used to store the exam reference student information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

ExamReferStudentsID No. NUMBER Yes No PK  
 ExamPlanID exam arranges ID NUMBER No No FK  
 StudentNum student number VARCHAR2 (10) whether FK  
 JoinExamNum Student reference NUMBER No Yes Judgment of student exams

Student Exam History Record (StudentExamHistoryInfo) Number: 11

Table Description: Student test history information table, the table used to store student test history information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

StudentExamHistoryID Student Test History ID NUMBER Yes No PK

StudentNum Student ID NUMBER No No FK  
 AnswerPaperId Answer ID NU NU No Yes FK  
 StudentMark score NUMBER (6,2) No No  
 ScoreRate Score rate NUMBER (6,2) No Yes  
 State state VARCHAR2 (8) No Yes Confidential  
 Public  
 UseTime with NUMBER No No

Answer List (AnswerPaperInfo) Number: 12

Table Description: Single-choice information table, the table used to store single-choice information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

AnswerPaperID Answer ID NUMBER Yes No PK  
 StudentNum student number NUMBER No No FK  
 ExamPlanID exam arranges ID NUMBER No No FK  
 ExamBeginTime Answer start time Date No Yes  
 ExamEndTime Answer end time Date No Yes  
 TotalScore total score NUMBER (6,2) No yes

Answer Answers Question List (AnswerPaperQuestionInfo) Number: 13

Table Description: This table is used to store random answer topic relationship information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

AnserPaperQuestionID Relationship ID NUMBER Yes No PK  
 AnswerPaperID Answer ID NUMBER No No FK  
 QuestionID Questions ID NUMBER No No FK  
 StudentAswer Candidates Answer VARCHAR2 (8) No No  
 State answer flag NUMBER No yes  
 Score score NUMBER (6,2) No Yes

Permission table (PopedomInfo) number: 14

Table Description: The table is used to store permission information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

PopedomID permission ID NUMBER is unique identifier (PK)  
 PopedomName Permission Name VARCHAR2 (20) No No  
 PopedomAction Action Name VARCHAR2 (80) No No

Rights Relationship Table (UserPopedomInfo) Number: 15

Table Description: This table is used to store user and privilege information.

Field Description:

Field name Description Data type and length Whether the primary key is empty

UserPopedomID user rights relationship ID NUMBER is PK  
 PopedomID permission ID NUMBER (10) No No FK  
 UserID user ID NUMBER (10) No No FK

### 3.2 Class diagram

Figure 3 - Login module class diagram

### 3.3 Screen design

The main page of the system is designed as follows

1) The

Figure 5-1 Examination System Login Interface

2) Main page

3) Entry

4) View the subject

5) Increase the subject

6) Manual grouping

7) Random test paper

8) Arrange the exam

## Chapter 4 System Implementation and Testing

### 4.1 Test cases and test reports

The main functional test cases and test reports are as follows:

Table 5-1

Test case number addQuestionFile001

Add a title to the application case name batch

Test interface

Test type function test

Version number V1.0

Use case designer Long Ling

Use case design date August 17, 2009

Prerequisites The user normally accesses the system

Enter the data account name: Java

Select the file path: E: \ test.doc

Execution criteria Select the subject and file path.

Expected results Sorry, add failed.

Actual result added failed

Tester Long Ling

Test date August 17, 2009

Conclusion file format is wrong, add failure.

Test case number addQuestionFile002

Add a title to the application case name batch

Test interface

Test type function test

Version number V1.0

Use case designer Long Ling

Use case design date August 17, 2009

Prerequisites The user normally accesses the system

Enter the data account name: Java

Select the file path: E: \ data.txt

Execution criteria Select the subject and file path.

Expected results added successfully.

Actual results added successfully.

Tester Long Ling

Test date August 17, 2009

Conclusion The file format is correct and added successfully.

Test case number addSingleQuestion003

Apply a single name to the application case name

Test interface

Test type function test

Version number V1.0

Use case designer Long Ling

Use case design date August 17, 2009

Prerequisites The user normally accesses the system

Enter the data account name: Java

Subject Title: The specification in the software engineering V

model corresponds to

Option A: Unit test

Option B: Integration test

Option C: System test

Option D: Acceptance test

Correct answer: B

Score: 2.5

Execute condition Complete entry of contents

Expected results are added successfully

Actual results are added successfully

Tester Long Ling

Test date August 17, 2009

Conclusion Complete entry of the contents, the successful addition.

Test case number handWorkTestPaper004

On the application name of the manual group

Test interface

Test type function test

Version number V1.0

Use case designer Long Ling

Use case design date August 17, 2009

Prerequisites The user normally accesses the system

Enter the test file name: Java exam 01

Total papers: 100

Select the subject in the corresponding subject: JAVA subjects in all the topics

Execute condition Complete entry of contents

Expected results are added successfully

Actual results are added successfully

Tester Long Ling

Test date August 17, 2009

Conclusion Complete entry of the contents, the successful addition.

Test case number randomTestPaper005

A random test of the application case name

Test interface

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Test type function test  
 Version number V1.0  
 Use case designer Long Ling  
 Use case design date August 17, 2009  
 Prerequisites The user normally accesses the system  
 Enter the data file name: Java exam  
 Total papers: 100  
 Account name: JAVA, design pattern  
 Number of questions: 10,5  
 Score: 5,4  
 Execute condition Complete entry of contents  
 Expected results are added successfully  
 Actual results are added successfully  
 Tester Long Ling  
 Test date August 17, 2009  
 Conclusion Complete entry of the contents, the successful  
 addition.

Test case number addQuestionFile001  
 Add a title to the application case name batch  
 Test interface  
 Test type function test  
 Version number V1.0  
 Use case designer Long Ling  
 Use case design date August 17, 2009  
 Prerequisites The user normally accesses the system  
 Enter the data account name: Java  
 Responsible person: Long Ling  
 Execution Criteria Enter the account name.  
 Expected results added successfully  
 Actual results added successfully  
 Tester Long Ling  
 Test date August 17, 2009  
 Conclusion Enter the name of the account and add it  
 successfully.

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