**重庆理工大学毕业设计（论文）**

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学 院 计算机科学与工程学院

班 级 115030703

学生姓名 皮艳萍 学 号 11503070311

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指导教师：

年 月 日

网络问卷系统的设计与实现

盛文文

原文：The Design and Implementation of Network Questionnaire System

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**关键字：**调查问卷，SSH，系统设计

# 摘要

为了实现校园科研和民意调查的信息化，本网络问卷系统采用Struts + Hibernate + Spring框架技术和MySQL数据库开发技术，通过网络对校园科研和民主建设服务方面进行调查研究。

# 介绍

大学校园经常需要开展各种研究，科学研究，对大众进行调查，征求学生意见，与其他社会研究相比，这些研究有其自身的特点，比如目标是固定的群体，时间有限，或者具有一定程度的组织分析，调查结果需要考虑参与者的身份。基于上述背景，本研究结合移动互联网技术开发了一个“校园网络调查系统”，包括移动客户端、门户、后台服务器。该系统在学校应用后，已经在科学研究中服务过多次，并取得了显著的成果。

# 系统结构

“校园网络调查问卷系统”旨在实现随时随地从学校教职员工和学生那里收集意见、科学研究调查等的目标，以形成一个移动信息平台，供学校和教职员工、教师和学生交流、给学校调查以及科学评估研究和其他服务。由于该系统属于我们学校信息平台的一个子系统。

从系统分布来看，系统分为三个部分

**1 .后台服务器**:系统和数据发布在服务器上，服务器安装了Linux操作系统、Tomcat服务器、MySQL数据库。

**2 .移动**: Android客户端开发，在教职员工和学生登录后，你可以在给定权限内填写并查看填写结果。移动客户端向服务器请求的数据需要从其后台服务器获得；

**3 .PC** :一方面，教员可以在登录后投票，并查看给定范围内的调查结果。另一方面，不同级别的管理者可以在给定的权限范围内发放问卷并收集问卷。

从用户权限划分，系统有五类用户

**1 .超级管理员**:超级管理员是学校级管理员，只有PC，一方面，系统初始化和维护，具有部门管理、学院管理、教员管理的权限；另一方面，它有全校范围的发行、回收调查问卷的权限。

**2 .科室管理员**:高校管理员，只有PC一方，一方面对科室医院信息进行初始化和维护，具有专业管理等权限；另一方面，对于部门发放的，收回调查问卷的权限；

**3 .专业管理员**:专业管理员，只有PC一方，专业的信息初始化和维护，具有班级管理、学生管理等功能，另一方面，管理功能具有面向专业的发布、回收问卷的权限；

**4 .教师用户**:使用移动终端和PC终端，一方面参与问卷调查，另一方面，在部门范围内，经部门检查后，对一些专业或班级发放和回收问卷。

**5 .学生用户**:在移动和PC端，参与问卷调查，并在权限范围内查看问卷结果。

# 移动客户端设计

对我校学生手机型号的一项全校调查发现，超过90 %的学生使用基于Android的手机，100%的学生拥有移动网络服务，并具备使用移动客户端填写问卷的硬件基础。**移动客户端具有以下功能:**

在移动APP客户端未登录的情况下，您可以浏览和查看新闻频道部分的项目和发布的研究报告。为了确保用户信息的准确性，帐户只能由管理员分配。用户登录或绑定电话号码后，可以在权限范围内进行问卷调查、检查问卷进度、参与情况和查看调查结果。

# 系统功能设计与实现

问卷设计与实施

该系统在校园内使用。调查和研究有两种模式。第一个是匿名调查，第二个是确定调查范围。因此，调查问卷的生成分为两个步骤:第一，设置调查问卷的名称、发布时间、开始和结束时间、调查问卷的性质、面向对象的调查问卷等几个信息；第二步，添加问卷问题，问卷题目分为选择题和主观题三类，为了便于大量题目进入系统，系统支持excel。问卷文件中的问卷直接导入系统，这大大简化了操作，降低了输入题目时出错的可能性。问卷导入由JXL实施。导入调查问卷后，可以在后台修改问题和选项。

数据库设计

问卷之间没有直接关系。在普通的网络调查系统中，调查者者和选项之间的关系通常是有建立的。关系表中的记录表明参与者选择了A选项，所有的调查问卷记录都记录在同一个表中，这种方法有许多缺点:首先，表访问频率之间的关系非常高，如果表由于某些原因损坏，会导致大量数据丢失；第二，虽然数据库支持海量数据，但是将所有的大量研究数据都放在一个表中，仍然会影响查询和统计效率；第三，调查问卷的数据具有一定的时效性，数据导出分析在调查报告形成后，原始数据失去了存储价值，这将导致大量无效数据的存储。因此，在该系统的设计中，我们采用了在创建新问卷的同时为该问卷设计单独的数据存储表的方式。

.1、实体关系如下(仅标记主键和外键) :

问卷实体:描述注册调查问卷的信息。

调查结果实体:记录每个参与者的调查结果。

问题实体:保存所有投票的问题。

选项实体:保存所有问题的选项。

2 .生成调查问卷后，将生成Data\_Storage\_Table，并命名为voteData \_ \* \*，其中\* \*表示相应调查问卷的ID。该表的字段设计如下:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **类型** | **限制** | **标注** |
| id | int | 主键自增 | Option number |
| cyDate | dateTime | not null | 生成问卷的时间 |
| UserId | int | not null | 外键：参与者id |
| question\_\* | varchar(200) | not null | 问卷中的问题id |

3 .当投票结果公布时，我们需要首先考虑每个问题都被成功导入，一个名为question\_\_ \*的新字段被添加到voteData \_ \* \*表中，其中\*表示问题表中项目的ID

4 .当用户参与调查并提交问卷时，数据存储表可以通过id找到相应的voteData \_ \* \*表。然后，参与者和问卷的提交时间被记录在表格中。每完成一个问题，选项将存储在字段question\_ \*中，该字段定义为字符串类型，内容由问题的类型决定。如果类型是单选，就记录选项ID。如果是多选记录，多选记录的ID用“；”分隔，就像“A;B;C”。如果是主观问题，答案会直接保存下来。

数据导出和分析

步骤1 :查看调查问卷:如果要查看参与者的调查问卷(调查问卷id=x )，可以执行以下SQL语句:

( 1 )SELECT qId FROM question WHERE vId=x;

( 2 )SELECT \* FROM VoteData\_x WHERE VId=x;// 依次提取字段:问题\_id1、问题\_id2……

( 3 )分析字段question\_id1、question\_id2等，以便提取答案。

步骤2 :总结结果:首先，查询问卷中包含的所有问题，其中qId=a。然后，依次找出问题中包含的选项。最后，计算每个选项被选择的次数:

SELECT COUNT(\*) FROM VoteData\_x where(question\_a like b+‘;%’or question\_alike‘%b%’orquestion\_a like ‘%;’+b)

步骤3 :导出结果:首先，由qId查询调查问卷中包含的所有问题。然后，依次查询每个问题的选项。最后，查询选择问题选项的参与者列表。参与者信息和问卷调查信息从数据库导出到Excel表中，然后通过Excel的统计分析功能对问卷结果进行统计和分析。

# 总结

该系统改变了问卷调查系统的传统数据存储模式，为每个问卷设置了单独的表格，提高了存储效率。该系统已在我校校园网中使用，实现了调查管理、问卷设计和调查用户管理等功能。它具有操作方便、界面友好、功能强大的特点。它为学校意见调查和科学研究做出了贡献。

原文

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**The Design and Implementation of Network Questionnaire System**

Wen-wen SHENG

**Keywords:** Questionnaire, SSH, System design.

# Abstract

In order to achieve the informatisation of scientific research and polls on campus, this network questionnaire system is designed by using Struts + Hibernate + Spring framework technology and MySQL database development technology, which carry out investigation and study through the network for the campus scientific research and democratic construction services.

# Introduction

University campuses often need to carry out a variety of researches, scientific research, public opinion surveys of staff and workers, student solicitation of opinions, compared with other social researches, these researches have its own characteristics, such as the target is a fixed group, time constraints, or with a certain degree of organizational analysis of the survey results need to consider the identity of participants. Based on the above background, this study combines the mobile internet technology to develop a "campus network survey system", which includes mobile clients, portals, background servers. After the system was applied in the school, the system has served many times in scientific research and achieved significant results.

# System Structure

The "Campus Network Questionnaire System" aims to achieve the goal of collecting public opinions, scientific research surveys and so forth from school faculty members and students anytime, anywhere to form a mobile information platform for the exchange between schools and staff, teachers and students, to vote for schools and to scientifically evaluate Research and other services. As the system belongs to our school information platform to build a subsystem.

**From the System Distribution, the System is Divided Into Three Parts**

1. Background Server: System and data published on the server, the server installed Linux operating system, Tomcat server, MySQL database.
   1. Mobile: Android client development, after faculty and students logged in, you can vote and view the voting results within the given permissions. The data requested by the mobile client from the server needs to be obtained from its background server;

3.PC : On the one hand, the faculty members can vote after logging in and view the voting results within a given scope. On the other hand, different levels’ administrators can issue questionnaires within the given scope of authority and collect the questionnaires.

**Divided from the User Permissions, the System Has Five Categories of Users**

1. **Super administrator:** super administrator is a school-level administrator, only the PC, on theone hand, the system initialization and maintenance, with department management, college management, faculty management authority; on the other hand, it has a school-wide release, recycling questionnaire permissions.
   1. **Department administrators:** college administrators, only the PC side, on the one hand, theDepartment of hospital information to initialize and maintain, with professional management and other rights; the other hand, for the Department issued, recovery of the questionnaire authority;
   2. **Professional Administrator:** Professional administrator, only the PC side, on the one hand,the professional information initialization and maintenance, with class management, studentmanagement functions, on the other hand has a professional-oriented release, recovery of the questionnaire permissions;
2. **Teacher users:** With mobile terminals and PC terminals, on the one hand, participate in thequestionnaire survey, on the other hand, within the scope of the hospital department, after examination by the department, for some professional or class release and recovery of the questionnaire.
3. **Student users:** with mobile and PC side, participate in the questionnaire survey, and view thequestionnaire results within the scope of the authority.

# Mobile Client Design

A school-wide survey of students ‘mobile phone models at my school was found out that over 90% of students use Android-based phones, and 100% of students had mobile network services and equipped with the hardware foundation to use mobile clients to vote. Mobile client has the following features:

In the case that, when the mobile APP client is not logged in, you can browse and view the news channel section's project and released research reports. In order to ensure the accuracy of user information, the account can be assigned only by the administrator. After a user logs in or binds a phone number, he or she can make a questionnaire inquiry, check the progress of the questionnaire, participate in the situation and view the investigation results within the scope of the authority.

# System Function Design and Implementation

## Questionnaire Design and Implementation

The system is used within the campus. There are two modes for the investigation and study. The first one is to vote anonymously, the second one is to determine the range of votes. Therefore, the questionnaire generation is divided into two steps: First, set the name of the questionnaire, release time, start and end time, Questionnaire nature, object-oriented questionnaire, such as several information; The second step, add the questionnaire questions, the questionnaire topics are divided into multiple choice questions and subjective questions three categories, in order to facilitate a large number of topics into the system, the system supports excel The questionnaire in the file is directly imported into the system, which greatly simplifies the operation and reduces the possibility of mistakes in entering the title. The questionnaire import is implemented by JXL. After the questionnaire is imported, the questions and options can be modified in the background.

## Survey Data Storage Design

There is no direct relationship between the questionnaires. In the common network survey system, the relationship between the voter and the option is usually established. A record in the relationship table indicates that a participant has chosen An option, all the questionnaire records are recorded in the same table, this approach has many shortcomings: First, the relationship between the table access frequency is very high, if the table is damaged for some reasons which will result in a large amount of data Lost; Second, all the research data are placed in a table caused by a large amount of data in the table, although the database supports mass data, but will still affect the query and statistical efficiency; Third, the data of the questionnaire has some timeliness, the data Export Analysis After the formation of the investigation report, the original data lost its storage value, which would result in the storage of a large amount of invalid data. Therefore, in the design of this system, we adopt the way of designing a separate data storage table for this questionnaire while creating a new questionnaire.

1. Entity relationships are as follows( only primary keys and foreign keys are marked):

The Vote entity:Describes the information of registration questionnaire.

The VoteData entity:Ecords the results of each participant's survey.

The Question entity: Saves the questions of all votes.

The Option entity:Saves the options of all questions.

1. After the questionnaire is generated, the Data\_Storage\_Table is generated, and named voteData\_\*\*, where \* \* represents the ID of the corresponding questionnaire. The field of the table is designed as follows:

Table1. VoteData\_\* Data Dictionary.

|  |  |  |  |
| --- | --- | --- | --- |
| **Field name** | **Type** | **Constraint** | **Remark** |
| id | int | primary key auto\_increment | Option number |
| cyDate | dateTime | not null | Time for submitting the questionnaire |
| UserId | int | not null | Foreign key: Participant ID |
| question\_\* | varchar(200) | not null | \* |
|  |  |  | Question ID in the questionnaire |

1. When a vote is publishing, we need to import the questions first. Each question is successfully imported, a new field named question\_\* is added to the voteData\_\*\* table, where \* denotes the ID of the item in the question table.
2. When a user participates in the vote and submits the questionnaire, the data storage table voteData\_\*\* is found according to the ID of the questionnaire. Then, the participants and the submission time of the questionnaire are recorded in the table. Each completed a question, the option will be stored in the field question\_\*, t he field word is defined as the string type,the content is determined by the type of the question. If the type is radio, record the options ID.If it is a multiple-choice record, the multiple options’ID are separated with ";" ,just like "A;B;C".If it is subjective questions, the answer is directly saved.

## Data Export and Analysis

**Step1:**View the questionnaire: If you want to view a participant's questionnaire (the questionnaireid=x), you can execute the following SQL statement:

1. SELECT qId FROM question WHERE vId=x;// ID list of subjects for the questionnaire:id1, id2……
2. SELECT \* FROM VoteData\_x WHERE VId=x;// Extract fields in turn: question\_id1,question\_id2……, and encapsulate them into a collection.
3. Analysis the Strings of fields question\_id1, question\_id2 etc.in orderto extract the answers.

**Step2:**Summary the results: First, query all the questions included in the questionnaire where qId=a.Then, find out the the options witch are contained in the problem in turn.Finally,count the number of times each option is selected:

SELECT COUNT(\*) FROM VoteData\_x where(question\_a like b+‘;%’ or question\_a like ‘%b%’ or question\_a like ‘%;’+b)

**Step3:**Exportthe results: First, query all the questions included in the questionnaire by qId.Then,query the options for each question in turn. Finally, query the list of participants witch selected the option of the question. The participant information and the questionnaire survey information are exported from the database to the Excel table,then, statistics and analysis of the questionnaire results by the statistical analysis function of Excel.

# Summary

The system changes the traditional data storage model of the questionnaire survey system, set up a separate form for each questionnaire, and improve the storage efficiency. The system has been used in our school campus network, and has realized the functions of voting management, questionnaire design and voting user management. It has the characteristics of convenient operation, friendly interface and powerful functions. It has contributed to school opinion survey and scientific research.

评阅

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