

# Design and Construction of a Java Web-based Senior Citizens' Online Communication Community

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**Abstract**— Relevant conferences have pointed out that by 2050, elderly people living alone and empty nesters will exceed 54% of the elderly population. Empty nesters are often mentally lonely, depressed and feel that their life has lost its value. A survey shows that the number of elderly with psychological problems is 60% of the empty nesters, and more than 90% of the empty nesters want to communicate with others, have fun and use their old age. This project uses JSP technology to build a community communication (news, forum) project for the elderly group, to enhance the fun of the daily life of the elderly by intelligent information means, and to meet the spiritual needs of the elderly in a certain sense. It can realize the needs of cultivating hobbies, socialization and information notification for the elderly.

**Keywords**— Communicaion Community, Web-based, elderly people.

## I. INTRODUCTION

According to our questionnaire statistics and the information we searched, the common characteristic of the elderly, regardless of their class, in the context of today's time is the seriousness of the empty nest phenomenon. According to the information, there are 169 million elderly people in China, accounting for 12% of the total population. At present, China's elderly population is growing at a rate of 3.28% per year, and experts expect that by 2030, China's elderly population will be nearly 300 million, and the proportion of empty nesters may reach 90%. There are various causes of empty nesters, among which the main reason is that children go out to work, followed by natural empty nest and intergenerational differences. Empty nesters are often mentally lonely, depressed and feel that their life has lost its value. A survey shows that 60% of the empty nesters have psychological problems, and more than 90% of them want to communicate with others and have fun and use their old age.

In order to solve the contradiction between the increasing spiritual needs of the elderly and the inability of most of their children to visit them for a long time and the shortage of institutional beds, our project proposes a new idea in the home care model, i.e. "the construction of a warm nest under the intelligent network". In the project, we only proposed a solution based on the specific situation, combined with the local nursing home in Hangzhou has adopted robot care and other projects, but more in the theoretical discussion. As a computer science student, I would like to take practical action to build a communication platform for the elderly as a target group and make a practical attempt to improve this problem.

## II. DATABASE SELECTION - MYSQL AND NAVICAT

MySQL is a small relational database management system. Compared with other large database management systems (such as Oracle, DB2, SQL Server, etc.), MySQL is small in size and limited in functionality, but it takes up little space, runs fast, low cost of use, and at the same time it provides features that have been able to meet the use of slightly more complex applications, these features make MySQL the most popular open source type of the world today. database.

It is developed, published and supported by MySQL AB. It is widely used due to its ease of use and the availability of a free community version. MySQL Enterprise Server can provide data warehouse applications for enterprises at a very low cost, supports ACID transactions, has commit data, data rollback, row-level locking, and crash recovery.

## III. TASKS AND STEPS OF PROJECT ANALYSIS

Since the target group of this project is the elderly (most of them are empty nesters), it is not possible to analyze the needs of most Internet users. The key to the success of this project is that the project is in line with the daily use habits of the elderly, the functions are in line with the needs of the elderly, and the operation is acceptable to the elderly.

Understand the requirements of the elderly users, understand their requirements in terms of website features, performance and other aspects needed for daily use. Pay special attention to the fact that seniors are different from younger groups, and we should not impose our subjective views on them when considering their needs. Rather, we should be patient and careful in asking the elderly what they want.

Conduct requirements analysis through research and literature review, compile user requirements, etc., and complete the analysis report. Propose functional requirements design based on the analysis findings.

## IV. FUNCTIONAL AND INTERFACE REQUIREMENTS ANALYSIS

Based on the research and target group requirements analysis, combined with our own capabilities and technical framework, we generally came to the following conclusions on functional requirements.

A visitor's experience of browsing a web project is very important, and the first impression often determines whether they want to stay longer. This is especially true for seniors, as a user-friendly and functional website can attract them to

browse and even sign up for membership.

Therefore, visitor access should have the following functions: 1, visit the home page of the site; 2, view the board, posts (file, time, publisher, number of replies); 3, view the news (view by board, view the latest news, popular news); 4, post news anonymous comments; 5, register an account; 6, search posts; 7, view the information of posters and repliers.

When a visitor registers as a member, it means that this website has some attraction to him/her, and in order to enhance user stickiness, registered users will definitely have more functional experience than visitors.

Registered user functions are as follows:

Login account;

Enter personal control panel: edit information (change password, upload avatar), delete topics;

Publish new topics (upload files), reply to topics, delete replies;

Other same as the visitor section.

The research part has said that the administrator user group is not the elderly group, which should have the following functions: 1, login to the administrator system; 2, modify the administrator password; 3, add, delete, modify the forum section; 4, set, cancel the essence, top posts; 5, delete topics, replies; 6, view, delete registered accounts; 7, add, modify, delete news; 8, delete comments; 9, other with Guest section.

Non-functional requirements include interface, interactive experience, etc.

## V. DETAILED DESIGN AND PROJECT REALIZATION

This project contains two main sections in terms of functionality and interface: news section and forum section, which are built separately without interfering with each other. The top of the homepage is the news section, where users can view the recent hot news, the latest news and the list of related news by clicking the relevant column. The forum section provides the opportunity for registered users to interact with each other by viewing, posting and replying to posts according to the forum section set by the administrator.

The main interface is composed of webpage title, user login and registration, news center section and forum section. Among them, the news center section contains graphic display, most

Contains post list (contains all kinds of information), search box, posting and other functions.

The home page is designed as follows.

The top half of the project home page displays the content of the Newsroom section. The entire board fits into an open source jQuery Tab menu plugin. The board is divided into the home page and 5 major news categories by way of tabs. Since the news section and the forum section are actually two projects, the forum homepage was chosen as the homepage for the entire project. Therefore, the front-end display of the news section on the homepage comes from dynamic links. The actual loading is in the news project, while the implementation of this homepage provides pointing links. Clicking on any content in the news section is the only way to actually enter the news project.

Compared to the frontend implementation of the news

section, the forum section is much easier to write in html directly on the home page of the forum project. And the forum topic posts are arranged by the jsp tag library `<c:forEach>` to achieve, use this tag to traverse the Hibernate database mapping to achieve the post list arrangement.

Due to the nature of the project board, this project contains two backends, the main backend is the forum board backend, which requires a password login to achieve the operation of the forum part. The secondary backend is the news section backend, which requires no secondary password input when logging into the main backend. The secondary backend realizes the management operation of the news section. The overall layout of the backend uses a set of open source css scheme, the entire interface is clear, neat, simple and generous.

## VI. USER REGISTRATION AND LOGIN MODULE

Users need to log in to perform certain operations (posting, replying). If not logged in, the browser prompts please log in first. This function is implemented by the js-defined function `zhutiAdd(ccatalogId)`. The user enters the account password and submits the form, and then selects another js AJAX function `check()` to determine whether the input is correct. If correct, login successfully and jump to the home page.

The registration function has its own jsp page. Similarly, it transfers the data to the backend by submitting a form, and determines whether the account name already exists by comparing the function with the Hibernate database mapping. If it exists, it returns the relevant information, if not, the registration is successful and the relevant form data is transferred to the mapping and then saved to the database.

## VII. REGISTERED USER CONTROL PANEL MODULE

Users can click on the control panel to jump to the user center to view and modify their own information. The control panel interface elements are consistent with the administrator backend interface, but the functions are slightly different. Registered users can modify their own information and delete their posts through the control panel.

Click Forum Board Management or Forum Board Add to enter the corresponding function. You can delete or add forum boards.

The addition of a board is the creation of a new database message.

The deletion principle of the board is the same as the user deletion, which also retains the database information, while only changing the del field to yes.

Enter the news backend, click news release to add new news, transfer all the content to the database for record, and the frontend also retrieves data information for display by application when retrieving relevant pages.

In the news content call a text input control for multi-format text input, input submitted to the database for recording, after refreshing the project, application can be immediately based on the database for real-time refresh, the latest news on the project home page for correction. If the headline or hotspot is checked, the corresponding field is

written as yes when the database is written, and the backend is mapped and filtered to form the corresponding data table according to these fields, and the front-end jsp page is displayed according to the formed data table for the headline and hotspot news.

List all data in the database, click Modify to modify, click Delete to operate the database to delete data. The implementation is similar to the forum section backend.

And the comments section lists all comments in the database, click delete to operate the database for deletion, similar to the implementation of the forum section backend.

Enter the query data in the search box by submit() method to submit the form to the tomcat server, in the server by the Hibernate framework provides the method to complete the search .

This piece is mainly about how to achieve the user avatar upload function at registration, information modification and the release of new themes when the file upload function to achieve. Mainly by struts2 framework under the SmartUpload component to achieve. You need to import commons-fileupload.jar and commons-io.jar two jars.

When the file is uploaded, the source file filename will be recorded and the source file will be modified to the new filename according to the current time and other information, and then the source file name and the new filename will be recorded to the corresponding database item through the Hibernate framework.

When the file is downloaded, first judge whether the zhuti table fujian item in the database is null, if it is, the download button is not displayed, if it is not null, the dynamic path of the corresponding new file name is retrieved through the function, while naming it as the source file name at the time of

download.

#### VIII. PROJECT TESTING PROGRAM

Based on the needs of the entire project construction and related external requirements, the following test plan was broadly revised with the project testing purpose as a starting point.

Testing and development go hand in hand. Countless lessons have taught us that the earlier a bug is found, the less it costs and the less time it takes to fix it, and that bugs are often unavoidable, so at every stage of development we always uphold the principle of testing and correcting bugs while developing, and test at all times throughout the development process.

Present the expected results to facilitate test comparison. In general, each test case consists of two parts: input data and data comparison. The test only makes sense if the theoretically correct conclusion data is given in advance, and the test results are compared with the theoretical results to determine whether there is a problem with the project.

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