

Design and Implementation of Game Guild System based on Spring Boot and WeChat Applet

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Abstract. Nowadays, more and more children are exposed to all kinds of online games, which can bring different effects to children, both good and bad. Guild systems in some games are able to allow children to meet new people, realize the importance of teamwork and sociability, and improve their confidence and teamwork skills. Game guilds have become one of the most popular social choices for the younger generation. According to the current research, the game guild management system also has some functions that can be optimized, mainly reflected in the user's inconvenience. Therefore, we propose a reasonable and practical solution to this problem, which is to design a WeChat program to handle transactions anytime and anywhere. Based on the existing excellent cases and the analysis of various platforms and tools, this paper designs and implements a game guild management system based on Spring Boot framework, Spring Security framework and WeChat Applet. The system can serve three objects of guild: guild administrator, guild member and guild president. The main functions include member information management, association active management, reward information management, forum management and comment management. The system is easy to operation, to a certain extent to simplify the work of the guild administrator, and convenient for users and visitors.

Keywords: Game Guild; WeChat; Spring Boot; System.

1. Introduction

Nowadays, the negative impacts of online games are considered to be a serious social problem, therefore there are a number of studies about that have been published. For example, a cross-sectional study examined the differential association between attachment patterns and empathy and aggression, prosocial and interpersonal video games, and peer relationships in children and adolescents.[1] As a result, these findings demonstrate the hypothesis that violence in video games is inevitably associated with negative social consequences. Another issue that needs people to think about is a large number of children are addicted to the online games and neglect their studies. In recent years, there have been more and more cases of families falling into trouble as their children invest in a game. What's more, numerous parents regard games as demons or monsters.

However, online games can also bring many benefits to children because playing games is a good way to relax and reduce stress. They can help children boost their confidence and teamwork skills, make them understand the team spirit and importance of socializing. For example, some experiments have analyzed how guild activities in online games can improve leadership skills in the real life. The research results confirm that through the experience about guild, the timid character has been changed into a positive character, and the decision-making skills, teamwork skills and problem-solving skills have also been improved [2]. It can be seen from this study that among the elements of online games, the guild activity experience provides an opportunity to improve leadership and shows the possibility of improving various abilities [3].

And another experiment took place in 2016, the researchers investigated how game-based learning environments affect children's learning outcomes in terms of social skills knowledge and user

acceptance. It was discovered that some children were unable to adapt to society which puts them at risk early in life because it is a part of many emotional, behavioral and psychological problems [4].

Based on the conclusions of the above experiments and the analysis of the actual situation, the game has become one of the most popular choices to socialize with others for young generation. Maybe it's because that people feel more freedom and relax as they don't need to talk about face to face, which makes them feel that their privacy is respected.

Thus, the module responsible for social function and indispensable part of the game is the guild system. Which is a virtual organization for players in the game, in order to gain better resources or equipment. Stable cooperative relations are essential for everyone, for example, some veteran can help newbies through the adaptation period with their own game experience.

According to the current domestic research, the game guild management system still has some features that can be optimized which is mainly reflected user's inconvenience, because most people will not carry a computer with them, nor can they use game software at any time, which lead to the operations does not guarantee real-time performance [5]. In addition to providing adequate diversity of social styles among members, the system can also add the functions of the communion forum. The members who joined the Union early can help new members to understand rules and encourage them to overcome challenges. According to the different roles, different characters are given different rights and obligations, which is able to make work efficiently. It is convenient for members to enjoy high-quality services[6].

Therefore, we propose a reasonable and practical solution to this problem, which is to design the program to handle transactions anytime and anywhere. Based on the existing excellent cases and the analysis of various platforms and tools, this paper designs and implements a game guild management system based on Spring Boot framework, Spring Security framework and WeChat Applet. According to these tools, this paper designs a game guild community system for players to learn, communicate and handle some actives. First of all, we analyze the research background and research status of games. Then, we analyzed the requirements of the system, including system function, performance and security requirements, and design this system. The whole system is divided into several modules for development, and the specific module content is designed in detail, and the corresponding system functions are realized by using development tools [7].

2. Method

2.1 Introduction to the Wechat Applet

Today, many people have an issue that wasting their free time could not be used reasonably. By contrast, because of the spread of the epidemic in the world, most of the universities, the management of all kinds of facilities and activities are difficult to maintain for a long time. Meanwhile due to the limitation of time and space, the computer operation modal could not be used efficiently. Therefore, a reasonable and practical solution was proposed to solve this problem, which was to design a WeChat program to deal with affairs at anytime and anywhere. The WeChat applet, as a lightweight development platform, has been noticed by many well-known software companies due to its simplicity, small size, fast download speed and almost no space occupation [8].

2.2 Introduction to the Spring Boot

The Spring Boot mainly includes four layers, which are the mapper layer, view layer, the service layer and the entity layer, The Spring Boot framework can be used for encapsulation, so as to avoid complicated configuration and simplify the construction, which can help developer complete the system easily and rapidly [9]. The four layers connect all data into a mixed server system. The mapper layer is responsible for implementing the crud interface in the database and putting the data into the persistent medium, The service mapper. The service layer is developed on the basis of the Spring Boot framework and mainly includes two parts: the MySQL database and Tomcat server.

2.3 Introduction to the MySQL Database and the Tomcat Serve

All data is stored in the MySQL database and the Tomcat offers a free and lightweight open-source web application server which provides a basic environment for the game guild system. The entity layer completes the methods of the get and the set for creating objects, The view layer is developed on the basis of the Vue framework and integrated into the Spring Boot framework, according to the low time cost and high efficiency, which is one of the most popular combinations.

2.4 Introduction to the Vue Framework and the EChart

In particular, the development with annotations as the main means makes great use of the characteristics of The Java encapsulation, make the development simple and fast [10]. This layer combines an open-source visualization chart library called ECharts to provide users with More intuitive and interactive pie charts and bar charts.

3. Result

3.1 Research Status

In China, the glory of the king has become a phenomenal online game. In addition to the strong fighting function, social elements are also essential. For example, the MVP sharing function at the end of each game greatly promotes interpersonal communication and expands the scope of communication. Also, the division of labor of different identities and different tactics require players to communicate through microphones, which also promotes the relationship between players [11]. From here we see that social networking has become an almost indispensable part of modern online games. Unlike the extreme pursuit of single-machine games, the social networking module in online games should become the driving force for the sustainable development of games and the core of the number of location players

At present, almost all role-playing games have guild management systems, and the most prominent is The World of Warcraft. World of Warcraft is the first massively multiplayer online role-playing game launched by blizzard, In this game [12], players need to play a role that can freely choose their appearance, occupation and race, and can freely explore the world within the rules[13].This takes care of the feelings of some players who are curious or like to play alone. By contrast, the core ways of the playing is dungeons which based on team combat. Through dungeons, you can constantly improve your level and make your equipment ahead of others, also many awards or achievements can only be completed through team cooperation among players. Therefore, for some players who have the habit of collecting everything that forces them to participate in social activities. For example, team dungeons can be entered by 5-40 people, and some collected items can't be completed by individuals. Therefore, most players choose to participate in a game guild. This greatly enhances the communication between guild members and improves the stickiness of players. In addition, the functions of the game guild set up in the game also include job appointment, guild bank etc. the stickiness [14].

According to the existing excellent cases and the analysis of various platforms and tools, this paper designs and implements a game guild management system based on the Spring Boot framework and the Spring Security framework and the WeChat applet.

3.2 Analysis and Design of the System

The system is divided into three modules: administrator module, user module and president module. Every module has different functions, The administrator mainly has the functions of user information management, activities information management, forums information management, the user module mainly has the functions of attend guild's activities and Publish posts. The president module has the highest authority in the whole system and presidents identify mainly functions is positive management. In order to the efficiency and convenience, user module can only be used in

web WeChat applet, while the presentation module and administrator module can use in the web page and WeChat applet.

3.3 Design of the Database

3.3.1 Design of Database Conceptual Structure

The system mainly includes Echarts entity, active entity, award entity, blog entity blog_comment entity, blog_tag entity, member entity and other database entities. According to the relationship between all entities, the E-R diagram of this system can be gained [15].

3.3.2 Design of Database Logical Structure

According to the analyses, the result can be obtained, the entities and property in the E-R diagram are transformed into the relational model. The following are particular descriptions of each entity [16].

- The tb_member is used to store the basic information of all members of the guild. When applying to join the guild, the system reads the personal information and adds it to the database, the password is invisible for everyone. We explain the tb_member in Table 1
- The tb_blog_tag is used to store the tags which are used to simply describe the type of posts. When members post on the forum, they can choose to fill in the label themselves or use the default label. This property is not required. We explain the tb_blog_tag in Table 2
- The tb_blog_comment is used to store the replies and comments to posts
- The tb_blog is used to store the information of all posts. When someone decides to publish a post, they have to include all of information.
- The tb_award is used to store the information of all awards. The sponsor of the active can decide which winners and prizes to award for the event.
- The tb_active is used to store the information of all actives. We explain the tb_active in Table 3

3.3.3 Design of Database Physical Structure

(1) member table (tb_member) as shown in table 1

Table 1. member information table (tb_member)

field	data type	length	empty	primary key	remark
member_id	int		No	Yes	Member id
member_type	timestamp		No		Membership
member_name	varchar	200			Member real name
member_url	varchar	200	No		Member account
member_phone	varchar	200			Member real Phone number
is_deleted	datetime		No		Fake deletion
create_time	varchar	200	No		Time of member application
member_password	varchar	200	No		password

(2) blog_tag table (tb_blog_tag) as shown in table 2

Table 2. blog tag information table (tb_blog_tag)

field	data type	length	empty	primary key	remark
tag_id	int	0	No	Yes	tag id
tag_name	varchar	255	No		Tag name
is_deleted	varchar	255			Fake deletion
create_time	datetime	0	No		Time of tag application

(3) active table (tb_active) as shown in table 3

Table 3. Active information table (tb_active)

filed	data type	length	empty	primary key	remark
active_id	int		No	Yes	Active id
active_name	varchar	50	No		Active name
active_icon	varchar	50			Active icon image address
active_award	varchar	50	No		Awards of active
is_deleted	tinyint	0			Fake deletion
create_time	datetime	0	No		Time of active create
over_time	datetime	0	No		Time of active finish
active_intro	varchar	50	No		Introduction of active
active_author	varchar	255			Active creator

3.4 Realization of the Main Functions

This chapter mainly discusses the main work that the system can complete and the details of relevant processes

3.4.1 Member Login and Register

Register means that applying for an account and password that corresponding to that. If someone wants to use the system, they must log in first. If they don't, applying for one through game client instead of the system.

Members who are not join in any guild must enter their own account and password and select any guild they want to join. After that, click the application button, they just need to wait for the administrator of the guild or people with higher status to approve before joining the corresponding guild.[17]

After Members enter the realm name of the site, they need to fill in login information and click the login button. The homepage of the system will pop up. The system performs the following processing:

1. Users fill in the account, the password and the verification code. If the basis input boxes are empty but someone clicks "login" button. A prompt "this box cannot be empty" will appear.

2. After successful login. the backstage obtains the user's account, password and user type by post and starts verification. If the information does not match the contents in the database, or the account does not exist or the password is wrong. Members will be prompted with "the account or password you writing is incorrect, please try again".

3. If all of information are matches with the database. At this time, the page will jump to the homepage.



Figure 1. Homepage

3.4.2 Active and Award

Appropriate activities can enhance the cohesion of the guild and increase the initiatives of players. The president can publish various campaigns held by the guild in the activity module. After clicking

the publish button, initiators must fill in the corresponding title, introduction, award of the activity, and corresponding pictures, and finally determining the duration. The system performs the following processing:

1. Every information must not be empty, except the introduction or prize. And the system will calculate automatically the deadline according to the sever time and the duration time.

2. identity of Author and participant of active should be recorded. And the award module will add corresponding data. If any information is unsuitable, the system will also prompt. For example, incorrect e-mail or password which is verbose.

3. The active can be deleted and modified in batch, by contrast, it can only be appended one by one. The award module is simple, User can view details about awards but only the president is able to decide who is the champion and gains the award. Also, only someone who attends the active can be granted [18].

Figure 2. Attend the active

3.4.3 Forum and Comment

Figure 3. Publish post

Any members can enter forum area to post or comment, they have to fill in the content and title, and then the administrator need to examine and verify that. After approval is confirmed, they can publish them. If someone who wants to comment under the post, they enable to choose to be anonymous or use a real account to express your own views. It is noteworthy that the administrators need to regularly check the violations of the forum and delete the offending posts or comments.

3.4.4 Innovation

Nowadays, most forums possess powerful data storage skills, however it is difficult to use and costly to run. People can only find the information they want just one by one, such as World of Warcraft Forum. Another major disadvantage is that the zoning is not detailed enough and confusing, which leads to that the forums look like chaotic and unordered. And because the forums are usually sorted by time, the ability of traditional forums to obtain information is poor, and members can only search page by page in chronological order. some high-quality contents are difficult to search easily because of the age. For instance, Baidu Post Bar and so on. as well another disadvantage is that most of game guild management software has to base on web page or function embedded in the game. Such as The Crossfire or the Dungeon & Fighter and so on. The president cannot immediately and effectively change the personnel. which may result in loss of excellent talents. However, with its minimal size, the WeChat applet can inherit the advantages while minimizing the inconvenience.

In order to amend the problem of management confusion, when we design this software. our forum is divided into three areas, namely the comprehensive area, the transaction area and the literature exchange area. Each area is managed by 1-2 persons in charge.

The comprehensive is again divided into discussion areas, advisory press areas, and strategies areas. The discussion area is unrestricted. Anyone can discuss anything here. The advisory press area is responsible for managing and publishing any news about guilt association by administrators and above. Regular members can also provide consultation and feedback to administrators in this area. When members encounter difficulties in the game, they can post questions in the strategies area, and the big guys can help the newbies with their own experience here.

The transaction area is divided into violation reporting, comment box and activity area. When irregular posts are published successfully due to the auditor's negligence, any member can react in the violation reporting. The owners of each area must resolve them as soon as possible. The comment box is responsible for receiving all comments on the forum. Details will be posted in the activity area when the council decides to hold any activities.

If any member likes to create paintings, music and literature, they can publish in the cultural exchange area for sharing their ideas.

The ability of traditional forums to obtain information is poor, and members can only search page by page in chronological order. For the sake of resolving query difficult. Each post can be complimented. The higher the compliment, the higher the order. If the compliment exceeds 150, it is set as a boutique post and placed directly at the top of the forum. This can boost the enthusiasm of users to post, and also facilitate members to view more high-quality contents. And each post has its own tag that described by writer. It is easy to search information which is relevant.

4. Conclusion

This system can serve three objects of the guild: the guild administrators, the guild members and the guild president. All functions of the system are membership information management, guild active management, award information management, forum management and comment management. Two clients are interconnected and integrated.

This system is convenient to use and operate, which simplifies the work of the guild administrators to a certain extent and facilitates the users and visitors. However, the present system still has numerous defects. There are a lot of functions that we don't optimize. For example, existing forums have difficult communicating in real time, That is reason why we use applets which will contribute to

make it easier and more efficient for users to contact anyone, anywhere via WeChat instead of leaving messages on their computers.

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