Design and Implementation of Maker System based on Wechat Public Platform Present

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Abstract

This paper designs and implements a maker system based on wechat public platform, which aims to provide a platform for the majority of maker enthusiasts, especially teenagers, to learn experience and exchange experiences; at the same time, it can make profits by relying on the platform in the later stage. The courses on the platform are all recorded by famous teachers. In terms of function, users can watch, share and purchase courses on the platform; at the same time, users can communicate in the user community, upload and interact with others to share their works. The platform also contains user information system, which has different degrees of viewing courses for users with different permissions.

Keywords

Computer Application Technology; Wechat Public Platform; Maker System; Community Communication Platform.

1. Introduction

The term "maker" originated from a scientific and technological work, which points out that the maker movement is an important factor to promote the application of network intelligence in the real world and set off an upsurge of national invention and creation activities, which will trigger a new round of industrial revolution. At present, the interpretation of the word "maker" is that people who have independent ideas and turn their ideas into real products are individual design and manufacturing groups who are keen on creativity, design and manufacturing. The two core concepts of this concept are "hands-on implementation" and "own ideas". With the advent of we media era and the popularity of self innovation concept, more and more people are willing to implement it and share their ideas and works with others. At the same time, these groups need to acquire knowledge and learn from others to enrich themselves while producing things. On the other hand, the era of artificial intelligence has officially arrived, and teenagers' enthusiasm for robot programming has become increasingly high. The purpose of this maker system is to establish such a system platform in the field of robot education for teenagers, so as to make some efforts to promote communication and mutual assistance among young people and learn their own experience.

2. Features of wechat public platform

2.1 Overview of wechat public platform and wechat ecology

WeChat has a huge natural flow. At the end of 2017, Tencent Inc released the 2017 WeChat data report, WeChat's number of landing users reached 902 million, the number of messages sent 38 billion, the number of videos released on the friends circle day 68 million, 3 million 500 thousand monthly official account number, and 797 million monthly active fans. These data all prove wechat's position as a traffic overlord in China's Internet market. In August 2012, WeChat launched the WeChat official

account, which became a typical representative of WeChat's "browser stage". Then, after the birth of "wechat red packets" in 2014, wechat payment officially came into people's view. With the foundation of massive traffic and massive content, and with the mass flow + payment tool attribute + user's payment habits, wechat began to link people with a large number of services. In 2017, the development of wechat has entered a "mature period", and the last piece of puzzle of wechat "OS stage" has been officially launched. We can see that wechat first has enough people, secondly has enough content, and now it has also integrated enough applications in it; wechat traffic has been integrated for the current Internet market, and pinduoduo of E-commerce Internet platform is a successful case of using the flow of wechat platform. If we can make good use of wechat platform and wechat platform, we can see that wechat has been integrated into the Internet market Xineco, also in the early stage of platform development

2.2 Advantages and disadvantages of wechat public platform for maker system

Since Tencent launched the wechat public platform in August 2012, wechat public accounts have been constantly emerging. So far, the number of wechat public accounts has reached one million, which has great social influence. Although the WeChat public platform has already passed the bonus period, the number of official account maintained by the public is still up to 3 million 500 thousand by the year 2018, up by 14% compared with the same period last year, and the monthly number of users is still 797 million, an increase of 19% over the same period last year. Compared with the 1 billion of WeChat's daily activity, the number of users who are concerned about the official account still accounts for a large proportion.

It can be seen that the recognition level of China's users is still very high for WeChat official account. The development of customer service system based on WeChat public platform first guarantees the base of users, WeChat sits on 10. Yirihuo has become an indispensable tool for Chinese Internet social networking. As the name implies, "maker" needs a large number of users to communicate and interact. Maker activities without traffic can not be called makers. Secondly, the communication channel set up by wechat for its public platform will also provide the maker system with the greatest convenience, which will be more direct and effective in communication. Then, the micro blog will provide the maker system with the greatest convenience and be more direct and effective in communication The WeChat official account, the content part, the WeChat applet application part, the WeChat payment payment part, is more convenient for the necessary steps such as content link, payment content payment, and auxiliary application development. Finally, creating a guest system on the public platform, with smaller advantages, has another advantage. It can combine the contents of official account with the function of the customer service system, combine the front edge push of the content of the educational content with the user interaction part of the customer creating teaching, reduce the user's operation steps, enhance the user's learning content, and get the efficiency of the content.

But at the same time, the overabundance of WeChat's official account also makes it possible for the content of the platform to get a slice of the massive public address, which is facing great difficulties and challenges. The application platform as a form of WeChat official account can also make users get the same experience as small programs or app. Wechat public platform, which has more than 300 million users, has become the strategic place for small and medium-sized Internet platforms. How to have its own unique communication mode and operation mode is also a difficult problem for this subject..

3. Introduction of development environment, operation environment and key technologies

3.1 Development environment

The system is developed under the Windows 7 operating system, JDK 8, Eclipse 8.5, HBuilder9.0.2 and MySQL5 for the working environment.

3.2 Operating environment

The running environment is: Tomcat 8.0, Maven warehouse

Tomcat is a servlet container developed by Apache. Because Tomcat itself contains an HTTP server, it can also be regarded as a small and lightweight web server. It can be configured by editing XML configuration file. It belongs to lightweight application server and is widely used in many occasions. It is used to develop and debug JSP The first choice of the program. It is mainly used to respond to HTML page access requests, as a bridge between front-end user action behavior and background business processing.

Maven is a software project management tool designed based on the POM project object model, which can manage the construction, report and document of the project through a short description information (configuration file) pom.xml At the same time, you can also get the package through the jar file pom.xml Manage the entire life cycle of the project, including cleanup, compilation, testing, reporting, packaging, deployment, etc

3.3 Key technologies adopted in the system

The application of this system contains many key technologies, including web development framework, server back-end framework, database and so on

3.3.1. B/S architecture (Browser /server)

B / S architecture, also known as browser / server mode, is a new network structure mode formed after the rise of web browser. This mode simplifies the client side to some extent, integrates most functions of the whole system into the server side, and obviously optimizes the process of program development, maintenance and use. In the user side, only need to use the browser to use the web functions, such as 360 browser, Google browser, etc., users can use the browser to interact with the database through the web server, and the interactive results will be displayed in the browser in the form of web pages. The server side needs to configure the corresponding dB, MySQL and other databases. The common form of B / S architecture is shown in Figure 1.
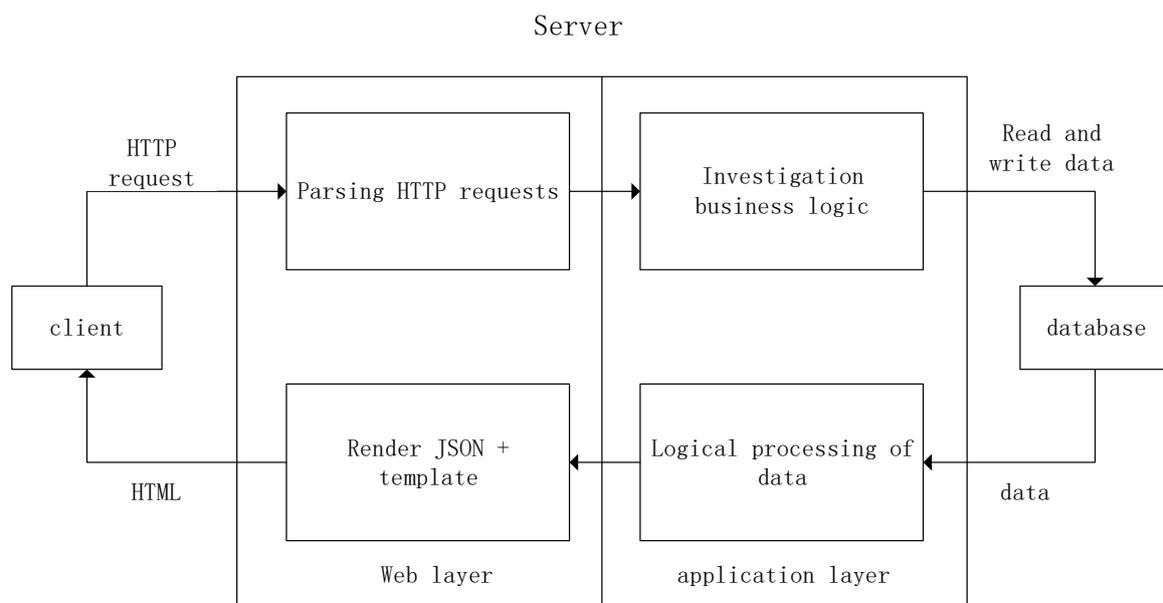
Figure 1. B/S architecture diagram

The workflow includes four steps: (1) sending a request to the client. Users submit the form operation in the client browser page, send a request to the application server to obtain or submit information, and wait for the server to respond; (2) the server processes the request. The server receives and processes the requests from the user's browser. The application server usually uses the server-side

technology to process the data and generate the response. (3) The server sends the response. The server returns the requested data (web page files, pictures, sounds, etc.) to the browser. (4) The browser interprets, executes HTML files, translates and presents the user interface

The advantages of B / s are as follows:

(1)Users don't need to install any apps, just web The browser can complete the search and view of the required content;

(2) it can be directly placed in the WAN, and can achieve the purpose of multi client access through certain authority control. At the same time, it can also carry out partial processing on the client computer, which greatly reduces the burden of the server, and has strong interactivity, so it can carry out local real-time refresh;

(3) there is no need to upgrade multiple clients, only need to upgrade ;

(4) by using the mature web browser technology, combined with the browser's various script languages and ActiveX technology, the general browser is used to realize the powerful functions that need complex special software to achieve, which saves the development cost.

3.3.2. Spring framework

Spring is a lightweight open source framework, its core is inversion of control (IOC) and aspect oriented (AOP). It is created in order to reduce the complexity of enterprise application development. It is a hierarchical architecture mode. The layered architecture allows users to use components arbitrarily, and provides an integrated framework for J2EE application development.

The spring framework has many advantages:

(1) It's lightweight in terms of size and overhead. The complete spring framework can be released in a jar file with a size of only 1MB or more. And the processing overhead required by spring is negligible. In addition, spring is non intrusive: typically, objects in a spring application do not depend on spring's specific classes.

(2) It is convenient to decouple and simplify the development. Spring promotes loose coupling through a technique called inversion of control (IOC). When IOC is applied, other objects that an object depends on will be passed in passively, instead of the object creating or finding the dependent object itself. You can think of IOC as the opposite of JNDI - it's not that an object looks for a dependency from a container, but that the container passes the dependency to it when the object is initialized without waiting for the object's request.

(3) Support declarative transactions. Spring provides rich support for aspect oriented programming, allowing cohesive development by separating application business logic from system level services such as auditing and transaction management. Application objects only implement what they should do -- complete the business logic -- that's all. They are not responsible (or even conscious) of other system level concerns, such as logging or transaction support.

(4) It is convenient for program testing. Spring provides rich support for aspect oriented programming, allowing cohesive development by separating application business logic from system level services such as auditing and transaction management. Application objects only implement what they should do -- complete the business logic -- that's all. They are not responsible (or even conscious) of other system level concerns, such as logging or transaction support.

(5) It is convenient to integrate various excellent frameworks. Spring can configure and combine simple components into complex applications. In spring, application objects are composited declaratively, typically in an XML file. Spring also provides many basic functions (transaction management, persistence framework integration, etc.), leaving the development of application logic to you.

(6) Reduce the difficulty of using Java EE API. Spring provides encapsulation for some APIs (JDBC, JavaMail, remote call, etc.) that are very difficult to use in Java EE development, which greatly reduces the application difficulty of these APIs.

All of these features of spring allow you to write cleaner, more manageable, and easier to test code. They also provide basic support for various modules in spring.

3.3.3. MVC framework

MVC is a pattern of using MVC (model view controller) to design and create web applications The design method uses a method of separating business logic, business data and operation display interface display to organize code, and gather business logic into a component. This improvement can allow programmers to improve personalized interface and user interaction without rewriting business logic. The model is the part of the whole application which is used to deal with the application data logic. Usually, the model object is responsible for accessing the data in the database, and the model represents an object or Java POJO to access the data. It can also have logic to update the controller when the data changes. View is the part of the application that deals with data display, that is, for data visualization. Usually, views are created based on model data.

Controller is the part of the application which is responsible for handling user interaction. It is responsible for reading data from the view, controlling user input, and sending data to the model. It can be summarized as two points: one is to distribute the user requests to the corresponding model; the other is to reflect the changes of the model to the view in time.

3.3.4. MySQL database

MySQL is a relational database management system, which is developed by mysqlab company in Sweden. At present, it belongs to Oracle products. MySQL is one of the most popular relational database management systems. In web application, MySQL is one of the best RDBMS (relational database management system) application software.

MySQL is a kind of relational database management system. Relational database stores data in different tables instead of putting all data in one big warehouse, which increases speed and improves flexibility.

The SQL language used by MySQL is the most commonly used standardized language for accessing databases. MySQL software adopts the dual licensing policy, which is divided into community version and commercial version. Due to its small size, fast speed, low total cost of ownership, especially the open source, MySQL is generally selected as the website database for the development of small and medium-sized websites. It is written in C or C + +, and tested with a variety of compilers to ensure the portability of source code. Support Linux, Mac OS, windows and other operating systems. API is provided for many programming languages. These programming languages include C, C + +, python, Java, PHP, etc. Support multithreading and make full use of CPU resources. The optimized SQL query algorithm can effectively improve the query speed. It can not only be used as a separate application in the client server network environment, but also can be embedded into other software as a library. Provide multi language support, common encoding such as Chinese GB 2312, BIG5, Japanese shift_ JIS can be used as data table name and data column name. Provide TCP / IP, ODBC, JDBC and other database connection ways. Provides management tools for managing, checking, and optimizing database operations. Support large databases. It can handle large databases with tens of millions of records. Support a variety of storage engines.

4. Design and implementation of maker system based on wechat public platform

4.1 Composition module of maker system

The whole maker system needs three parts to support. The first is the back-end database of maker system, which mainly stores the course content, user autobiography course and user data information; the second part is the management system of maker system, which is used to add, delete, modify and check the front-end of maker system; the third part is the front-end part of maker system, which is used to meet the user interaction and maker content Release, etc.

Using Android SDK to develop applications requires testing. Android provides developers with a virtual device AVD (Android virtual device), or simulator, that can directly test applications on computers. AVD can be used to test the application conveniently

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4.1.1. Back end database of maker system

The system has built an independent background database system. On the server, the database has 128 tables and more than 30 functions, which are mainly divided into two categories: user part function and course part function.

(1) Login and registration of some functions of users: after entering the platform, users can choose to log in to the platform through mobile phone number, password or verification code. If you use it for the first time, you need to register before watching the video course. You can register with your mobile phone number or wechat account. At the same time, it also provides the function of password recovery. The retrieval method is to send the verification code to the mobile phone, and use the verification code to modify the latest password. The platform's entrance mode can be entrance to WeChat official account platform, and also can be entered through web browser.

Personal Center: users can view and manage personal information in the platform's personal center, view or modify personal basic information, such as user's nickname and user's gender; and can view personal course information such as my order, my points, my viewing records, my collection, etc.

Community communication: users can watch other people's works on the platform, like others' works or collect others' works, and upload their own recorded works. This includes the upload function. The system calls up the photo album function of the mobile phone, selects the video file in the mobile phone, selects the picture in the mobile phone as the cover image of the work to upload as the material; the function of editing and uploading the content, and the function of deleting and modifying the work. To view and evaluate works, users can browse and view all the approved works in the community. In the list, you can browse the name of the work, the author of the work and the score of the work. In the work details page, you can view more detailed information, including the brief introduction of the work, the works of the co authors and user comments.

The function summary of the user part is shown in the following figure:
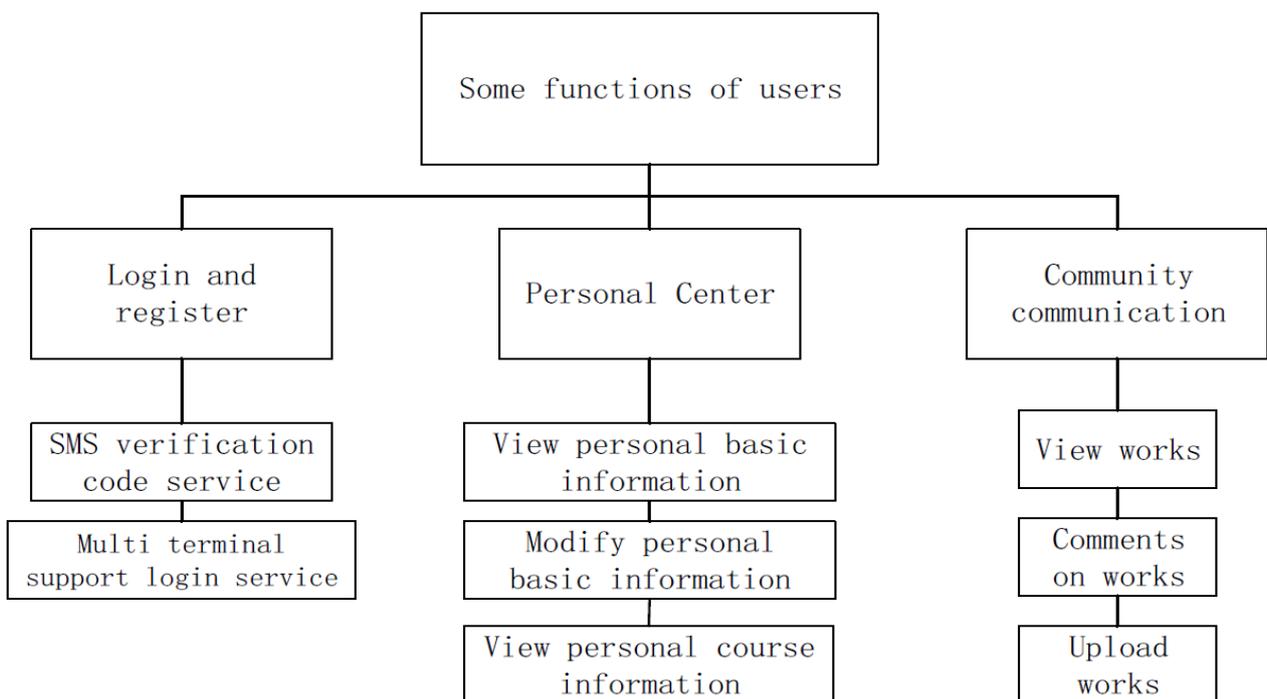
Figure 2. Userpartfunction

(2) Some functions of the course

Course search: the platform provides the search function for courses, and users can input search information in the input column after the home page of the platform. The search scope is all courses. The search method supports searching by course name or course author, and keyword search. The search results are sorted by keyword matching degree by default for users to choose.

Course information view: in the course module, courses are displayed in the form of classified list. The display information includes course name, course category, course price, course release time, and course charge type. The course information is changed synchronously in the background operation. After entering the specific details page of the course, you can have a short course trial, and users can learn the course for free for a period of time; on the information materials, you can view the number of participants, course introduction, other courses of the same author and detailed evaluation of the course by other users. At the same time, it is convenient to forward or collect courses. The forwarding will jump to the forwarding interface of wechat platform, and the collected courses will enter the user's personal Center - my collection.

Course viewing: after users log in, users can operate the course watching and learning. The platform embeds a web video player in the course details page, which can directly learn the course online. At the same time, some courses support conversion to audio mode learning. If the course is free, the user can learn directly after logging in; if the course is charged, the user needs to pay for the specified course to learn. During the course of playing the course video, users can pause and fast forward.
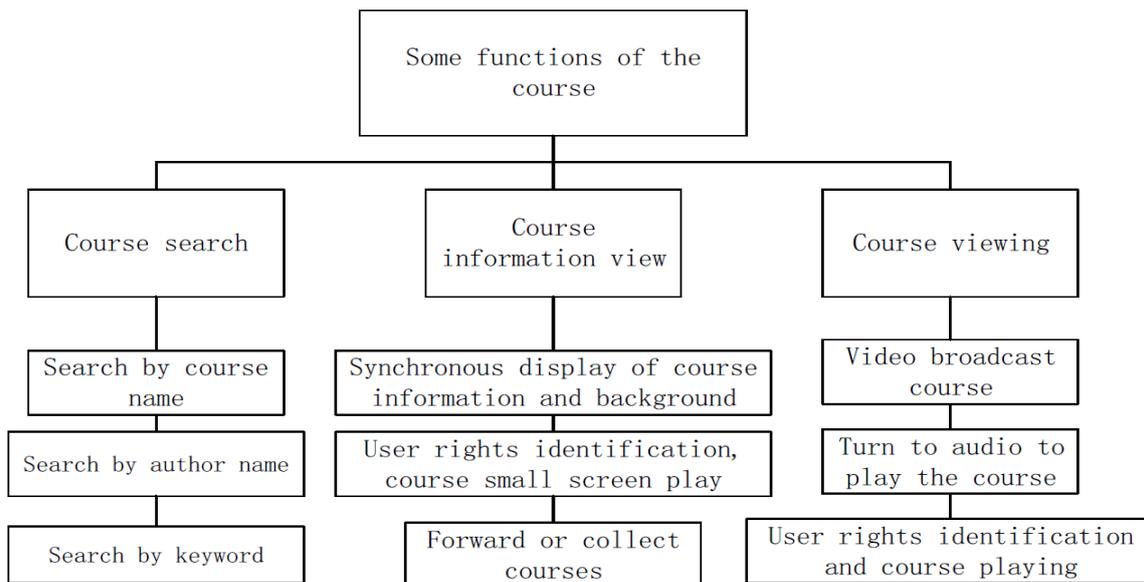
Figure 3. Coursepartfunction

4.1.2. Maker system management system

The management system is a necessary part of the daily maintenance and stable operation of a platform to ensure the smooth use of users. The management system of the maker system can be divided into three parts, as follows:

User management: including the statistical management of new registered users, paid user management, user rights management, user information, user course information management, etc. Make statistics on user data.

Course management: the courses here mainly refer to the original courses of the platform, including the addition, deletion, classification, permission editing, course display content editing, course time editing, course plate editing, etc. At the same time, statistics will be carried out on the broadcast volume of the course, the retention rate of the course, and the popularity of the course.

Community management: review the self created content uploaded by users in the community, layout the shared content in all communities, and count the broadcast volume of excellent community content. The functions include viewing, auditing and deleting the information shared by users. At the same time, the comment content of each shared video can be viewed and deleted.

4.1.3. Front end function of maker system

The front-end of the system is mainly written in HTML5. The purpose is to enable the platform to be started not only through wechat engine, but also through other browsers flexibly. The front end uses the general jump style, page style and so on. The front-end function corresponding to the back-end function can also be divided into otw parts.

User part: responsible for processing; receiving the processing results of the background displayed in the front end; obtaining th obtaining the user's login registration information and returning it to the background for functional e user's operation action for the personal center and community, docking and synchronization with the background database to complete the user's operation.

Course part: get the user's search keywords and analyze the matching, and feed back the searched content to the user; when playing the course, get the user's click and play action, judge the user's permission through the background, and return the playback content presentation for different permission playing modes

4.2 Advantages of development based on wechat platform

4.2.1. Convenient communication

This system is presented as the application in WeChat official account. As the design side of the system, it hopes that the platform can be promoted quickly in the initial stage, has a relatively good user accumulation at the beginning, and has natural advantages in the dissemination of users or the dissemination of courses. Through the WeChat relational network, it can quickly achieve the purpose of spreading the platform dissemination course, and users. By sharing the buttons inside the system or the share location that comes with the WeChat official account, you can easily share the content course. As a user, communicate and exchange the experience of watching the course on the maker platform.

4.2.2. Excellent user experience

At the same time, as a maker user, they hope to share their experience of watching the course with those who are interested in it. The strong social nature of wechat makes it very convenient and cheap to share the experience of the course. The sound of other wechat service systems, such as the popularity of small programs, makes the derivative content of maker platform (such as the sale of maker teaching aids in the wechat store) more convenient to run; the maturity of the payment system makes it easier to pay for courses. For users, the process is very convenient.

4.2.3. Content management layout of wechat platform

WeChat has a huge amount of content. In the face of so many redundant content, official account of WeChat public platform has set up WeChat public account rating. Now it has joined the recommendation function of friends, and the public number has been stripped from the whole WeChat ecosystem,These designs can make the wechat platform of maker system more effectively exposed to suitable people and survive in the whole wechat ecosystem.

overall design of maker system

This system combines the common design mode of the current Internet platform, combined with its own platform characteristics, makes a set of interactive design of maker content platform. The essence of interaction is to better let users get the value and information that the platform wants to convey. The purpose of this platform is to let users get the required content and learn the content in the shortest time. Therefore, interaction logic will be designed for the purpose of simplicity and directness. The functional architecture of the platform is designed as four content modules, namely "home page", "course", "sharing" and "personal center".

4.3 Overall design of maker system

4.3.1. Design of curriculum structure

The courses in the system are mainly divided into two categories, namely maker concept courses and professional maker courses.

The maker concept courses are mainly recorded by famous teachers, aiming to correctly guide parents and children into the door of maker world. The course can support video and audio dual form playback, because it does not involve professional teaching aids recording, so the audio is enough to meet listening, and the form of audio is actually more in line with the current user's habit of content acquisition.

There are a large number of professional courses, which can be divided into four categories: "growing wisdom", "ability storm", "machine age" and "others". Professional courses are mainly recorded by professional maker teachers. The course itself is highly professional and targeted. With professional teaching equipment on-site demonstration, the purpose is to enable users to learn the teacher's maker skills first and then create their own works according to the first step of the course.

The simplified layout of the courses is done on the front page. According to the major categories, there will be four major categories of curriculum emissions when the front page falls down. Each category of emissions is more representative than the previous 2-4 courses. On the course page, the courses of each category are arranged in turn, and the courses are displayed in the form of a list.

4.3.2. User operation design

After users log in to the system, the first step will be to see the banner display on the home page, showing the publicity of some courses and related maker competition information; the next part is five main operation modules, which are the entrance of platform promotion and live broadcast courses; the following is the course classification

At the same time, users can also intuitively discover community functions. In the community, all users create their own maker works to display. They can intuitively evaluate these courses and click the Publish button to publish their own works.

Finally, in the personal center, the first part is the avatar, and you can edit your personal information by clicking on your own avatar; the second part is "classmates", "orders" and "points", which provide convenience for users to find people they know. Orders are records of users' purchase of courses, and the points system corresponds to the charging system of the whole course, encouraging users to log on more platforms to obtain points. The third part is the user's personal works, personal viewing records and the way to earn points.

5. Conclusion

This paper presents a design scheme and implementation method of maker system based on wechat platform. Our purpose is to enable users who love makers and want to learn makers to have such a convenient platform to realize mutual communication and learning and achieve the goal of common progress. Our platform will go through a process from the initial stage to the stable operation. At the initial stage, we take the platform to be able to go online quickly and meet the most basic user needs as the first goal. There must be a lot of deficiencies in the way of implementation, the consideration of user experience, and the quality of course content. But I believe that with the operation of the platform, the maker system will become better and better, and more and more recognized by the market.

Acknowledgements

making and early warning of ecological animal husbandry development based on multimodal collaborative learning.

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