The design and implementation of the University ordering system based on WeChat platform

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Abstract—Because the phenomenon about unreasonable arrangement of college students' class hour is relatively common, the system designed a public colleges and universities ordering system based on WeChat. This system took use of convenience and openness of WeChat, which can tremendously simplify the development and promotion. At the same time, online ordering for the students provided a convenient way of eating, and it was conducive to enhance learning efficiency of students. This system mainly completed the users' ordering function. The users can observe the dynamic change in their orders. The sellers can have a real-time observation of the buyers' orders and deal with them in time. And at the same time, sellers can modify their own restaurants information including dishes' information. And the administrator can manage the sellers, including the crud of sellers.

Keywords- ordering food online; E-commerce; WeChat; J2EE.

I. INTRODUCTION

Online ordering form, which is different from the traditional food and beverage industry, not only saves the publicity cost of store, but also saves the users' waiting time and provides a better user experience. The online ordering system is a system which automatically generates records. It can greatly reduce the error rate, strengthen the management of the store and improve the efficiency of the shop. So the online ordering of meals is useful both for the users and for the business.

WeChat which is created by Tencent in early 2011 launched a mobile phone chat software. It can send text messages, pictures, voice messages and videos, supporting for more than one group of people through the network [1]. In mid-May 2015, Tencent's performance report showed that monthly active users in Wechat reached 549 million. WeChat's huge user base can greatly facilitate the promotion of ordering system. Ordering system, which based on Wechat platform, compared to traditional APP, can simplify the use of user by avoiding downloading APP. On the one hand, users may find cumbersome to operate. On the other hand, some of the users' mobile phones have memory limit, so these users may be unwilling to download APP. If ordering system is mounted in Wechat platform, users just need to add a simple Wechat Subscription, which also simplifies the user's operations. While at Tencent's performance report for 2015, the number of users' age division diagram clarified that the users aged 18-25 accounted for 45.40% among the Wechat users, which is the largest part of all ages. Therefore, the ordering system is designed for college students. With the spread of the mobile devices, China has entered the era of information on the Internet. There is a huge change in lifestyle and the rhythm of work becomes rapid with the accelerate of spread of information. The Mail developing into a telephone, traditional phone transforming into Internet video phone, all these had only limited real-life behavior gradually shift to the network level. The traditional store shopping is also developing to the network level. There was "Online shopping", and this new consumption pattern quickly captured the hearts and minds of many groups. Of course, the pillars in the service industry--catering industry is inevitably developing in a network level.

The trend that catering industry grows up with the Internet becomes more and more obvious, which can reform the whole catering industry effectively. It can help the whole industry become more efficient, more comprehensive and more automatic, which can tremendously simplify and change people's life. People can finish ordering delicious food for themselves or family without going outside by ordering online. Although the catering industry has been moving in the direction of digital and automated development, in general, the entire network catering industry has a lot of room for growth.

Catering System is managed by manual operation at the beginning in domestic, but this way has so many disadvantages, such as high error rate, low efficiency, poor user experience and bad reliability. In recent years, due to the rapid development of awareness of online shopping and the rise of network media, telephone ordering become popular. Telephone ordering indeed facilitates a part of people's life, they no longer need to go inside the shop waiting for ordering and dining, but telephone ordering still remains some problems, such as efficiency is not high and the line may appear busy. There is also the problem of poor reliability. There is one possibility to omit some customers' order when there are a lot of orders. And in recent years, due to the

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promotion of online shopping applications, online ordering system gradually showed up.

Online ordering system solves the problem of reliability compared to the telephone ordering. The user can query their orders through the Internet, see whether stores accept orders through the inquiry of their order status. If the orders have been accepted, then their order is not missing. If the store did not have time to pick this order, users can call the store to confirm their order. This way greatly improves the efficiency. The system will automatically generate orders record if there comes a new order, and then the system will notify the sellers. The corresponding seller simply chooses to confirm this one or cancel the order. In the order, sellers can view the user's personal information and other information. In this way can save sellers' time by avoiding recording users' personal information manually, as a result, the efficiency improves. But in general, the application of online meal ordering is still in a formative period. There are some problems remains to be solved.

I) In terms of logistics, the user's waiting time has a certain randomness, which will affect the reliability of the system.

II) From the perspective of authenticity, the descriptions of the dishes are not necessarily detailed and true, which can't guarantee the user's satisfaction.

III) From the point of view of promotion, the promotion of the site needs to spend a certain amount of human and material resources. As for online ordering app application, users may be subject to phone memory limit, resulting in the failure of the part of the promotion. In recent years, rapid rising of Wechat, Wechat public subscription is also regarded to be promising, and ordering system has gradually entered Wechat domain.

At present, mature app ordering systems are "ARE YOU HUNGRY, I COME TO" , and so on. This kind of systems are mainly carrying on the Android platform, users need to download corresponding app separately. But this system is equipped with Wechat platform. It doesn't need to download separately. At the same time, relatively speaking, there are some WeChat based ordering systems, but mature, better promotion production is still relatively few.

II. OVERALL SYSTEM DESIGN

A. System requirement analysis

I) Functional Requirement

This system mainly involves three roles: the buyers, the managers, the sellers.

Buyers mainly involve personal registration, information management and reservation function. Buyers need to register first. After successful registration users have their own account and password, then they can login the system, manage personal information and order. Personal information management is mainly for the modification of the personal password and other information. Individual ordering can look through sellers and dishes and generate orders. After the success of the ordering, the buyer can choose to cancel the order according to the actual needs. And if one transaction completed, the buyer can choose to confirm the order, marking the order has been completed. After confirmation of the order, the buyer can submit the evaluation about this order.

Sellers mainly involve information management, food management and order management functions. Seller's information management mainly refers to the seller's shop information, including address, contacting phone, etc., of course, also including the seller's personal password modification. And the dishes management function means that the seller can manage the food in their own shop. The sellers can choose to add dishes or remove the dishes, of course, or change the description information of dishes which is mainly related to dishes' pictures' changing. Order management function means the seller can manage the orders belonging to this shop. The seller can view the shop order in details in real-time and confirm these orders and see the evaluations. At the same time, the seller should be convenient to view the progress of the order which is helpful for the management of the orders.

Managers' function are seller management and personal information management. Manager information management is in line with the buyers and the sellers. The difference between manager and sellers is that manager can manage the sellers, but should not directly manage the seller's dishes.

II) Nonfunctional requirements

Nonfunctional requirement refers to the situation or characteristics of the system in some conditions, rather than the functional requirement of some specific behavior of the system. The main contents include security, reliability, interoperability, robustness, ease of use, maintainability, portability, reusability, scalability [2]. It is mainly aimed at the requirements of the system performance. In this system, it is mainly to meet the requirements of the performance:

a) Easy to use: Interface should be friendly, easy to operate. Interface is designed to facilitate the user to use, enhance the user experience. The interface should be as simple and clear as possible, so that users operate the system easily. And the color of the interface should not use brighter color, otherwise the user's eye is easy to fatigue and feel tired. This system uses EasyUI framework to build the interface. Clear layout and blue colors is adopted, so the interface is very friendly and the system is convenient to operate.

b) Real-time: The ability to response to a specific event within the agreed time. The real-time requirements of the system mainly reflected in system should prompt a new buyers' order in one minutes at the seller management interface, including the cancelled orders. This will not lead to the progress of orders' delay. And for the user, the waiting time is also in the acceptable range.

c) Reliability: generally used to describe the percentage of the system's correctness. The system should meet the system can operate accurately, reliably, efficiently and steadily.

d) Portability: the system should be applied to different platforms. The system should have good compatibility. In face to college students, the mobile phone terminal platform used

by college students is varied. Only with portability can meet a variety of users.

B. Functional Design

The overall functional design of the system is drawn out from the overall flow chart of the system, and the overall flow chart of the system is shown in Figure 1.1.

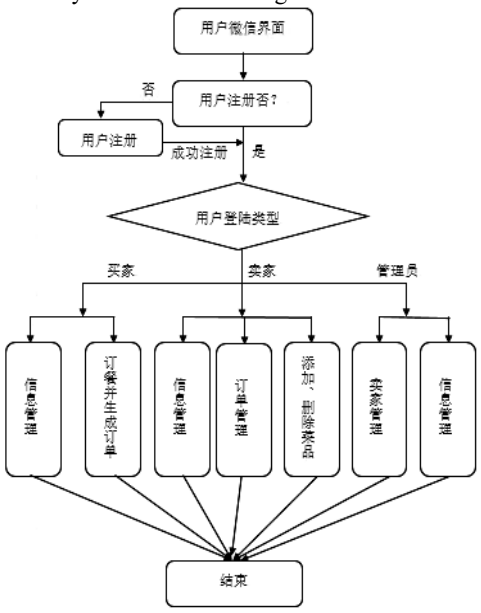

Fig.1 System overall flow chart

From Figure 1.1, we can see that the system function module is mainly divided into information management, order management, food management and the seller management.

I) Information Management. Information Management Module mainly refers to the modification of personal information. And after finishing modifying, newly personal information can write into database.

II) Order Management. Order Management Module refers to the create of buyers' orders and the watch and deal of sellers' orders.

III) Food management. Food management module is the sellers modify their own restaurant's dishes, including add and delete and other operations. And this module also provides access to database with read and write permissions.

IV) Seller management. The seller management module is only for the administrator, only an administrator can manage sellers.

C. Database design

System database uses MySQL. MySQL is a relational database management system. MySQL is the most popular relational database management system, which is one of the best application software in WEB application [3]. Just because it is the relational data model, the system's E-R diagram is shown in Figure 1.2.

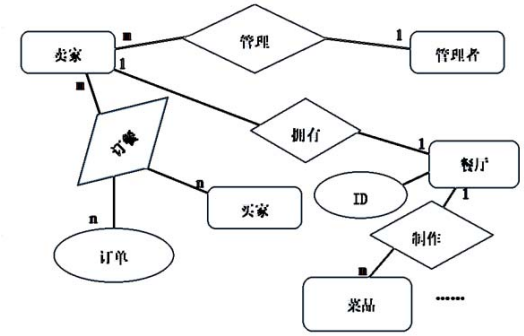

Fig.2 System E-R Figure

Transforming the E-R diagram into a relational schema, the schema table can be got. Relational schema table is shown in table 1.1.

TABLE 1 SYSTEM RELATIONAL SCHEMA TABLE

User(UserId, UserPhone, UserAddress, UserPsw);

Seller(SellerId, SellerName, SellerRest, SellerPsw);

Admin(AdminId, AdminPsw);

Restaurant(RestId, RestName, RestTotalSellNum, RestAveWaitTime, RestDiscription, RestStartPrice, RestPhone);

Food(FoodId, FoodOfRest, FoodName, FoodPrice, FoodTotalSellNum, FoodDiscription);

OrderFood(OrderId, OrderFoodId, OrderNum);

OrderList(OrderId, FoodTotalPrice, OrderStartTime, OrderEndTime, OrderState, OrderUser, OrderUserAddress, OrderPhome, OrderOtherReq, OrderRest, OrderFinishTotalTime, OrderComment);

III. SYSTEM IMPLEMENTATION

The whole system is developed based on MVC model. In view of the MVC model, we can see that the main advantages of it lies in the separation of business logic and view display. One obvious advantage of the MVC model is that it is able to separate the view presentation and business logic very clearly. So developers can focus more on the development of the corresponding module. In addition, the separation of MVC also greatly reduces the complexity of large-scale application design. Developers do not have to worry too much about the coupling between modules. The codes' hierarchy is clear, so it is easier to maintain, test, and more reusable. So when the system is realized, we don't need to consider the relationship between the system logic and the view display and we can think directly. The only thing need to consider is that how to deal with the link among three independent controlling modules. Because the entire system is based on WeChat public platform, so mostly users we face to is the mobile phone users. And sellers mainly use this system to real-time control orders by using the computer. So in the seller side, the users are mainly computer users [4]. So the system uses JSP add HTML to achieve the balance between mobile phone and computer users [5]. The system uses JSP language to realize the writing and implementation of the computer interface, and

using HTML [6] language to achieve the realization of the mobile phone interface [7].

I) Realization of buyers' function

Buyers can mainly complete the function of registration, login and ordering. The ordering function is the key to realize the function of buyer. In the ordering function is related to some small function such as browsing stores, food, adding or deleting shopping cart, confirming information and viewing order status. [8] The main function of the order's flow chart is shown in figure 2.1.

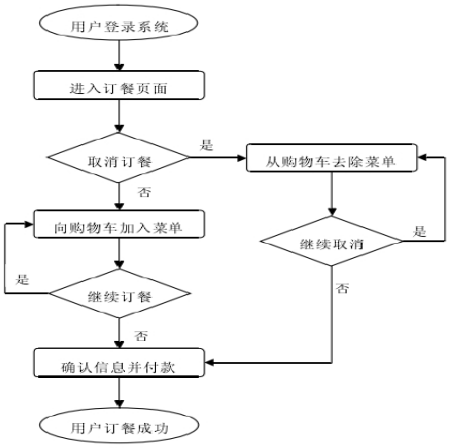

Fig.3 Buyers' ordering flow chart

The effect diagram about the realization of ordering function [9] is shown in Figure 2.2.

Fig.4 The effect diagram of ordering function

II) Realization of buyers' function

The seller can manage the seller's recipes in their restaurant. They can choose to add, modify and delete the shop's dishes. At the same time in the menu management they can have a preview of the menu information. The effect diagram is shown in Figure 2.3 and 2.4.

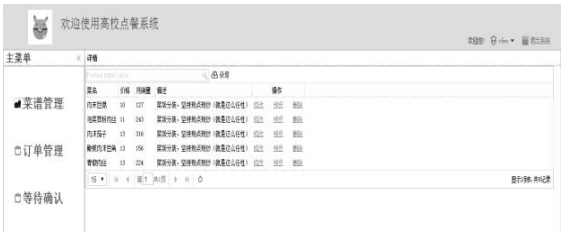

Fig.5 The management of menu

Fig.6 Management of orders

III) Realization of managers' function

Because the seller is managed by the manager, so the sellers cannot register by themselves in the system. They must be audited by the manager [10-12]. After the manager enter the system to apply for the seller, the seller is able to operate. Managers can not only add or remove the seller, but also can view the details of the seller. As shown in figure 2.5 is the effect diagram of realization of the managers' function.

Fig.7 Management of sellers

IV. CONCLUSION

In this paper, we designed a online ordering system based on Wechat public platform. In this system, we apply MVC mode to the system development. It not only effectively solves too cumbersome links among module in actual development process, but also there're some mature framework in the market available for developers to choose. To a great extent, it can effectively save system development's time and reduce complexity.

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