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Implementing a Delivery Software Platform to Enhance Direct Farmer-to-Consumer Sales

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Abstract: With the increasing prevalence of online shopping, this study explores the design and impact of a specialized Vegetable Shopping App, aimed at facilitating direct sales between farmers and consumers. Leveraging the convenience of digital platforms, this app allows farmers to list their fresh produce while enabling buyers to purchase and pick up goods from local supermarkets or designated points. The app's unique feature of displaying real-time growth and freshness information enhances transparency and consumer trust. Particularly beneficial during the COVID-19 pandemic, this app supports collective distribution, minimizing the need for physical shopping trips and reducing logistics personnel contact. The proposed app not only aids farmers in reaching consumers directly, ensuring better profits and reducing wastage of agricultural products, but also provides consumers with quick and easy access to fresh produce, thereby improving overall quality of life. The effectiveness of this model in enhancing direct agricultural sales and consumer convenience highlights its potential for broader application.

Keywords: Uniapp, multi-platform, vegetable trade, online shopping.

1. Introduction

1.1. Status analysis of Internet shopping and platform

Internet shopping has become more and more common, not only urban online shopping, rural online shopping can also be said to be a very common thing. According to the "China Internet Hot Spot Survey Report" published by CNNIC, 17.9% of Wang Min in China have had online shopping experience in half a year; among the netizens who have visited shopping websites, 29.6% have had online shopping experience in half a year; Among the interviewees who have had online shopping experience, more than 90% will continue to do online shopping in the future; 63.7% of Internet users who have no shopping experience said that they will continue to try online shopping in the future [1]. Online shopping involves a wide range of aspects, eating, wearing, housing, transportation and other aspects, it can be said that only unexpected can not find, for our life, work, study can be said to be very convenient. In addition to such formal shopping platforms, there are informal wechat groups, such as community shopping wechat groups, supermarket wechat groups, etc[2]. In short, no matter what form of shopping platform, their biggest feature is convenient for users, especially in terms of time, greatly reducing the time for users to go out to buy, saving worry andeffort. It is based on the opportunities brought by the rapid development of the Internet that more and more fields have begun to enter the shopping platform.

1.2. The design concept of APP

Vegetables APP is an APP for buying and selling fresh vegetables. The users of the APP are divided into farmers and buyers. Farmers can publish the details of their vegetables through this APP. Buyers can go to the supermarket to pick up the goods. This order is closed. The biggest highlight of this APP is that buyers can see the growth or freshness of dishes[3]. If possible, users can contact vegetable farmers to visit planting sites, eat vegetables that make themselves and their families feel at ease, and ensure the taste of vegetables.

2. System Design

2.1. APP design concept

Vegetables APP As a mobile application, the front-end page is the first experience of the project that the user sees. When designing the front-end page, you must pay attention to the user's experience.

First of all, for some controls, such as buttons, I hope to give users a better interaction, so that the user experience increases. For example, when the user wants to quit, click the logout login button, interact with the user, and pop up the Toast prompt box. If you accidentally press the exit button, you can also re-select according to the prompt message to increase the user's sense of experience, participation, and interaction.

Secondly, for the functions designed to the front and back end of data interaction, such as the display of food details page, which need to obtain data from the database or the release of food and other information from the front end to the database, the user is prompted to load or upload information. If it is in the process of filling in theinformation, resulting in the upload failure, after the prompt, the original information will not disappear, let the user fill in again from the beginning. Increase the interaction between users and the APP from some small details, so that users can geta better sense of experience when using the APP, and then increase the users of this Vegetables APP.

Then, for some jump functions, such as page routing jump,

return, etc., especially in the return as far as possible to meet the user's behavior habits. Go back to level 1 instead of going directly to the home page.

Finally, set the wheel cast to play automatically. The choice method is to set up the rotation content according to the product feedback and the new situation on the product, to present the hottest and latest products to consumers more directly, quickly and conveniently, to save time and experience for consumers as much as possible, and to buy satisfactory vegetables.

In addition to the design of the above functional details, this project uses the uniapp framework to build the front-end page, and the uniapp framework is particularly convenient because it can be published across platforms. The APP compiled by this project can also be published to the web (responsive) and various small programs and fast application platforms. Deliver projects quickly without the need to change your development mindset.

2.2. APP Function Overview

Login and registration are all forms. Because the users of this Vegetables APP are divided into two types, one is the vegetable farmer, who releases dishes and belongs to the supplier. The other is the family, which buys vegetables by browsing dishes and belongs to consumers. Therefore, when designing the registration page, register accounts according to different roles.

When registering and logging in, you can choose to use your mobile phone number or email address as an account to register and log in. You can use the password or the verification code obtained from the system to log in. The profile picture and nickname are the default ones when registering. After login, you can modify them on the personal page.

Fig. 1 Sign in to register ideas

The function of publishing dishes is designed for vegetable suppliers. Vegetable farmers can enter the publication page by clicking the button, and publish vegetable information by editing the type, location and price of their own vegetables. In addition, you can also choose to upload vegetable photos, so that consumers can more intuitively understand the details of vegetables, so that products are more intuitive and vivid, and enhance their competitiveness in a lot of information.

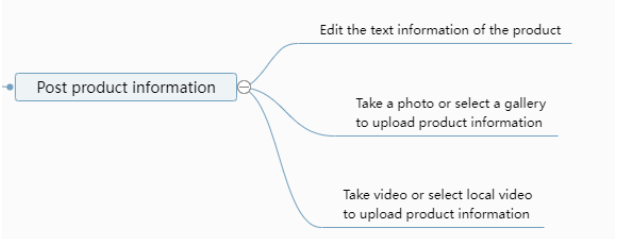

Fig. 2 Publish the menu idea

When consumers browse through the vegetable information, they can add the vegetables that they feel good to the cart and continue to browse other vegetables. When you feel good vegetables are added to the shopping cart, you can go to the shopping cart to view the type, quantity, price and other information of added vegetables, if you decide to buy, you can set the delivery address, select the nearby supermarket, name, phone and other information, and place an order directly. Of course, if you feel that it is not appropriate, you can only select the information you want to buy and set the order.

Users can also view their orders, the front-end of the APP to the background to send the request order data, the background will be classified in each state of the order, to the front-end for page rendering. This way, users can check their order status. Including pending payment, pending shipment and completed status.

Fig. 3 Order shopping idea

Setting the comment function is to ensure that consumers have the right to speak. The quality of a product does not depend on the introduction of farmers and suppliers, but should be evaluated by consumers after their own experience. For vegetable products, seeing can not be real, consumers after the purchase of vegetables, from the product shape, freshness, size, color, taste and other aspects of the evaluation, evaluation is visible to all people. The purpose of evaluation is not only the user's shopping experience, but also the valuable advice to the vegetable farmers. Vegetable farmers can understand their products through consumer evaluation, and make adjustments according to consumer opinions, so as to better expand sales channels, retain more old customers or attract new customers, and increase their own income.

Evaluation can be divided into two situations. One is that consumers give evaluation, whether it is good praise or evaluation of the shopping does not conform to the map or other unsatisfactory text information. The other is that the consumer does not give any text information, then the Vegetables APP will default to high praise, and no information display.

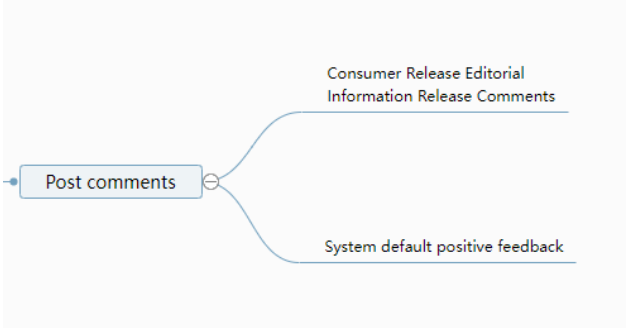

Fig. 4 Publish comment ideas

2.3. Backend design concept

Backend is used to manage data, an APP involving a large number of users will have a huge amount of data, so manage the background data, ensure that the data does not cause

problems, will not cause adverse effects on the user's personal information, property, etc.

The backend page design is mainly white, simple and generous, and does not give people a dazzling feeling. It is mainly divided into user management, order management, evaluation management and other management modules.

2.4. Backend Management Overview

Backend management is the most important and indispensable module is user management, an APP if there is no user, then the development of this APP is meaningless[4]. If you have users without management, it will be particularly chaotic and disorderly. Just like traffic, if there are no traffic rules, the vehicles on the street all look at the mood of the driver, and the driver decides when to go and how to go, then our traffic will be clogged and we can't travel normally. But with the traffic rules, we have order, we judge when to go and how to go according to the traffic rules to ensure that the road is smooth. User management is like the rules of the road.

In the process of user management, we add a save for newly registered new users. For older users who have already registered, remind the user to log in. For the user who cancels the account, the backend should delete the user information and update the database information.

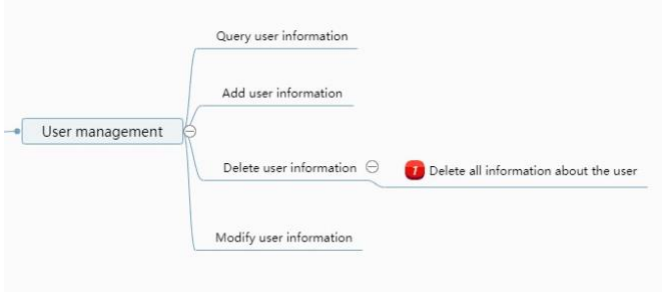

Fig. 5 User management concept diagram

The backgend needs to manage the information released by the vegetable farmers. After receiving the vegetable farmers and vegetables information from the front end, the background will display the vegetable farmers' information according to the user id and write it into the database. If the user wants to delete the vegetable information, the background will delete the vegetable information. If the user logs out of the account, the background will delete all the information about the user.

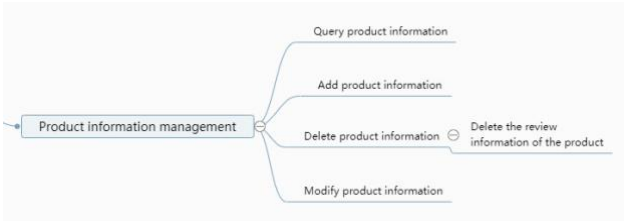

Fig. 6 User release information management concept

Order management is the management of user orders. The background management of the order includes saving the user's order, including various states of the order, delete the user order and so on.

The APP classifies the unpaid order as pending payment through the user's payment on the front end; Classify paid orders as pending; Change received orders to completed status. When the user views the order situation on the front end, the background will classify and render the status of all orders, so that the user can understand his order situation[5].

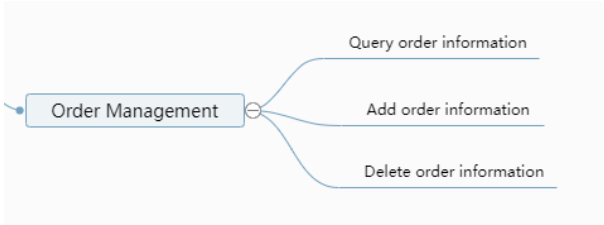

Fig. 7 Order management concept diagram

Evaluation is the embodiment of consumers' satisfaction with buying vegetables, and we also need to manage evaluation. After the user publishes a comment on the front end, the APP will send the comment content and user id to the background, and the background will write the information to the database and display it in the background. If a user wants to delete a comment, the background will delete it. If the user cancels the account, all comments on the account will be deleted. For users who have not made comments for a long time, the system will default to a good review.

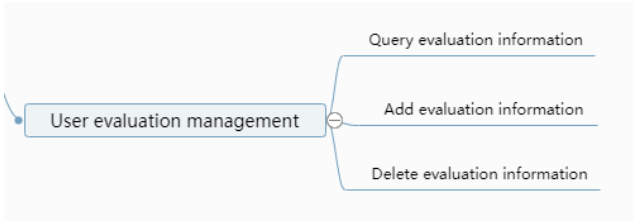

Fig. 8 Evaluate the management concept

3. Database Construction

3.1. Database table construction concept

If there is no data, all pages will be static, and if the pages are just static, then the developed system and software will not be liked by users, and without users, all development work is meaningless. So database is the flowing component of the whole development[6].

The database is built using mysql. mysql, as a relational database management system, can put different classes of data into different data tables and connect them by primary keys and foreign keys in a clear and organized way. It is convenient and easy to operate when performing operations such as query, add and delete.

3.2. Database connection

User table includes user id, user nickname, user cell phone number, user email, user login password information. Among them, user_id is the user id, which is the primary key of the user table, unique and cannot be null.

Table 1 User-related information

Field Name	Data Type	Not Null
user_id	char	√
username	varchar	
email	char	
address	varchar	
identity	char	√
password	varchar	√

The vegetable information table includes the user id of the posted information, vegetable information id, vegetable information content, etc. Where user id is a foreign key and vegetable information id is a primary key, which is self-incrementing.

Table 2 Product-related information

Field Name	Data Type	Not Null
goods_id	char	√
gprice	float	
user_id	char	√
gcontent	varchar	

The order table includes order id, user id, vegetable information id, order time, and completion status fields. Where user id is a foreign key and order id is a primary key that is self-incrementing.

Table 3 Order-related information

Field Name	Data Type	Not Null
goods_id	char	√
gstatus	varchar	
user_id	char	√
glisttime	datetime	

The evaluation table includes user id, evaluation id, vegetable information id, evaluation content, evaluation time, and rating fields. Where user id is a foreign key and rating id is a primary key that is self-incrementing.

Table 4 Comments-related information

Field Name	Data Type	Not Null
goods_id	char	√
ccontent	varchar	
user_id	char	√
ctime	datetime	

4. System Implementation

4.1. Navigation bar

APP navigation bar is built using uniapp, which mainly includes home page, publish and personal page[7]. In the bottom navigation bar, the module icon is on the top and the module content is shown on the bottom. If a module is selected, both its icon and font color will change from gray to dark pink, and the top route name will follow the change.

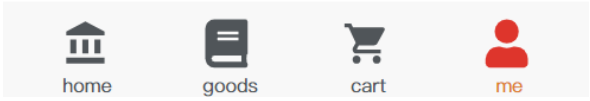

Fig. 10 Navigation bar

4.2. Publish product information

Vegetable farmers will upload their vegetable information such as vegetable types and freshness to the APP, and users will choose to add the vegetables according to the information released by the farmers. When releasing information, vegetable farmers need to fill in their vegetable prices and other information, in addition to uploading vegetable picture information, so that users have an intuitive understanding[8].

The technical implementation is mainly:

Image: A call to uni.chooseImage() is made, and the user can choose to select a photo from a local album or use a camera to take a photo and upload it. It is worth saying that the use of sizeType property can compress the image, the image compression can make the user compress the loading time when browsing and enhance the user experience to a greater extent; and then uni.previewImage() to achieve the image preview function, according to the path information returned after the successful call to uni.choseiao() call to preview the image.

Video: the call to uni.chooseVideo(), the user can choose to shoot video or select video from the phone album, and the selected video source file can be compressed to shorten the loading time, and the file path of the video is returned after a successful call.

4.3. Post comments

Users rate the shopping experience, and the effect is mainly achieved by the rich text editor box provided by uniapp. editor rich text editor can edit and mix the images and text formats of the items uploaded by users. The user is given hints through the placeholder property, which facilitates the user to complete the user rating function. Get the editor content through editorContext.getContents(), and pass the content to the backend to write to the database to achieve front-end and back-end interaction.

Fig. 11 Editorial comments

4.4. Automatic positioning

APP needs to locate the user's geographic location and recommend vegetable products nearby or shopping options for nearby users based on the location to provide reference for users. If users feel that the collection time or other reasons make the collection inconvenient, they can specify the nearest supermarket to help collect on their behalf.

Technical implementation is mainly to call uni.getLocation interface of uniapp framework, this interface can set the geocode property value to true to parse the address information. After a successful call can be the latitude of the current location, accuracy, address information address and other parameters, where address property can give the country, province, city, district (county), street and other information. So the address attribute can be filtered to see the shopping choices of nearby users, which can be more convenient for users to provide reference information for shopping.

Fig. 12 Automatic positioning

4.5. Interactive Feedback

showToast() is called when registering an account, logging out, etc. The title property is used to display the content that needs to be prompted, and the duration property indicates the delay time of the prompt.

Show loading alert box: When the front-end needs to apply data to the background, set the loading alert box to improve the user's experience. Call uni.showLoading() to achieve this. The title property is used to set the text content of the prompt, which is displayed below the loading.

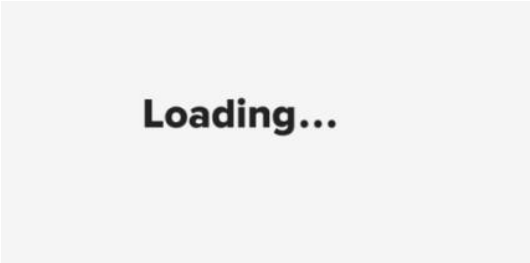

Fig.13 Loading alert box

4.6. Shopping Cart List

The display of all vegetables in the shopping cart is implemented using the <list> component provided by uniapp. The <list> tag is filled with a set of <cell> tags generated by looping through a simple array[9]. That is, by calling the backend interface and getting the array datalist of vegetables added by the user, and then using v-for="(item, index) in datalist" :key="item.id"> to render the data, you can get a list of all the vegetables added by the user.

Then use checkbox-group to select, check the product to set its checked to true, to achieve the effect of selecting the product, and then click the payment is the end of the purchase.

4.7. Orders Display

User's orders need to be classified according to the completion of the order, first set isPay attribute for each user's order according to the payment situation to be divided into paid and to be paid, in accordance with the isEnd attribute is divided into two states: completed and in delivery, so the APP side needs to send a POST request from the interface to the back end first, send the user's id to the back end, the back end will send this user's order to the APP side, in the judgment of the attribute value for classification, each display the user's order.

4.8. Rotating image

A rotating image is used on the home page of the app to let users know about the latest products or the most popular products. The specific effect is to use the swiper component of uniapp to switch from left to right. The indicator-dots property is set to true to display the panel indicator points of the rotating map whenever you slide to an area, and the indicator-color property is used to set the color of the unselected indicator points, and the indicator-active-color property is used to set the color of the currently selected indicator points. Set the autoplay property to true to achieve automatic switching. The autoplay interval property is used to set the time. The sliding direction is horizontal, so set the vertical property to true.

Fig. 14 Rotating image

4.9. Search box

Set the search box in the APP home page, after users enter the keywords to search, the page will present the relevant vegetable product information, users can browse and add the purchase. Set the search icon in the search box, use to icon property, directly set the image path to achieve the specific effect. Then use the input method to get the user's input information, and send the information through the interface POST request to the back-end to achieve information interaction.

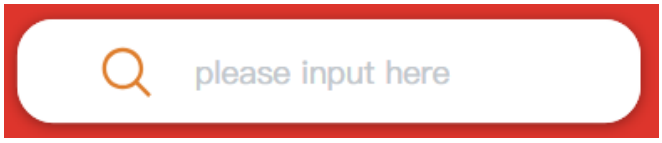

Fig. 15 Search box

5. Conclusion

Through APP design, it can help vegetable farmers directly consume agricultural products to gain profits, and help consumers to easily and quickly buy fresh and green agricultural products, which is convenient for people's life and improves people's life happiness. Especially during the epidemic, because of the home quarantine policy, collective distribution can be carried out through the APP, and consumers do not need to go out shopping, only need to buy online during the home period[10].

This shopping mode can not only save the time to go out, but also the distribution point will be selected in the user's nearby supermarket or self-pick up point, choosing the collective self-pick way can reduce the time of logistics distribution personnel and reduce contact (especially during the epidemic). The general delivery time is the next day delivery, not only this distribution method delivery time is fast, to ensure the quality of the user's fresh food, but also convenient for the user to pick up.

During the epidemic period, I personally felt the difficulties of users in purchasing vegetables, and I also saw on TV news and media that because of the inconvenience of transportation, many agricultural products were stranded in the hands of vegetable farmers, and they could only be damaged in the fields and warehouses because there was no channel[11]. A year of hard work not only did not earn profits, but also lost capital. Therefore, through APP design, organized, channel and sales in a way, we hope to do our best to increase people's happiness of life.

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