

Android-based Mobile Flower Trading Applet Design

Tianduo Wang, Yujin Zhang, Lihua Gong, Yiwei Shen, Xiaoxiong Wu

School of Electronic and Electrical Engineering, Shanghai University of Engineering Science, Shanghai
201620, China

Abstract

The flower trading applet mainly uses JavaScript language for page editing, and the finished product is produced through the Tencent cloud applet micro-match functions. The system is divided into two parts of merchants and consumers, compared with the products on the markets, the functions are richer, and in addition to providing normal flower trading services, it also contains functions such as flower arrangement and sharing, flower raising tutorials, etc., which basically realizes the overall management of flower services. The applet aims to provide one-stop service for users to buy flowers and grow flowers by providing more perfect services for businesses and consumers where users are located.

Keywords: WeChat applet; applet coding; flower trading; visual programming

1 Introduction

Innovation and invention of science and technology, the main purpose is to serve the public, with the continuous improvement, compared with the past, people are more concerned about their spiritual life, flowers, as an existence with a concrete meaning, are widely used as blessings by people, and the products on the market in general, the function is not perfect, or the coverage of the scope of the too small, people need a perfect function, wide coverage, safe and reliable platform, that's why we developed the flower trading applet.

Research by Kuang Ye et al. in 2020 showed that flowers provide rich emotional value to people, and that flowers have not only a strong effect on the expression of immediate emotional behavior^[1], but also on secondary socio-emotional behavior, flowers can be given not only to friends and loved ones but also to oneself, and a bouquet of flowers can often put a person in a happy mood.

Affected by the epidemic, florists make full use of online platforms to publicize and recommend floral products, so that more and more people have the opportunity to learn about floral horticulture, so that the flower industry in recent years the turnover of 1.21 billion yuan in 2013, to 2016 has reached 7.37 billion yuan, with an average annual growth rate of 83.03%, and in 2019, online sales, the live bandwagon trend is increasingly surging. Taobao online flowers and gardening merchants have more than 430,000, selling 30 million kinds of goods, with annual sales exceeding 25 billion yuan. According to the assessment of AIPH(International Association of Horticultural Producer) on Chinese flower market, there is still much room for development of the domestic flower market^[2].

WeChat Applet, as a light and fast software, establishes a friendly, effectively and consistent user experience with in its ecosystem. It is also easy to use due to its advantages of no installation, use-it-or-lose-it, and reach-it-at-your-fingertips. Applets provide a complete set of development frameworks, rich components and APIs for rapid development, so many business units have moved into WeChat Applet^[3].

2 Flower Trading Applet Development Design and Overall Architecture

2.1 Design and Development Applet

The Applet involved in this paper is built using the uni template provided by HBuilderX, based on JavaScript Vue framework through the WeChat developer tool production. The visual programming approach offers higher efficiency, lower costs, richer configurations, time savings, and greater freedom compared to other methods. Furthermore, the WeChat Developer Tools supports real-time debugging on physical devices, facilitating the testing and development of functions while enabling timely identification of issues. It also boasts extensive WeChat ecosystem capabilities, including WeChat Pay, message reminders, link authentication-free, and traffic access functionalities. Additionally, the modular development approach is conducive to future maintenance and expansion, effectively extending the lifecycle of the program.

2.2 Introduction to Relevant Technologies

Vue.js: Vue is a popular JavaScript frontend framework used for building user interfaces. It features reactive data binding and component-based development, making frontend development more efficient and maintainable. The core idea of Vue is component-based development, which involves breaking down pages into individual components, enabling a more modular approach that simplifies maintenance and expansion. Additionally, Vue supports directives, filters, and other functionalities, enhancing the flexibility and efficiency of frontend development.

HBuilderX: HBuilderX is a powerful HTML5 development tool that supports frontend frameworks like Vue and React. It provides features such as code hinting, autocompletion, and other functionalities that enhance development efficiency. The advantage of HBuilderX lies in its integration of various development functions, including code editing, page preview, and debugging, smoothing the development process. Furthermore, HBuilderX supports debugging on real devices and simulators, facilitating testing and debugging for developers.

WeChat Applet: The WeChat Applet is an application that can be used without installation or downloading, offering cross-platform compatibility and easy sharing. Its development is based on the JavaScript language, adopting a development model similar to web development. Developers can use the WeChat Developer Tools for development and debugging. Additionally, the WeChat Mini-Program provides a rich set of API interfaces, including user information, geolocation, payment functions, and more, making it convenient for developers to implement various functionalities.

2.3 Applet Setup Process

First, register a WeChat public account to obtain an Applet AppID. Next, set up a JavaScript compilation environment and design the frontend interface of the applet using HBuilderX, with the separation of logical and page designs. Then, design the database, bind it to the program, and change the data source. Finally, publish an experimental version, submit it for WeChat review, and await the official release of the applet.

2.4 Main Code Involved in the Applet

2.4.1 Page Design

The page design utilizes the Vue.js framework, implementing modularization through components. For instance, creating a flower list component:

```
<template>
  <view class="flower-list">
    <block v-for="(flower, index) in flowers" :key="index">
      <view class="flower-item">
        <image :src="flower.image" mode="aspectFit"> </image>
        <text>{{ flower.name }}</text>
        <text>{{ flower.price }}</text>
        <!-- Display other flower information -->
      </view>
    </block>
  </view>
</template>
<script>
export default {
  data() {
    return {
      flowers: [] // List of flower data
    };
  }, //other function
};
</script>
```

2.4.2 Login Processing

For logic processing, tasks such as handling user requests and data interactions are required. For instance, when a user clicks the purchase button, we need to call the backend API to create an order and process the payment. Below is a simplified example of the purchase logic:

```
methods: {
  async buyFlower(flowerId) {
    try {
      // Call the backend API to create an order
      const order = await createOrder(flowerId);
      // Call the WeChat payment API to proceed with payment
      const paymentResult = await weixinPay(order.paymentInfo);
      if (paymentResult.success) {
        // If payment is successful, update the order status or perform other operations
      }
    }
  }
}
```

```
        updateOrderStatus(order.id, 'paid');
        this.$toast('Purchase successful!');
    } else {
        // If payment fails, notify the user or perform other operations
        this.$toast('Purchase failed, please try again!');
    }
} catch (error) {
    // Handle error scenarios such as network errors, parameter errors, etc.
    console.error('An error occurred during flower purchase:', error);
    this.$toast('An error occurred during the purchase process, please try again later!');
}
}
```

2.5 Database Design

2.5.1 User Table(users)

Table 1. users' table

Field Name	Data Type	Description
user_id	INT	User ID (primary key, auto-increment)
username	VARCHAR(50)	Username
password	VARCHAR(255)	Password (encrypted storage)
email	VARCHAR(100)	Email address
phone	VARCHAR(20)	Phone number
address	VARCHAR(250)	Shipping address
create_time	DATETIME	Registration time

2.5.2 Flower Information Table (flowers)

Table 2. flowers' table

Field Name	Data Type	Description
flower_id	INT	Flower ID (primary key, auto-increment)
name	VARCHAR(100)	Flower name
image	VARCHAR(255)	Flower image URL
price	DECIMAL(10,2)	Flower price
description	TEXT	Flower description
stock	INT	Inventory quantity
category	VARCHAR(50)	Flower category

2.5.3 Order Table (orders)

Table 3. orders' table

Field Name	Data Type	Description
order_id	INT	Order ID (primary key, auto-increment)
user_id	INT	User ID (foreign key, referencing the user table)
flower_id	INT	Flower ID (foreign key, referencing the flower information table)
quantity	INT	Purchase quantity
total_price	DECIMAL(10,2)	Total order price
order_status	ENUM('pending', 'paid', 'shipped', 'completed', 'cancelled')	Order status (pending payment, paid, shipped, completed, cancelled)
create_time	DATETIME	Order creation time
payment_info	TEXT	Payment information (such as payment ID, payment time, etc.)

3 Functions and Roles of Applet for Flower Trading

3.1 User Registration and Login

This function allows users to register and log in to the applet to enjoy personalized services. Implementing WeChat login through the WeChat API simplifies the login process and enhances user experience. After registration and login, users can protect their purchase records and personal information while enjoying a more convenient shopping experience.

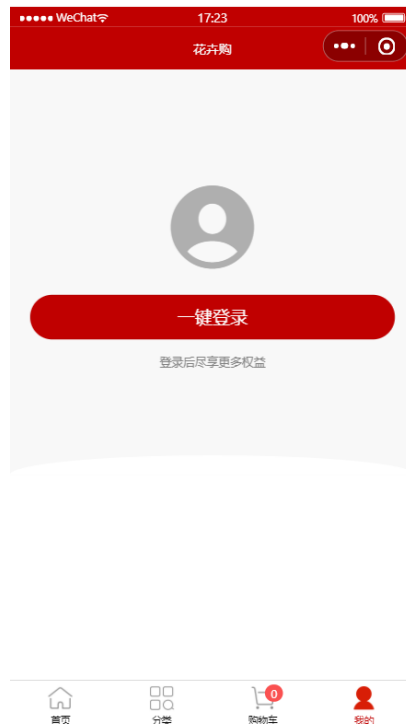


Figure 1. The Login Page

3.2 Product Display

The product display function aims to showcase a variety of flower products to users, including high-resolution images, detailed prices, variety descriptions, and more. This function allows users to quickly browse through various flowers and select the ones that suit their preferences and needs.



Figure 2. The Products Display Page

3.3 Shopping Cart

The shopping cart function enables users to add desired flower products to their cart and view and edit the items in their cart at any time. Users can conveniently adjust the quantity of products or delete unwanted items before proceeding to checkout, enhancing the convenience and flexibility of the shopping experience.

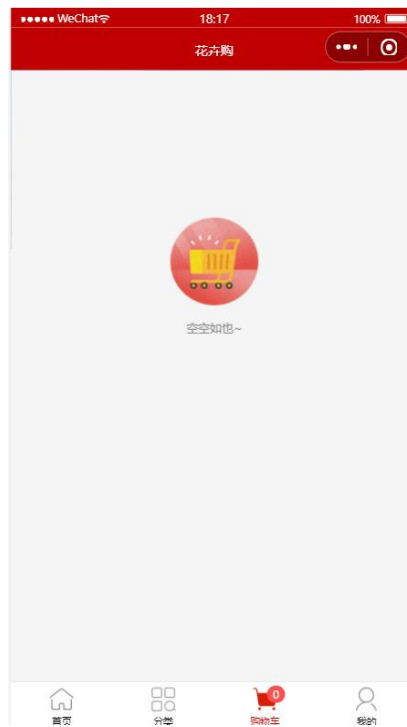


Figure 3. The Shopping Cart Page

3.4 Payment Function

The payment function is one of the core functionalities of the flower trading applet. By integrating WeChat Pay, the applet offers a secure and stable payment environment for users. Users can choose from various payment methods, such as WeChat wallet balance or bank cards, to complete their purchases. The convenience and security of the payment function are crucial in enhancing the user's shopping experience.

3.5 Personal Information Management

The personal information management function allows users to view and edit their personal details, such as name, address, and contact information. Additionally, users can deactivate their accounts within this function to protect their privacy. The comprehensiveness of the personal information management function contributes to enhancing users' trust and satisfaction with the applet.



Figure 4 The My Page

In conclusion, the flower trading applet, through its diverse functions and roles, provides users with a convenient and secure shopping platform. These functions not only enhance the user's shopping experience but also contribute to promoting the development of flower trading.

4 Conclusion

In summary, this article provides a detailed introduction to designing and implementing a flower trading WeChat Applet using Vue and HBuilderX, which includes interfaces for the home page, category page, shopping cart, and user profile. Through the elaboration of its features and implementation, we can observe the practical application and advantages of Vue and HBuilderX in such e-commerce mini-programs, including responsive data binding, component-based development, as well as the cross-platform capabilities and social attributes of WeChat Applets. Additionally, this article explains the structural output diagram of the system, revealing its main structure and pages.

With the continuous advancement of internet technology and the widespread use of mobile devices, WeChat Applets, as a new form of application, are transforming the way people live. Flower trading, being a part of daily life, has a vast market potential. Therefore, the flower trading WeChat Applet introduced in this article has practical value and market potential.

Certainly, there is much room for further exploration and optimization of the system, such as adding more product categories and detailed information display, optimizing the user interface and interaction experience, and enhancing payment security and privacy protection. As technology evolves and user demands change, we must continuously learn and explore new technical means and methods to meet user needs and improve market competitiveness.

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References

- [1] Kuang Ye, Jeannette Haviland-Jones, Holly Hale, Patricia Wilson & Terry Mcguir. Flowers make people feel happy. *Chinese Flower Horticulture*,2020(13):22-31.
- [2] Job Hendick. A brief analysis of AIPH's report on consumer demand and market potential in the chinese flower market. *China Flower Horticulture*, 2019 (19): 42
- [3] Wang Yuan. Online trading platform based on WeChat mini program. *China Science and Technology Information*, 2019 (01): 78-81+14.