

Design and Development of Maintenance System App Based on react - native Framework

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Abstract

The Maintenance System is an O2O service product software based on the reactor-native framework, and it can provide enterprises with solutions of a complete repair system, from ordering in We Chat, to sending the order on internet, to reporting the rate of progress of workers and to customer evaluation. The author of this paper, starting with the mobile applications engineering, made an overall design of the technology and framework of the system from the perspective of user demand, profoundly clarified the advantages of making use of react-native framework to develop maintenance system cross-platform mobile application app, and introduced the operating environment –Node.js and the development tool--Android Studio. Then, the requirements analysis, technical analysis, UI design, function development, system safety and performance test are discussed in detail, and a series of development processes, including the mobile application function to be achieved, business process, page layout design, function module design and interface design, are emphatically introduced. Finally, the author of this thesis focuses on the problems encountered in the design, analyzes and explains the solution and draws a conclusion about the usage analysis of the users.

Keywords

Mobile Applications; Maintenance system; Cross-platform; Interactive Design.

1. Introduction

With the continuous development and progress of human society, Internet applications and the popularity of mobile device applications, the current number of traditional offline services began to use online technology to achieve high efficiency, low cost. The system is a set of O2O management system to solve the after-sales maintenance service of household electrical appliance enterprises. It provides the enterprise with the information from the customer's WeChat to report the fault information, the management personnel to send the single, the worker orders, the order completion progress, the order completion, the customer evaluation The Internet solution.

At present, the Internet is the impact of the traditional industries, for the maintenance industry, people for the maintenance of this demand is increasing, while the quality of service requirements are also rising. Today, on the one hand, people have not only satisfied with the telephone reporting failure and maintenance matters to communicate, on the other hand for the enterprise service providers side, the establishment of a sound maintenance order management system is very necessary. Enterprises can be collected through the order, send a single to the workers, greatly simplifying the work process, through the customer's evaluation can also have a comprehensive understanding of the quality of service workers at the same time to make a reasonable reward and punishment mechanism, through the order of large data analysis, Product quality, and make the appropriate rectification measures.

Therefore, the maintenance system should be fully dependent on the Internet, to achieve a single maintenance menu, product add, decentralized operation, information sharing, so that maintenance

personnel and users online communication, and maintenance services. From a technical point of view, will continue to update, optimize the framework for the maintenance system for subsequent development.

Currently, mobile applications are distinguished from the way they are built, with the following three types of applications: native applications, HTML5 applications, and mixed applications. React Native develops using the ES6 language and native JSX syntax sugar. For the ES6 everyone must be unfamiliar, because JavaScript is a very widely used language, for developers to learn through a simple study can use React Native to carry out the basic business logic development. Of course, any framework is a double-edged sword has advantages and disadvantages, React Native also has some shortcomings, such as memory consumption, slow running and other issues, and we look forward to the follow-up in the follow-up to quickly solve these problems.

2. System Design

2.1 Functional requirements analysis

- (1) After the product is sold, the product information and the buyer import the information list to generate the corresponding two-dimensional code, posted on the product.
- (2) When the user needs to repair, scan the product above the two-dimensional code, enter the fault reported page. In the page, the user can fill out the fault phenomenon, the type of equipment, can add pictures contact information, customer information, etc., by the background management personnel audit, if approved by the group will be sent to the group leader, If the audit does not pass back to the customer did not pass the reasons and recommendations. Equipment type: optional single, lack of manual input can be added; Model: optional single, lack of manual input can be added. Symptom: optional single, lack of manual input can be added. Maintenance equipment Location: can be selected by map or manually entered. Contact: manual input.
- (3) For the delivery of work orders, the background manager groups the maintenance workers according to the type of equipment. Each group has a group leader. The group leader can log in the background management system and assign the work order to the designated workers.
- (4) maintenance workers in the APP can be assigned to pay their own details of the work order, the workers can choose to accept the work order or not accepted, after receiving the work order, the status of the work order changed to the processing, do not accept the work group Feedback and then distributed to other workers. In the event of a change in maintenance, the worker may cancel the work order and explain the reason for the cancellation. Workers can call the map via the customer's address. After the repair is complete, the status of the work order changes to Completed. Customers in the WeChat page on the quality of the service to make an evaluation, the workers in the mobile side can also view all of their service evaluation.

2.2 System overall design

- (1) The overall design process; registration: get a copy of your account. Add employee: Add your team/employee to the system. Create a Work Order Method 1: Create a work order that needs to be dispatched. Create Work Order Mode 2: Customer Microphone Public No. Online Order; Assign Employee Method One: Assign employee to work order created for you. Designated staff way two: grab single mode, preferred choice to grab a single worker. Synchronization progress: real-time access to the progress of each employee's work. Complete the work order: confirm the completion of the work order, and fill in the evaluation can generate WeChat site, displayed to the customer, Customer orders online, the order will go to the management platform. And then assign the order from the management platform to the worker. Workers with a single phone to receive a single, to perform, with photos or text reported progress, while customers can see the progress of the progress of the workers after the evaluation. Workers on the mobile side can also view the customer evaluation of their services. Hierarchical structure shown in Figure 1:

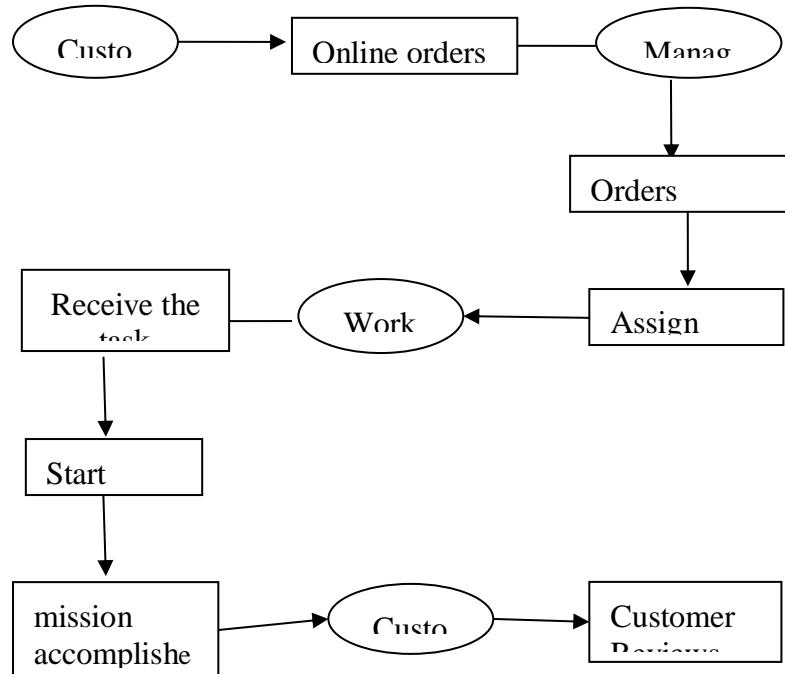


Figure 1. Overall design flow chart

(2) client design process; login: each worker has a user account and password. Home: Login system after entering the home page, in the home page users can visually see their work orders are being processed, the upper left corner is the personal center entrance; the upper right corner is the message notification entrance; the middle of a single, grab single and customer evaluation of three Entrance. In the personal center, the user can view the news notification, all the work orders (according to the status classification: pending orders, processing, has been completed and has been invalid), personal data (can modify the picture and basic information), system settings (change password, Whether to open the message notification, version upgrade and exit account). Click on any of the list of work orders to enter the details of the work order, you can view the customer information, repair information, work order status information, etc., while the work order to change its status. Customer evaluation: the user can be in my evaluation module to see their customers have served their own evaluation.

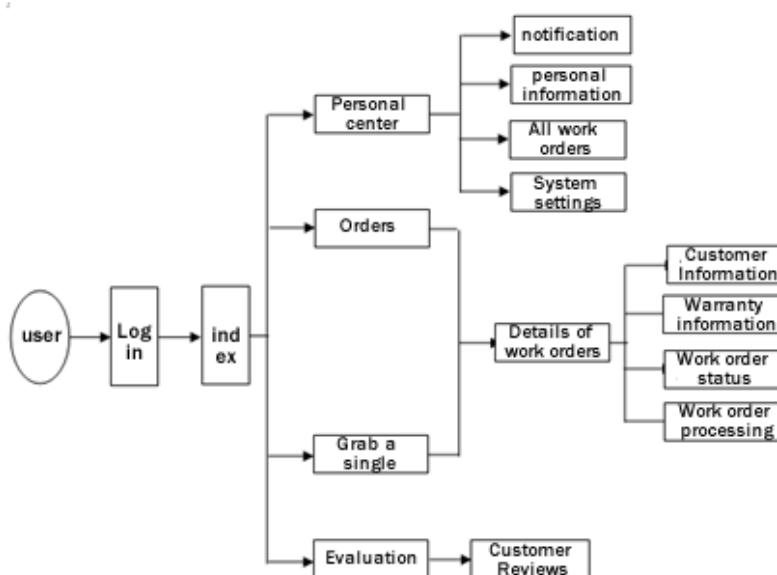


Figure 2. Client design flow chart

(3) Background management process: each administrator and group leader has an account. After logging in to the management system, users can provide orders, order management, worker

management, customer management, comment management, department management, equipment management and other functions. There is a lot of dynamic information on the site directly to the operation, data processing speed faster, and in a short time to respond to the request of maintenance personnel, send information to the maintenance staff.

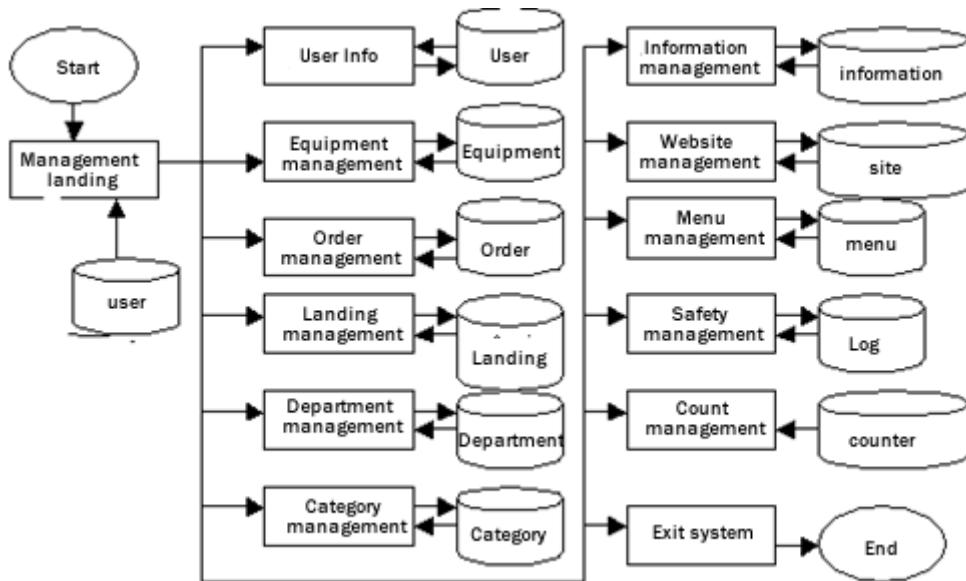


Figure 3. Client design flow chart

2.3 Interface design

In the actual project design, the interface design of the front and back data interaction should first provide a reasonable specification for each function module. Excellent interface design can reduce the coupling between the compositions of the module, improve the composition of the module cohesion, reduce the coupling of each part of the system, thereby enhancing the system maintenance and scalability. In order to ensure the integrity and robustness of the system, it is necessary to design the interface to communicate with the background service before the system development.

(1) Design Description:

Maintenance system server, using JSON as the message format, encoding set for the UTF-8.

(2) Common error code:

9998 = Please re-login; 9999 = User is not logged in.

(3) interface design:

The response part of the table below does not contain the common information, that is, retCode and retMsg all interface response retCode to 0000 will have the following table response information field: response success: retCode = 0000 response failure: retCode = 400, retMsg for failure reasons! Invalid return log data as an example: "{" retCode ":" 400 "," retMsg ":" account and password are inconsistent, please check "}".

Table1. Interface design summary table

Interface address	name
User/userLogin	log in
Setbill/billList	List of work orders
Setbill/billDetail	Details of work orders
Setbill/billHandle	Work order processing
Setbill/billGrap	Query grab single
Setbill/billAction	Grab a single
User/commentList	Evaluation list

User/userInfo	personal information
User/modifyUser	modify personal information
User/modifyPwd	change Password
Common/msgList	notification
Common/ newMsg	Whether there is new news
Common /location	Send location

3. System implementation

3.1 User login

Login part of the account input box, password input box and login button. In the function, to achieve user authentication. To ensure that the user input a valid string, the front end with a js regular match to verify. In the background interaction with the background data to abandon the traditional ajax request, the use of ES6 syntax fetch method.



Figure 4. Login page

3.2 Work order module

(1)to send single mode: enter the single mode, the user can view the team assigned to their own work orders, and choose whether to accept. If you accept the work order, the user can contact the customer to determine the good maintenance time; if refused to accept this single can choose to cancel the work order and explain the reasons.

(2)grab single mode: enter the grab single mode, the user click the refresh button to send a request to the background whether there is a new single, if not a new single show no new single page, if the new single will show the release of the work order.

(1) work order processing: enter the details of the work order, the user can view the work order customer information, maintenance information, work order information. Each work order has no orders, processing, completed and has failed four states.

3.3 Map navigation

In this system, the user can call the third-party platform map to the customer's home based on the customer's location. Introducing third-party high-map APIs primarily at React Native.



Figure 5. Map navigation page

4. System Security and Testing

In this maintenance system, the functions discussed in the design have been basically implemented and run normally. From the user login, work order distribution, work order processing, customer evaluation of a set of processes have been achieved, did not find a system exception. In the data transmission, the use of md5 password encryption. Md5 is a secure hash algorithm, the encryption process is one-way irreversible, through the encryption of the user password to ensure that the user's account information is not theft. In the client with http protocol post access to security, made the following two points of security measures:

1, the first request, request username and password, verify through, kind of cookie to the client, app save cookie value. Each request to bring the cookie, and pc on the same principle of browser authentication.

2, to develop a token generation rules, each user login server according to the token generation rules to return a string identifier to the client, the client to get the identifier stored in the cookie, each request to bring the cookie, the service side to take To the client to send the cookie to match the check. Of course, to generate rules to be confidential.

When the server receives a large number of requests, the load balancing service is used. When a user in the use of the client, every 10 seconds to the background server to send a request to update the location at this time, then if the day is online, that is $24 * 60 * 60 / 10 = 8640$ times, one hundred users That is, 864000 visits, in the case of this large amount of users, a server is not possible to complete the independent, the general use of a server to receive first down, and then distributed to other servers to the sub-service to ease the server pressure.

5. Conclusion

Maintenance system is a relatively large network platform. Related to the order process, billing methods, maintenance personnel communication, address information display and so on. The functions of user login, information display, work order processing, map navigation and customer evaluation information display are realized. However, in the evaluation system and the progress of work orders, as well as news push and points incentive system, and so on, it is a little insufficient, needs to be improved and improved, in the future work to further explore, in order to make greater progress.

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