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Project Title: A platform of errand delivery Service in the same city
based on crowdsourcing model

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Executive Summary

Our proposal named *A platform of errand delivery Service in the same city based on crowdsourcing model* introduces the functions of our team software, which can bring customers' experience and practical needs for developing the software. This software provides convenience for both businessmen and individuals. It has the functions of issuing orders, receiving orders, evaluating and viewing individual orders. The software also provide platform management user information and order management for platform managers. It also covers the scope of the software development process, such as Java programming, server deployment, database operations, UI design, etc. The development time is 6 months and 6 hours per working day. We mainly use Eclipse and jQuery tools to develop software. The risk of such software development is that some functions may not be implemented due to time and technology constraints. We will give priority to the main functions: issuing orders, receiving orders. The budget for this project is about \$14,000.

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1. A brief project description

1.1 Project purpose

Crowdsourcing makes time for fragmentation more valuable. With the development of Internet and sharing economy, why can't we open the delivery service mode casually, since drivers can pick up and deliver customers on their way home? With the rise of UBER, crowdsourcing model based on mutual assistance behavior is becoming more and more popular.

This project is a crowdsourcing logistics platform based on mobile Internet and shared economy, which can attract full-time and part-time distribution personnel with free time, and provide real-time information push and the whole process of distribution monitoring service.

1.2 Context of project

In order to meet the following functional requirements, we need to develop a crowdsourcing model based on the same city job delivery service platform.

1.3 Order Provider Application(Android):

Users with delivery requirements can publish tasks through this application.

Order Providers have the following functions,

- Set up different service types (takeout, small package or large package) and other important information
- Release orders in missions
- Real time monitor(order status)
- Orders are finished

-Evaluate the service

1.4 Deliverymen Application (Android)

Deliverymen can download our Deliverymen Application to get orders and get rewards by completing these delivery orders.

Deliverymen have the following functions,

- Users need to upload ID cards (be reviewed by platform)
- Receive the order
- Pay deposit(according to the value of goods)
- Take and send the goods
- Finish the orders

1.5 Platform (Web-Based)

Collect delivery tasks and assign them to order receivers.

Order management

- cancel the order

User management

- Deliverymen(by star rank)
- Blacklist(publish the wrong information of orders)

1.6 Client Organization

Our customer group can be roughly divided into two groups: one is that some people can not deliver goods to others in person for various reasons; the other group can help the former deliver goods to the receiver if they have free time to get some compensation.

Research & Development Project Proposal**Order providers**

People who do not have time to delivery goods

People who is unwilling to delivery goods

People who want to delivery some thing urgently

.....

Deliverymen

Undergraduates

Unemployed people

Drivers

Couriers

.....

2. An overview of project objectives

2.1 Project objectives

The objectives of the project is to develop two Android applications (order provider end and deliverymen end) and a back-end website for order system management. People who want to send something create new delivery orders, fill in the information and complete the orders. These orders will be displayed on the deliverymen end, and the deliverymen will decide whether to accept the order or not according to his own circumstances and wishes. Of course, we will have the service of locating recommended orders service. Order management system can deal with abnormal orders and prevent discredit users from using the software.

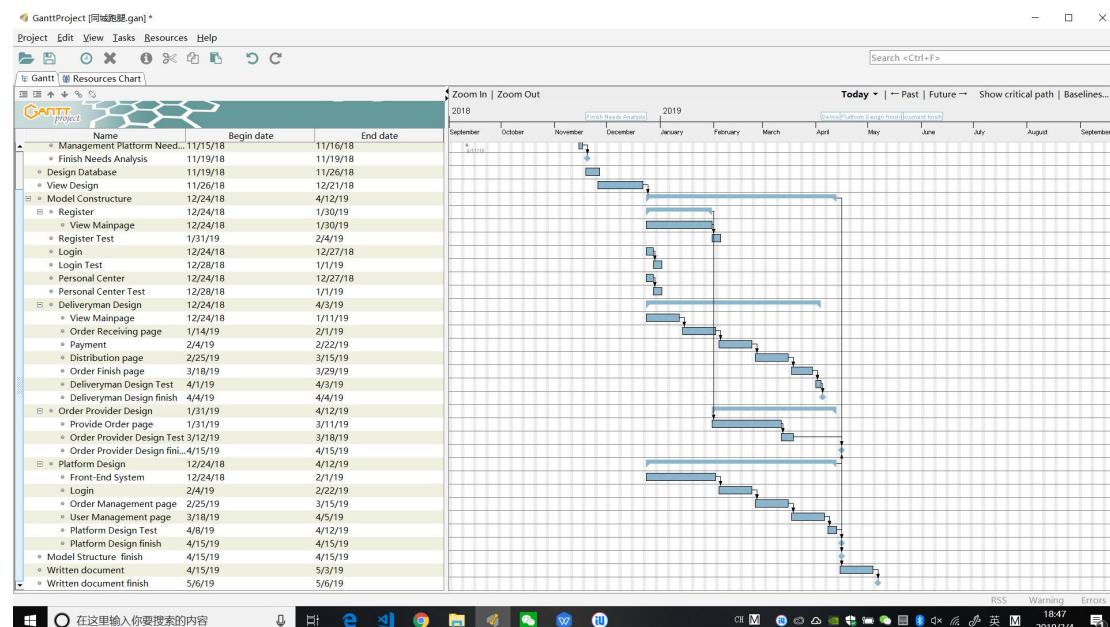
2.2 Scope Statement

According to Scrum (IT project management), the estimated duration of this process is 6 months. We will first determine the users requirement and complete the project design, such as E-R diagrams, data relational model, business process diagram and so on. According to the functions, we will complete the design prototype, then we will

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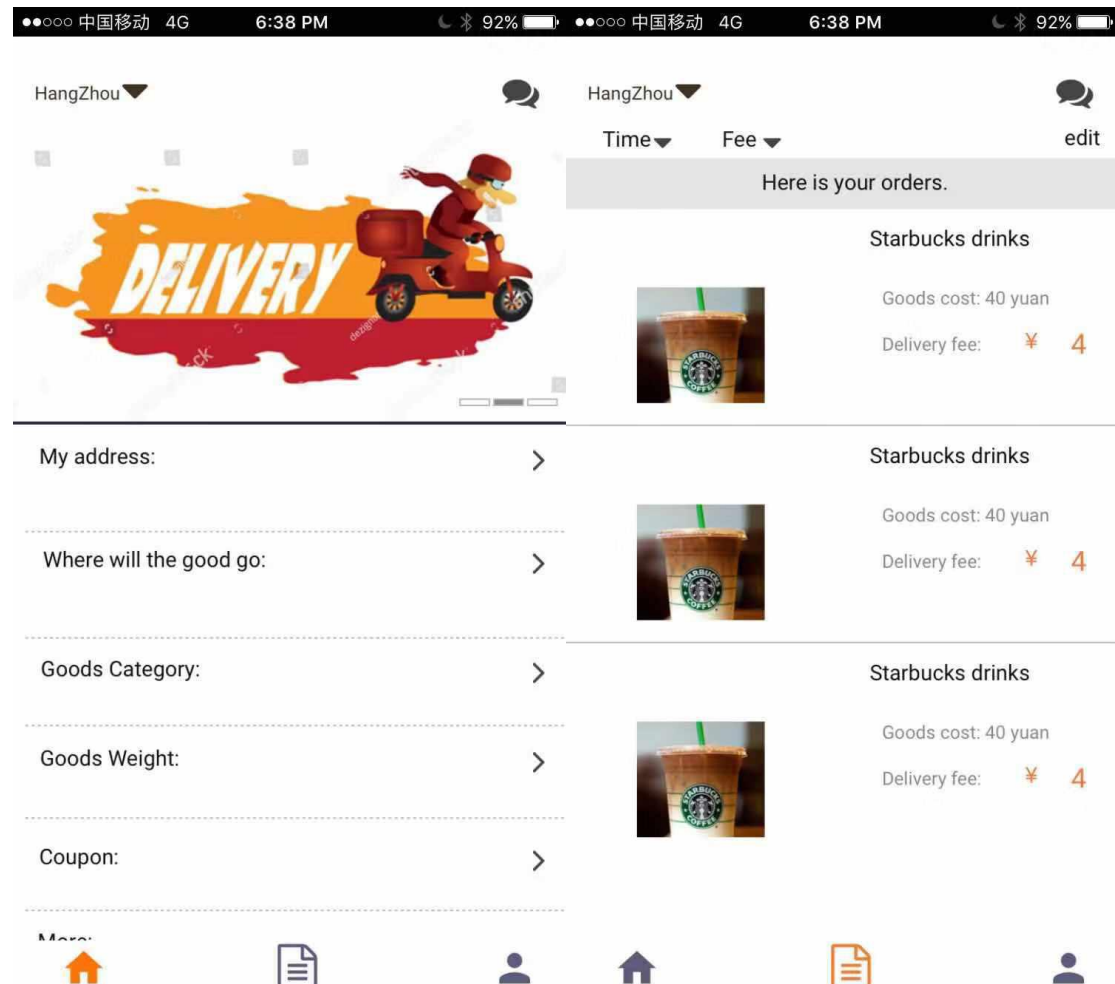
test the prototype, and constantly change the prototype of our project after some investigation. Basically complete the confirmation of the prototype, we will use Photoshop and Coreldraw to complete the design of the front-end page and the acquisition of icon pictures in Android. Then, we will use MVP model to build two Android applications and a web based order management system. Completing the project code step by step according to the user stories designed before. Finally, online testing is carried out.

2.3 Major milestones

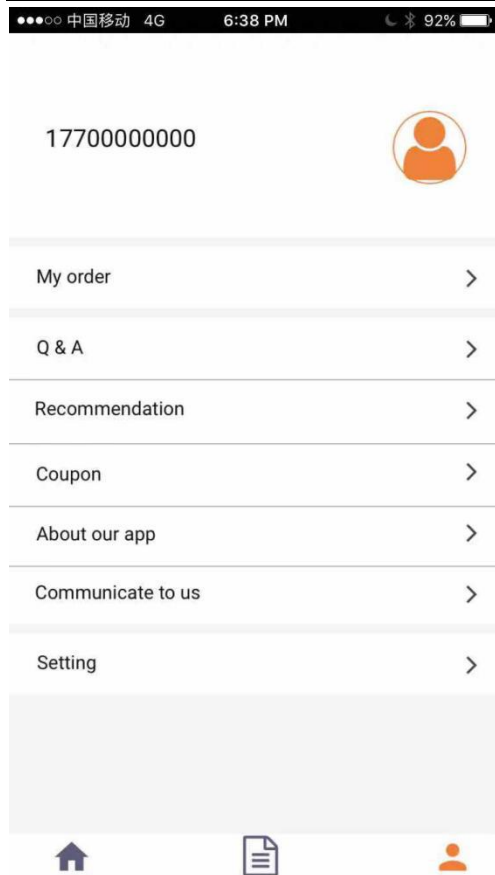


Milestones : Finish Needs Analysis 、 Deliveryman Design finish 、 Order Provider Design finish 、 Platform Design finish 、 Model Structure finish 、 Written document finish

2.4 Deliverable



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LOGO | Management Platform

Module name

Administrator

Overview

Order Management

User Management

All status

Order number

Search

Default order

| Order | Time | Order Provider | Item Category | DeliveryMan | Status | Operation |
|---|-------|----------------|---------------|-------------|---------------------|-----------|
| <div>Order name</div> <div>ID: 480100003309</div> | 14:00 | xxxxx | Food | Bob | To be delivered | check |
| <div>Order name</div> <div>ID: 480100003309</div> | 15:00 | xxxxx | Drinks | Justin | In distribution | check |
| <div>Order name</div> <div>ID: 480100003309</div> | 8:00 | xxxxx | Clothe | Lily | Have been delivered | check |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

LOGO

Management Platform

Module name

Administrator

Overview

Order Management

User Management

User Management

Star Level

User ID

Search

Default sort

User ID

Star Level

User name

Operation

IN-20170421-009001

4

Justin

Add into blacklist

IN-20170421-009001

5

Bob

Add into blacklist

IN-20170421-009001

3

Amy

Add into blacklist

IN-20170421-009001

5

Mike

Add into blacklist

IN-20170421-009001

5

Jim

Add into blacklist

3. Project Method or Approach

3.1 Development Approach

1) Prototyping Approach

We design our prototype by using Axure 8.0, which is a well-liked in IT development tool. After that, we will discuss the design of our Android application software and web management system. User surveys are then conducted to adjust the location of a component and the structure of the interface.

2) UI design

We use Scrum frame (On Trello) to divide this project into 4 Sprints to complete software development. In Scrum, we use the product Backlog to manage product requirements. In backlog we add few user stories prioritize the development of high value requirements for customers (The main function is the function like Weibo and the Class Schedule). The Backlog's requirements selected by our Scrum Master (Lyu Jiaqi) are discussed, analyzed and estimated at the Sprint Planning Meeting to get the corresponding task list. Every Sprint takes for 4 weeks, Sprint Planning Meeting & Sprint Review Meeting are needed every 4 weeks, and we have Sprint Daily Meetings between the Sprint.

3) Development

·MVP Model

MVP (Model-View-Presenter) is evolved from the classical model MVC. Their basic ideas have something in common: Controller/Presenter is responsible for logical processing, Model provides data, View is responsible for display.

This model allows us to more clearly define the location of files, and to better communicate for multi-person tasks. In addition, for the later stage of testing, this model also makes it easier for us to test in modules.

·JAVA

Java is an object-oriented programming language. It not only absorbs the advantages of C++ language, but also abandons the concepts of multi-inheritance and pointer which are difficult to understand in C++. Therefore, Java language has two characteristics: powerful function and easy to use.

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As the representative of the static object-oriented programming language, Java language perfectly implements the object-oriented theory and allows programmers to program in an elegant way of thinking.

Java has the characteristics of simplicity, object-oriented, distributed, robustness, security, platform independence and portability, multi-threading, dynamic and so on. Java can write desktop applications, Web applications, distributed systems and embedded system applications.

As a result, our project will use JAVA development language to implement Android applications.

·Android SDK

Android SDK(Android software development kit) is used by software development engineers to build a set of development tools for specific software packages, software frameworks, hardware platforms, operating systems, etc.

We will use it to perform functions that require complex code and algorithm.

·Android Studio

Android Studio is a development platform for Android released by Google. The system is based on IntelliJ IDEA. Similar to Eclipse ADT, Android Studio provides integrated Android development tools for development and debugging. Android Studio's development environment and mode are more abundant and convenient. It can support multiple languages, and also provide developers with testing tools and various data analysis.

·Apache-tomcat

Tomcat server is a free open source Web application server, which belongs to lightweight application server. It is widely used in small and medium-sized systems and occasions where concurrent access to users is not very many. It is the first choice for developing and debugging JSP programs. In fact, Tomcat is an extension of Apache server, but it runs independently at runtime, so when you run tomcat, it actually runs as a separate process from Apache.

·Our order management system will use this server to display, add, delete and check the contents of the database.

·Navicat(mysql)

Navicat is a client query management tool for MySQL database, which makes it easier for us to use the database.

4) Test

·Monkey

We can use this software to complete the stress testing of Android software.

·UiAutomator

This is a very comprehensive automated testing software, of course, it can be applied to Android software development.

3.2 Tasks Involve

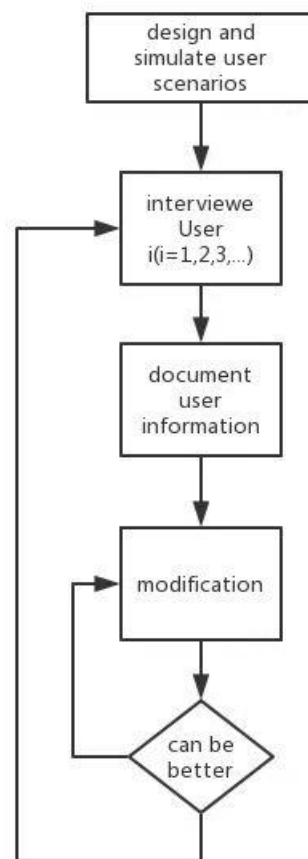


Fig.4.2 Flowchart about task

4. A response to how the proposal conditions or recommendations have been addressed

Through the mid-term inspection, the tutor put forward some comments and suggestions to us. Our group discussed and planned adjustments to these problems:

1. Our previous Gantt Chart tasks were not detailed enough and did not include project documentation tasks. So we revised the Gantt chart, refined the task details, and rationalized the time.
2. The names of the three roles in our previous project were not clearly expressed. The tutor suggested that we change the names. Now our two objects are Order provider and delivery men .

5. New variations from the original proposal with a rationale for them

1. Adding some functions (Order Provider Number、Deliveryman Number、Blacklist Number、Abnormal Order number、Completed Order number、Unfulfilled order number) in order to show more intuitive orders and user usage.
2. Changing development tools (front-end Visual studio code back-end idea), we find tools suitable for our development in discussion and practice.
3. Android end use two apps.

6. Summary of current project status

6.1 Work completed

1. Needs Analysis
2. Design Database
3. View Design
4. Android completed the basic layout design and connected to the test database.
5. Platform end completes front-end page design.

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The top screenshot displays the 'Order' management interface. It features a sidebar with navigation links: User, User Management, Blacklist, and Order. The main content area shows a summary of orders: 12 Abnormal order, 621 Completed order, and 432 Unfulfilled order. Below this is a search bar with 'Order ID' and a 'Check' button. A table lists orders with columns: Order ID, Item Category, Provider, Order Time, Order Amount, Delivery Man, Status, and Operation. The table contains three rows of data.

| Order ID | Item Category | Provider | Order Time | Order Amount | Delivery Man | Status | Operation |
|------------|---------------|----------|------------|--------------|--------------|---------------------|-----------|
| 6801003309 | Food | p100 | 2012-3-19 | 53 | d888 | Have been delivered | Delete |
| 6801003310 | Drinks | p101 | 2012-3-29 | 66 | d666 | In distribution | Delete |
| 6801003311 | Cloths | p102 | 2012-3-09 | 88 | d777 | To be delivered | Delete |

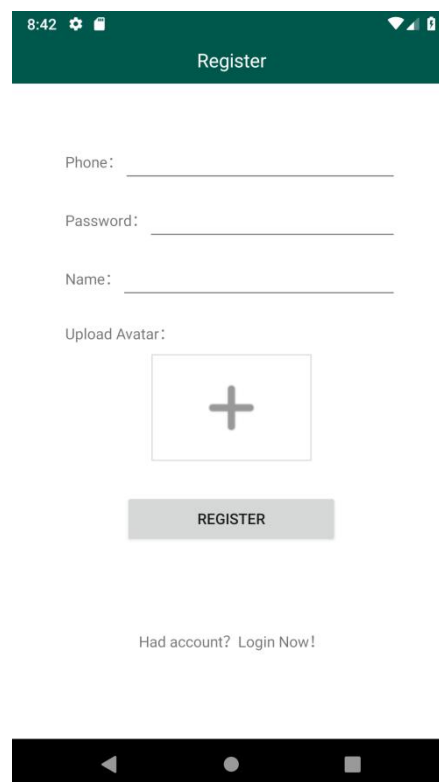
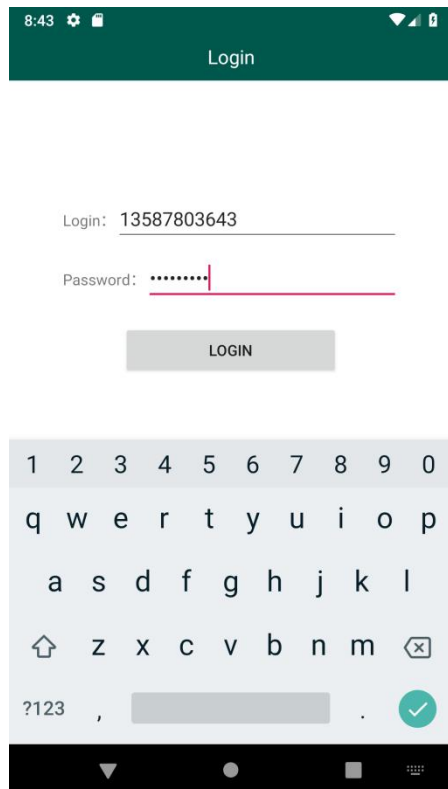
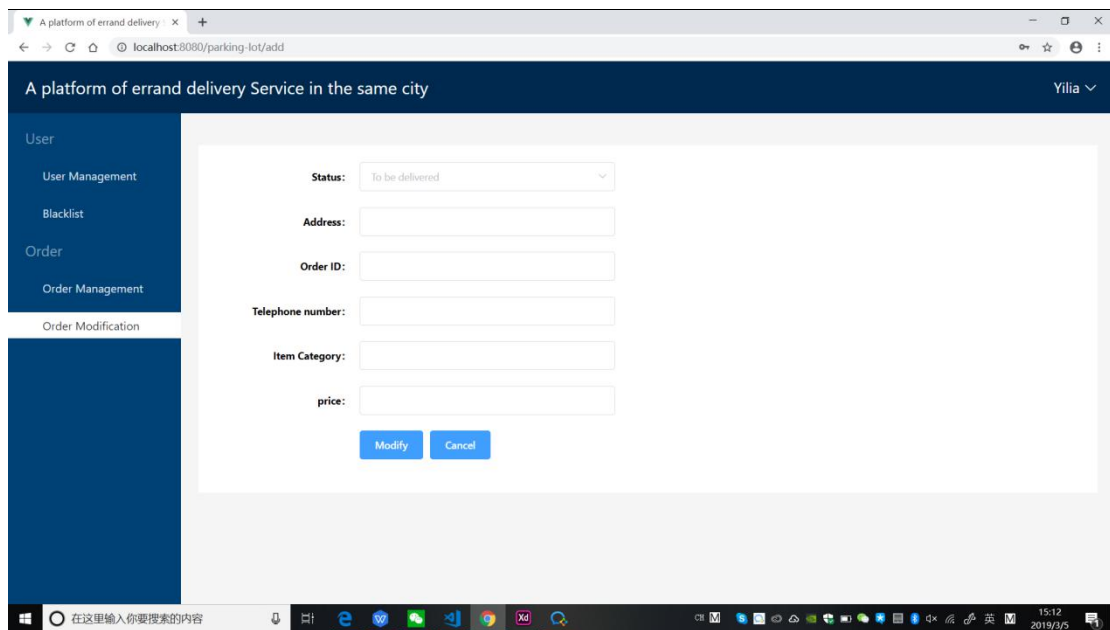
The bottom screenshot displays the 'Blacklist' management interface. It features a sidebar with navigation links: User, User Management, Blacklist, and Order. The main content area shows a summary of blacklist entries: 1000 Order Provider Number, 1000 Deliveryman Number, and 50 Blacklist Number. Below this is a search bar with 'Starlevel' and a 'Check' button. A table lists users with columns: User ID, User Name, Phone number, Star Level, and Operation. The table contains four rows of data.

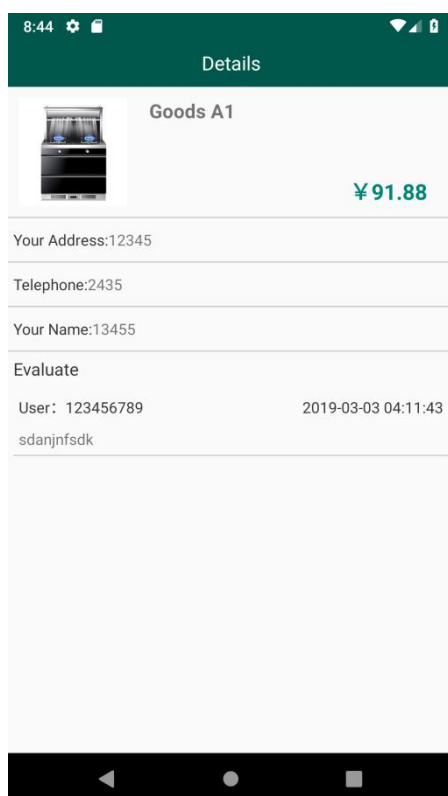
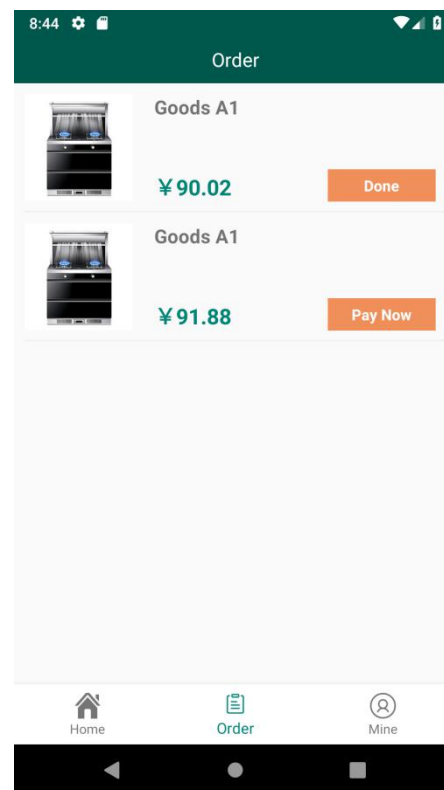
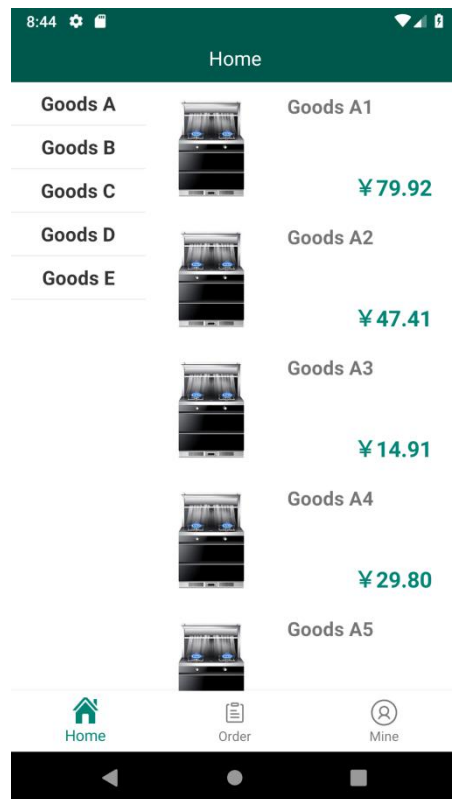
| User ID | User Name | Phone number | Star Level | Operation |
|---------|-----------|--------------|------------|--------------------|
| u123 | Justin | 18603771491 | 5 | Add into blacklist |
| u234 | Bob | 15868115688 | 4 | Add into blacklist |
| u121 | Amy | 18615965533 | 3 | Add into blacklist |
| u222 | Jim | 13758252848 | 1 | Add into blacklist |

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The top screenshot shows the 'Blacklist' management interface. The header bar displays 'A platform of errand delivery Service in the same city' and the user 'Yilia'. The left sidebar contains navigation links: 'User', 'Blacklist', and 'Order'. The main content area shows statistics: 1000 Order Provider Number, 1000 Deliveryman Number, and 50 Blacklist Number. Below these is a search bar for 'User ID/Telephone Number' with a 'Check' button. A table lists blacklisted users with columns for User ID, User Name, Phone number, Date, and Operation. The table contains four rows of data, each with a 'Remove the blacklist' link. The bottom screenshot shows the 'Order Management' interface. The header bar is the same. The left sidebar contains navigation links: 'User', 'Blacklist', and 'Order'. The main content area shows statistics: 12 Abnormal order, 621 Completed order, and 432 Unfulfilled order. Below these is a search bar for 'Order ID' with a 'Check' button. A table lists orders with columns for Order ID, Item Category, Provider, Order Time, Order Amount, Delivery Man, Status, and Operation. The table contains three rows of data, each with a 'Delete' link. The status of each order is indicated by a colored dot and text: 'Have been delivered' (blue), 'In distribution' (red), and 'To be delivered' (green).

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6.2 Work yet to be done

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1. The connection between background management platform and database has not been completed.
2. **Android development has not yet been completed(具体),** and the function realization is not complete.
3. The connection between Android and background management platform has not been realized yet.
4. No complete test has been carried out.

7. Recommendations for improving the project team's performance

7.1. Time arrangement

Our communication is not timely enough to complete Gantt chart progress on time. After that, we should communicate effectively in time and hold group meetings every week to keep up with the progress.

7.2. Cooperation

Help each other and integrate all modules.

8. Individual contributions and learning

Shen Zhangyi:

In the early stage of the project, I discussed and wrote the product requirement analysis report with the team members and mentors. I completed the E-R chart, and jointly completed the evaluation and production of Gantt chart, burn down chart and management platform prototype map with He Ying. In the latter stage, I am mainly responsible for the front-end development of the platform.

In the mid-term of the project, I completed the front-end development of the platform interface. I use the Visual Studio Code to write this platform, and use Vue.js which is a

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progressive framework for building user interfaces. Unlike other large frameworks, Vue is designed to be applied layer by layer from bottom to top. The core library of Vue only focuses on the view layer, which is not only easy to get started, but also easy to integrate with third-party libraries or existing projects. With the cooperation with my team member He Ying, who wrote the back-end, we connect the Database. The main function of the platform is to provide management operation platform for administrators, as well as Product Requirement Document. Including order management and user management, the order management interface mainly includes order information addition, deletion, modification and query. It displays the status of the order at the top of the page - abnormal orders, uncompleted orders, completed orders, which intuitively and clearly shows the order situation of APP; the user management interface mainly includes user information query and blacklist management, the number of the same users displayed at the top of the page - Order providers, Delivery men, Blacklist members, which intuitively counts the number and proportion of users using apps.

From this project, I learned not only the technology, but also the thinking of designing products, the logic and way of realizing different functions. I am currently working as a Product Director in the company. For me, competitive analysis, user needs analysis and prototype diagrams are the key links, which lay the foundation for product development and development. So I think it takes a lot of time to discuss how to design a good product in the early stage of the project is very important. My team members and I often discuss the products, put forward their own ideas, and constantly improve the products. At the same time, I realize that a clear schedule is very necessary. We must follow up the progress of the project strictly according to the schedule. I think our team should have a project manager to remind us of the schedule of the project and promote work efficiency.

Ren Bin:

During the need analysis and project design process, I am mainly in charge of drawing the project process diagram. In order to make every process clearly, our team has had many meetings with our clients which help me to have a whole understanding of the whole project. I use the online project process diagram tools to draw it and the first diagram is chaotic. However I keep modifying it and make it become better.

Then I help to design an android app prototype and I am in charge of designing the order provider end prototype. The tool that I used is an online prototype design website called modao which really help me to design it quickly and easily.

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As for the development process, I am in charge of the android development. I am not so good at developing an android app. However I try to study from online videos and android developing books. I understand the android page design and how to use the http to connect our online server and send the result back to android. The test server that I use is Tomcat and I use the simple jsp web page to test it.

From this project, I have learned not only just project developing method, but also the importance of team work and communication. I have a chance to have an project experience from needs analysis to developing which really help me to understand how the project really work in a really IT business company. On the other hand, it really help me to improve my developing skill and I still have a lot to learn since I am weak in android developing.

He Ying:

In the project, we intended to design two android ends (order provider end, delivery men end) and a web platform. I am in charge of database and web platform with Shen Zhangyi. During the process of needs analysis, we discussed the plan of the project at meetings. I wrote Gantt chart and burndown chart with Shen Zhangyi. I took part in the requirement analysis and writing design documents (business process diagram, data dictionary, E-R diagram and relational model). Data dictionary was written by me and I modified it three times during the whole process. After that, I created the database locally. I am also in charge of the back-end of web platform.

I learned a lot in the R&D Project so far, I knew the whole process of how to develop a project. We need to draw up an appropriate plan for the project and follow the plan. Besides, communication is important for us to exchange our individual progress. I also learned the important of team work from the project. Sometimes one person can not complete tasks, but with the help of teammates, not only can the task be accomplished, but it is also efficient.