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COMP2043.GRP Interim Report

**VISION-BASED PROJECT MANAGEMENT
SYSTEM FOR HOME DECORATION COMPANY**

UNIVERSITY OF NOTTINGHAM NINGBO CHINA

SUPERVISED BY: DAVE TOWEY

TEAM 01

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Team member:

Ming Kai(20126414)

Yizhou Liu(20216921)

Yuzhe Zhang(20215366)

Yuhong Wei(20217010)

Yuanshi Wang(20215278)

Zixiang Hu(20215538)

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1 Introduction

Project managers for home decoration projects face several challenges to monitor the progress of the work, for example, it can be inconvenient for project managers to check if the decoration resources are in place, and whether the work done by the workers are verified and accepted. Under this circumstance, our team decides to create and deliver a vision-based project scheduling system for home decoration company and its project manager. This system aims to display the project scheduling of a typical home decorating project. From this system the user could easily follow up the current stage of the project, as it would display what is the ongoing task, how much task waiting to do, how much task is done.

Through this WeChat applet, we provide services to mainly four kinds of users to improve the project management efficiency during home decoration. For **house owners**, it is capable of viewing the decoration progress information at any time and providing feedback or rework requirements in real-time. For the **project manager**, it can be efficient to manage all progress and respond to matters during the decoration project with the cooperation of other workers. **Workers and material managers** can also gain their current task information and audit their work more efficiently.

In order to successfully complete this project, our team paid great attention to the user experience in terms of **schedule control**, and worked hard to promote this aspect as a feature of our product. In addition to applying such a system to specific home decoration companies, we also hope to spread it to more people as soon as possible.

1.1 Problem Description

1. The system should focus on tracking the status of each task in the project, including the completion of each task and the readiness of resources.
2. It should show the manager the status of each project and each task in the project in a vivid way through the WeChat app.
3. Some details of the statistical results should be presented in a layered manner.
4. Other users, such as the resource provider of a task should be able to see and edit the status of the task.

The target of this project is to create and deliver a vision-based **project scheduling system** for a **home decoration** company. It is designed to provide a WeChat-based interface to present daily project schedules and resource status to the stakeholders.

1.2 Updated and expanded description

As for involved problems which are bound to be solved in the subsequent development process, we summarized a few points as follow:

1.2.1 Dynamic interface

Since the main function of our system is to monitor the progress of the home decoration project and utilize time efficiently to complete the project, the applet must have capacities of tracking and recording the completion status and resources preparation for each task. More importantly, the construction status should be able to **dynamically reflect** in the forms of flow charts, photos and charts. Moreover, it should be noted that other users will log in and modify the task status as the project progresses. For this reason, how to sort out the relationship among the changes of different users is a serious problem as well.

1.2.2 Information interaction

Obviously, it is the project manager that plays the most important role in the whole project. Hence, the functions involved project manager are the most complicated and difficult to implement. It can be predicted that **massive information exchange** will occur continuously between the project manager and database or among users. We hold the view that there is still a great amount of work need to do before we crack the problem.

1.2.3 User maintenance

According to the requirement given by the client, the users of our project can mainly be classified as 4 characters: **project managers, house owners, workers, and resource managers**. The service is also available to potential users. Therefore, this applet is expected to separate user categories in the login phase so that they can perform their respective functions appropriately. This is what we will focus on after we have solved the above two problems

2 Background Information and Research

2.1 Existing system analysis

We analyse the existing home improvement project management systems on the market and select the two most informative ones shown below. The advantages and disadvantages of each system are discussed. In this way we aim to improve the competitiveness of our software in the current relevant software market.

2.1.1 ZhiJianCloud project management APP[1]

The application's modules can be divided into construction delivery management, schedule control management, quality and safety management, data insight (data statistics/Kan-ban), information coordination (including photo recording, reports and mobile address book) and smart hardware.



Figure 1: Menu Interface Display

Pros

1. Camera Button: This module is kept statically at the bottom of the interface. It is convenient for users to upload the reports for those modules. Besides posting photos (enable to edited and location recorded) into project record, the function can also record related modules and responsible person.
2. Digital Task View: The view of the sub-modules within these modules is divided into 3 columns (click to switch)—Task status, Log and Statistics.

- (a) Task status: Different task forms are showed in each card with 4 state which are 'Overall' 'To be complete' 'Complete' and 'Overdue'. When clicked, each task record accompanied by a photograph accurately depicts the current task status, the start and finish times of the construction and the person responsible.
- (b) Work log: Users can upload the real-time construction progress related to them. It is similar to the detailed task status report.
- (c) Statistics: System can dimension the data to show the proportion of different task state.

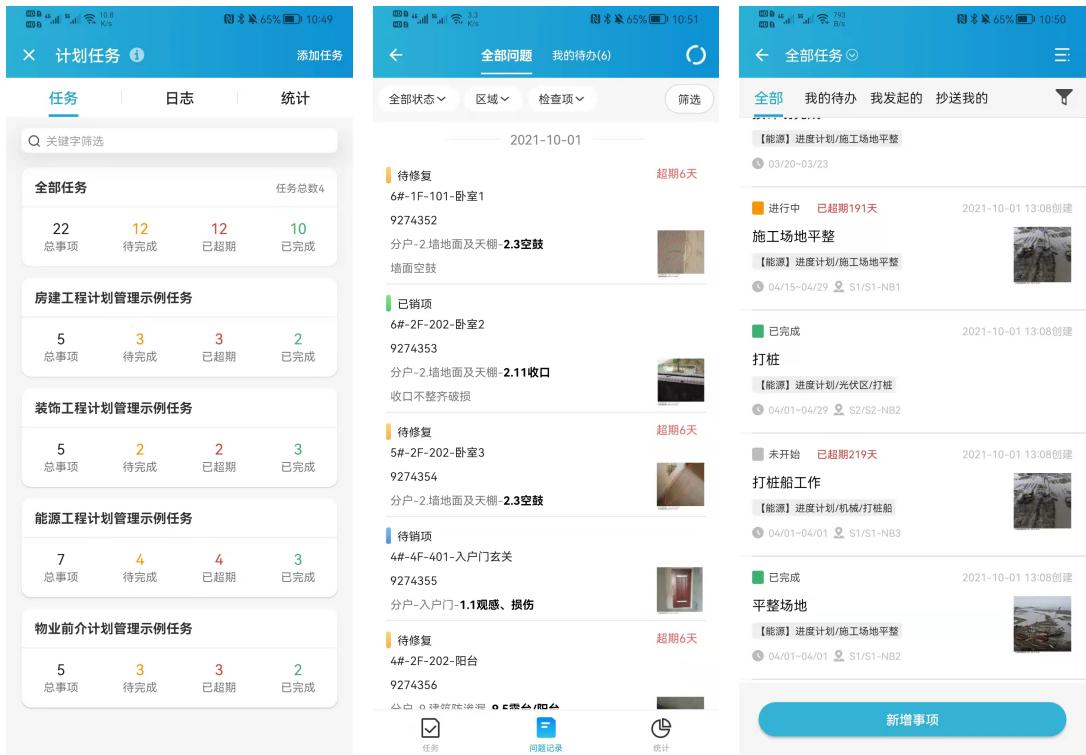


Figure 2: Progress Control and Quality Management Interface

3. Visualized floor plan: By clicking on each section of the floor plan, the delivery status of each section can be checked. On the detail screen, categories that need to be rectified can be recorded, which can then be uploaded and notified to the relevant person.
4. Check list: For each decoration case, the list gives detailed category to be accepted by project managers.

Cons

1. Cluttered user interface. All interface tasks are button states with no clear distinction between categories, resulting in a cluttered overlay of some frequently used buttons with infrequently used buttons in multiple buttons, which is detrimental to the user experience.
2. Non-personalised display of functions. All application buttons are listed in an unorganised manner in the interface. For users with different functional rights, they cannot find the relevant task they are responsible for in a short time.

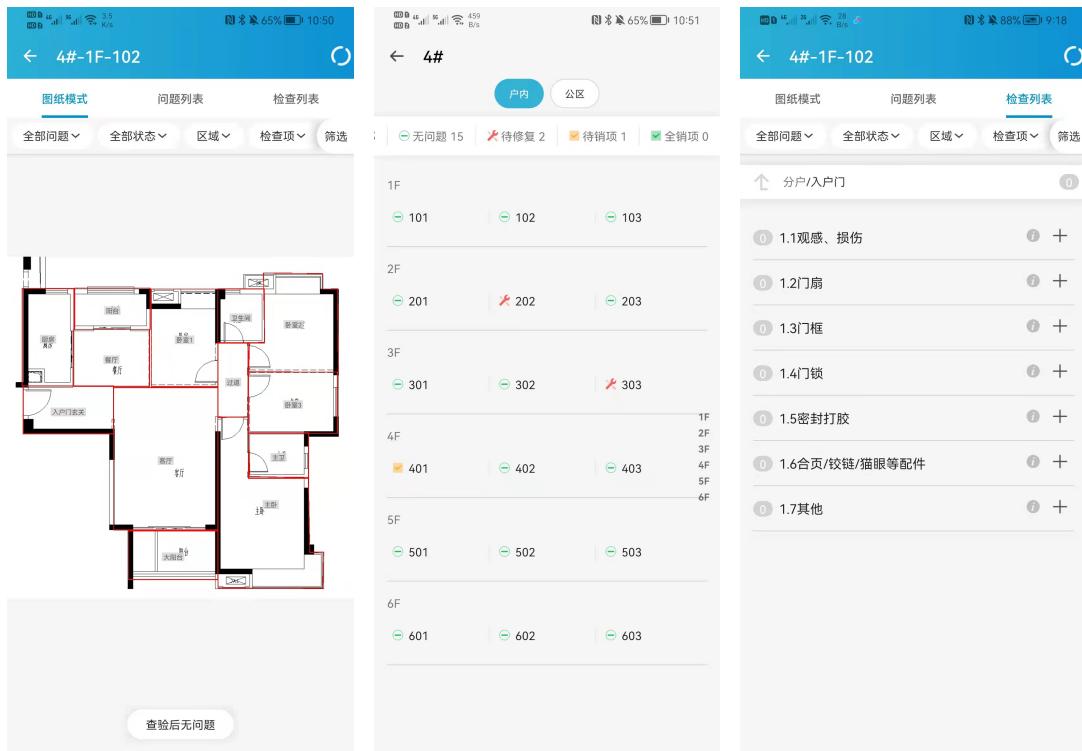


Figure 3: Construction Delivery Management Interface

2.1.2 Worktile Website APP

Worktile is a collaborative office platform for enterprises, suitable for personalised office management needs in different industries and scenarios. It can help enterprises implement project management, standardise processes, build knowledge bases and assist in management decisions. Its attendance and approval functions are better than its peers, but its practicality is still relatively weak. If the need for attendance and approval is at a basic level, Worktile is a useful tool.

Main Function Instances

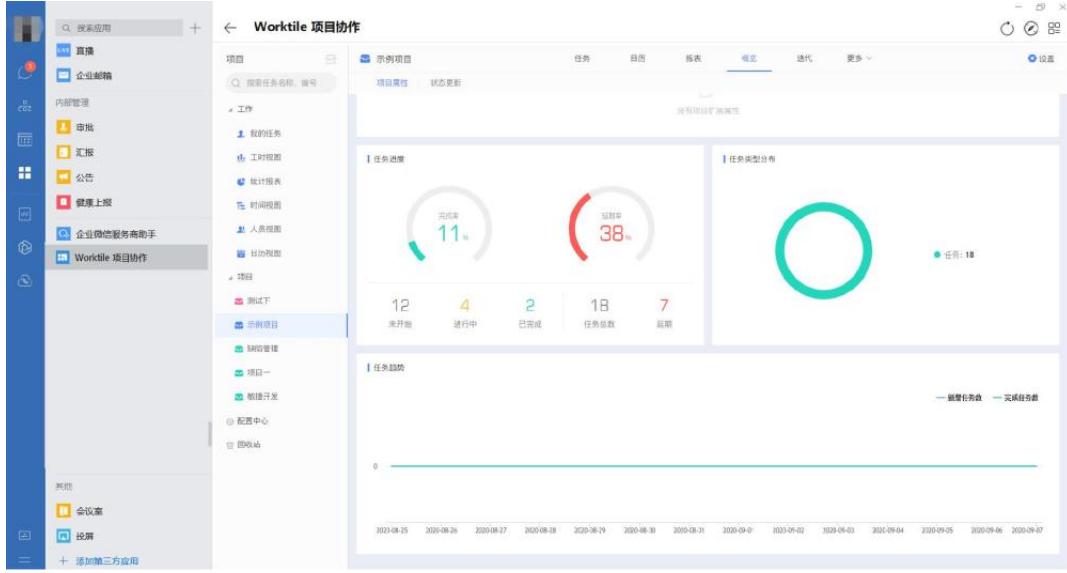


Figure 4: Project Overview Display

1. Task Overview: In this module, user can browse the detailed information of tasks include task state, deadline and responsible person. Project manager have permissions to modify, classify and create new task. This module also includes many sub-modules such as task view, task calendar, working-hours statistics, report and so on.



Figure 5: Task Overview Display

2. Task Statistics: For task progresses, task statistics interface gives detailed information by using various statistical diagram.



Figure 6: Task Statistics Display

3. Permission Setting: For members in the project, their permission can be set in this module.

Advanced Pros

1. Agile research and development: This function provides an efficient and standard agile RD management solution to solve the challenges of enterprise RD.
2. DevOps continuous delivery: This function can deeply integrate the RD tool chain, open up agile RD data and help enterprises build an automated RD pipeline to achieve rapid product build and release.
3. Team collaboration: This function can suit for different industry collaboration scenarios such as project management, scheduling, OKR management, document collaboration and real-time communication scenarios.

Cons

1. The functionality is not comprehensive. Other modules for day-to-day office use are lacking and need to be used in conjunction with other software. As far as task management is concerned, the free version is not fully functional, for example in terms of time statistics.
2. The application does not support private deployment and poses a number of security risks.

2.2 Market research

China's urbanization process is accelerating, and accordingly, people's demand for housing remains high, and the demand for home decoration is growing rapidly.

2.2.1 Statistic Changes

According to the China Construction Decoration Association, in 2018, China's construction decoration industry completed a total project output value of 4.22 trillion yuan, of which the residential construction decoration industry achieved a total output value of 2.04 trillion yuan. Compared with the total output value of residential building decoration industry of 0.95 trillion yuan in 2010, the compound annual growth rate was as high as 10.2 %. 2019 residential decoration business output value of the building decoration industry was about 2.24 trillion yuan, with a year-on-year growth rate of 10.02 %, while the total project output value completed by China's public building decoration business during the same period had a compound annual growth rate of 8.3 %, and the residential decoration business Growth rate is significantly higher than that of public building decoration business (2020 China Construction Decoration Industry Market Status, 2021)[2], the home decoration industry has shown great potential for development. In the past 10 years, the market size of the home decoration industry has grown steadily, and the future home decoration market size is expected to reach 6 trillion yuan (Qu. Consumer finance to help home decoration, 2018)[3]. In order to promote the healthy development of the industry (and improve the efficiency of the project), it has become necessary for customers and various principals to have instant and accurate information.

2.2.2 Motivation

However, before the rise of information technology, companies recorded business data through manual records and other means. Each customer (family) and project manager could not get accurate and up-to-date information, and domestic decorators only obtained information about a particular family's decoration by conducting on-site surveys and asking relevant people, which could also lead to delays in decoration projects and low project efficiency, but at this time. The new consumer groups are relatively more aware of personal consumption and their home decoration needs are more refined, so improving users' home decoration service experience through digital technology and solving the problems caused by human reasons in the past can also promote the healthy development of the industry and start to become a new driving force for industry growth.

2.3 Technical research

In this section, we would talk about the result of our technical research, e.g. what technique we would use and how we made the decision and how we would implement it.

2.3.1 Background of technical research

Before starting the technical research part, let's first think about what kind of problem we are facing and what the client is asking for. In our understanding the Client would be more focused on the interaction with the applet, Whether its reaction is smooth, whether its graphic interface is precise. Moreover, the parallel stage in the whole project is limited. As a consequence, implementing the cutting edge technology such as Genetic algorithm raised by CARL.K.C (2001) [4], frog-leaping optimization algorithm raised by EMAD.E (2007) [5] are just like using a sledge-hammer to crack a nut... Our decision toward this case is to implement critical path method(CPM), and may follow the example provided in paper "Implementation of Material Requirement Planning(MRP) on Raw Material Order Planning System for Garment Industry"[6] to implement material requirements planning(MRP).

2.3.2 What is critical path method(CPM)?

CPM was developed in the late 1950s as a solution to the problem of increased costs due to inefficient scheduling. Its main component is the critical path, which is the longest sequence of activities that must be completed on time in order to complete the entire project. Any delays in critical tasks will delay the rest of the project, causing delay to the whole project[7].

2.3.3 How we would implement CPM?

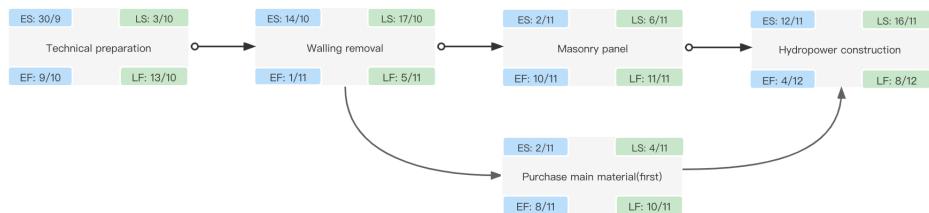
Firstly, we list all the activities. Here we used a work breakdown structure(see figure) to list all the project activities. The list of activities in the work breakdown structure serves as the foundation for the rest of the work.



Secondly, based on the work breakdown structure, we figure out the tasks that are dependent on one another. This will also help us identify any work that can be done

in parallel with other tasks. The list of dependent tasks is referred to as an activity sequence, which will be used later to determine the critical path.

Afterwards, we turn the work breakdown structure into a network diagram (see figure), which is a flowchart displaying the sequence of activities. In network diagram, each task is encapsulated into a box (see figure) and connected with arrows to depict dependencies. Then the estimate task duration is write onto each box. With upper left corner early start (ES) date, upper right corner early finish (EF) date, lower left corner late start (LS) date and lower right corner late finish (LF) date. Then the critical path is right in front of us, the sequence of activities with the longest duration is the critical path.



3 Requirement specification

3.1 Functional requirement

3.1.1 Log-in part

1. User should be able to reset its account when he forget his/her password.
2. System should send a piece of verification code to validate if it is the owner of the account that is changing password.
3. System should verify password and if it is wrong, login error should be displayed.
4. System should detect whether it is a house-owner, manager, worker, admin or material manager account and show according page.
5. System should allow user to sign up an account through binding phone number.

3.1.2 Admin

1. Administrator should be able to see the overview of all the ongoing project of the company, where overview should include start time, expected duration, project manager and current stage.
2. Administrator should be able to view detailed information of a specific project when clicked in, where detailed information should include project manager, current stage, start time, end time, priority, tag, participant list, description of the project and subtask.
3. Administrator should be able to view the list of all the current idle working team / project manager.

3.1.3 House owner

1. House owner should be able to View the whole project progress in Kanban or Task Overview.
2. System should display each task unit with information contains start time, due time, subordinate, stage, priority and description.
3. House owner have no right to edit/modify whatever he/she sees.
4. System should divide the jobs into four stages(Completed, Progressing, Overdue and Not Started) with different colors, when task is displayed in Kanban mode.
5. System should display the project progress in creation order, when task is displayed in overview mode

6. House owner should be able to check the project state and if something went wrong he should be able to give feedback to manager.
7. House owner should be notified when new progresses are made.
8. House owner should be able to see the overall budget from the beginning of the project.

3.1.4 Project manager

1. Project manager should be able to View the whole project progress in Kanban or Task Overview.
2. Each task unit should show the \downarrow start time, due time, subordinate, stage, priority and description \uparrow .
3. Project manager have the right to accept or reject the work progress, then upload the confirm record or give a feedback.
4. When displayed in Kanban mode, system should divide the jobs into four stages(Completed, Progressing, Overdue and Not Started) with different colors.
5. In overview mode, system should display the project progress in creation order.
6. Project manager should be able to check the current project state and upload the record log.
7. Project manager should be notified when house owner have rework requirements on some tasks or have any feedback.
8. Project manager should be able to see the overall budget from the beginning of the project to current stage.
9. Project manager should be able to create new project by template in database.
10. When project create from template, project manager should be able to Initialize a detail home decoration process flow by a process list, which has priority and sub project.
11. When project create from template, project manager should be able to initialize the material management list according to the provided construction specification, which has fundamental budget and suppliers' information.
12. When project created from template, project manager should be able to initialize the staff composition list which contains the information about the job category and the contact information. Project manager can select different construction teams to participate the project.
13. Project manager should be able to create invitation link to invite other users (workers or house owners) to participate in the project.

3.1.5 Material manager

1. Material manager should be able to view all his tasks in Task Overview.
2. Material manager is not allowed to create assignments on his own and could only accept task assigned by project manager.
3. System should display each task unit is supposed with information contains type, quantity of materials, destination address and deadline of delivery.
4. System should display the items contained in Task Overview from top to bottom according to how much time is left.
5. Material manager should be able to click button "complete" to confirm that he has finished this task. After that, this item will be deleted automatically from Task Overview and project manager can receive notification message as well.
6. Material manager should be able to notify the manager if the task can not be finished on time for some reason and could click button "modify" to apply for extending deadline or increasing budget.

3.1.6 Worker

1. Worker should be able to view the introduction of his part of task, which include personnel involved in this task, engineering materials, specific engineering step's information and construction date(flexible time).
2. Workers should be able to update task progress.
3. Workers should be able to end subtask of a specific engineering step but could not create subtask.
4. Workers should be able to upload attachments.
5. Workers should be able to upload photos taken at the start of construction(record start time).
6. Workers should be able to upload photos taken at the end of construction(record end time).
7. Workers should be able to receive rework and specific information of house owner from Manager

3.2 Non-Functional requirements

3.2.1 Performance

1. App response time to user commands must be no more than 2 seconds in general hours and no more than 4 seconds in peak hours.
2. The software should be able to make a relatively fast response during the assessment.
3. The database must be able to support up to 100 users for the initial version of the project.
4. The app must support cross-platform usage.

3.2.2 Reliability

1. The software should minimize the occurrences of crashing and not responding.
2. The server should provide a fast access in both China and abroad.

3.2.3 Resource usage

1. CPU Occupancy $\leq 50\%$
2. Memory Occupancy $\leq 50\%$

3.2.4 Compatibility

The operating systems that the software supports are Android and iOS.

3.2.5 Usability

The user interface of the software should be clear and simple while achieving the main functions.

3.2.6 Maintainability

The software should enable the developers to modify criteria of both assessments in a convenient way.

3.2.7 Safety

1. After identity authentication, users can only access data and perform operations within their permission limits.
2. Different users have different identities and permissions. On the premise that user identities are authentic, the software should provide reliable authorization management services to protect data from unauthorized or unauthorized

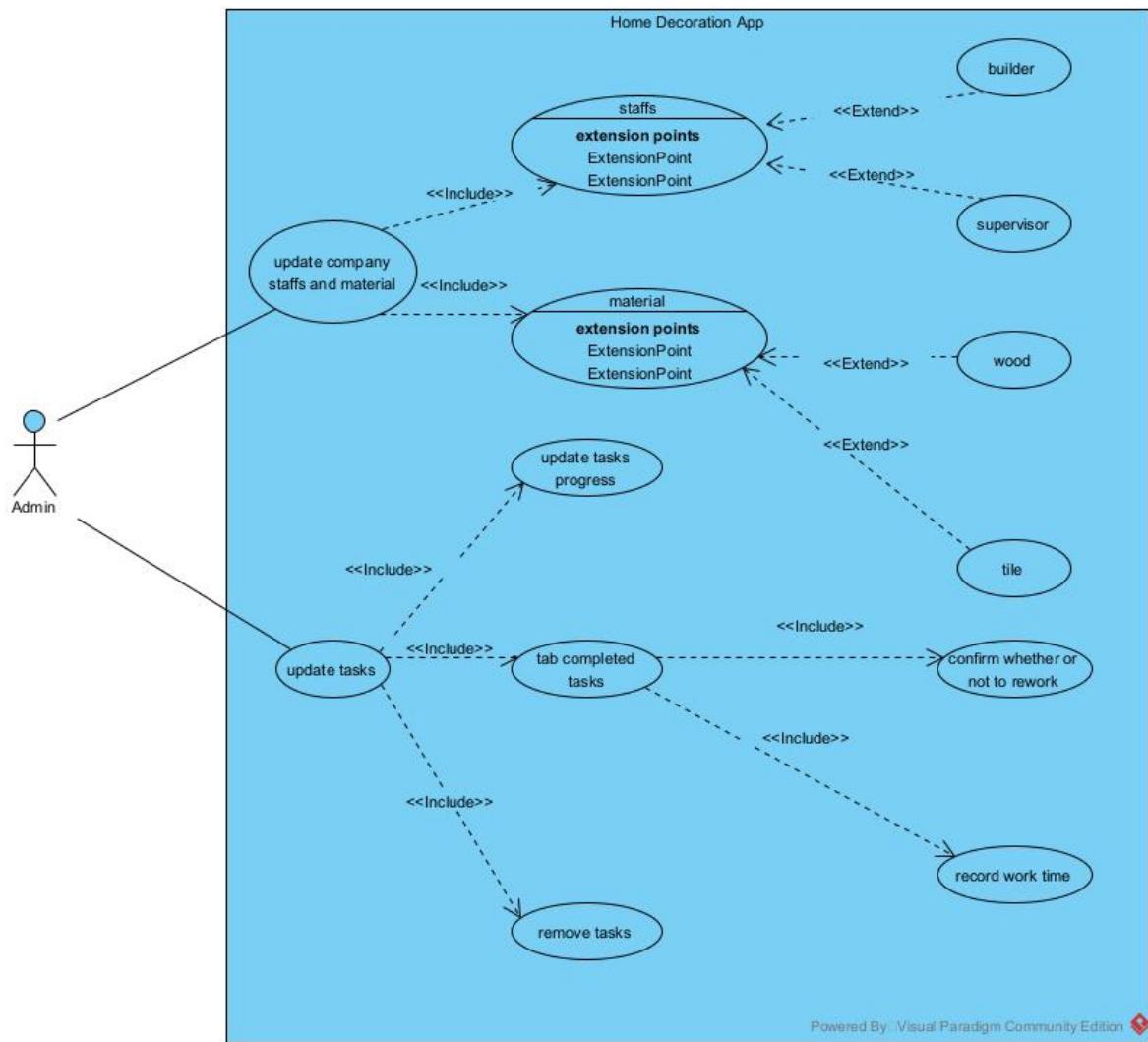
access and tampering. Meanwhile, data confidentiality and integrity should be ensured.

3. The software provides run log management and security audit functions to trace the historical usage of the system.

4 User interface and prototyping

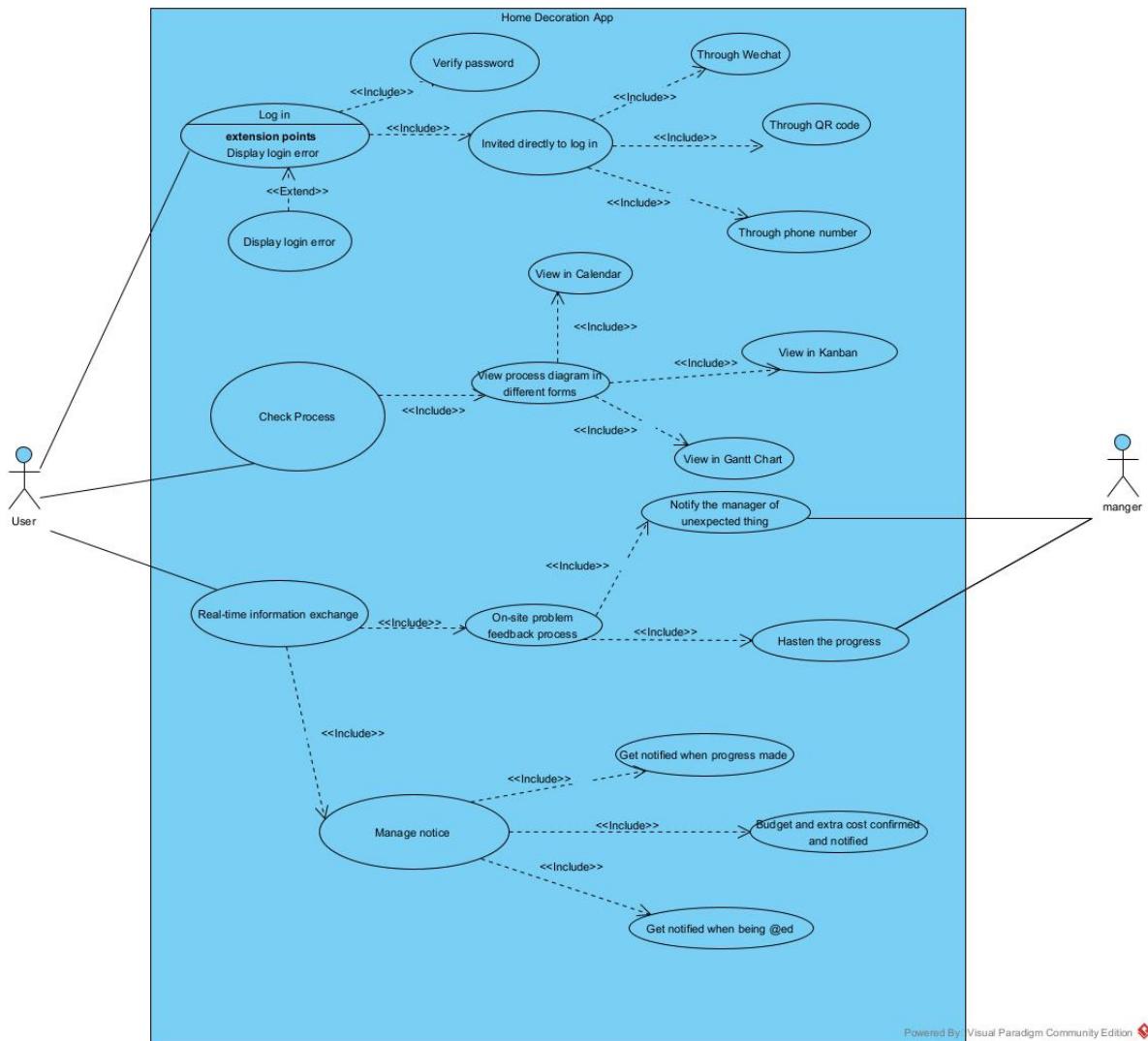
4.1 UML design

4.1.1 Use case diagram



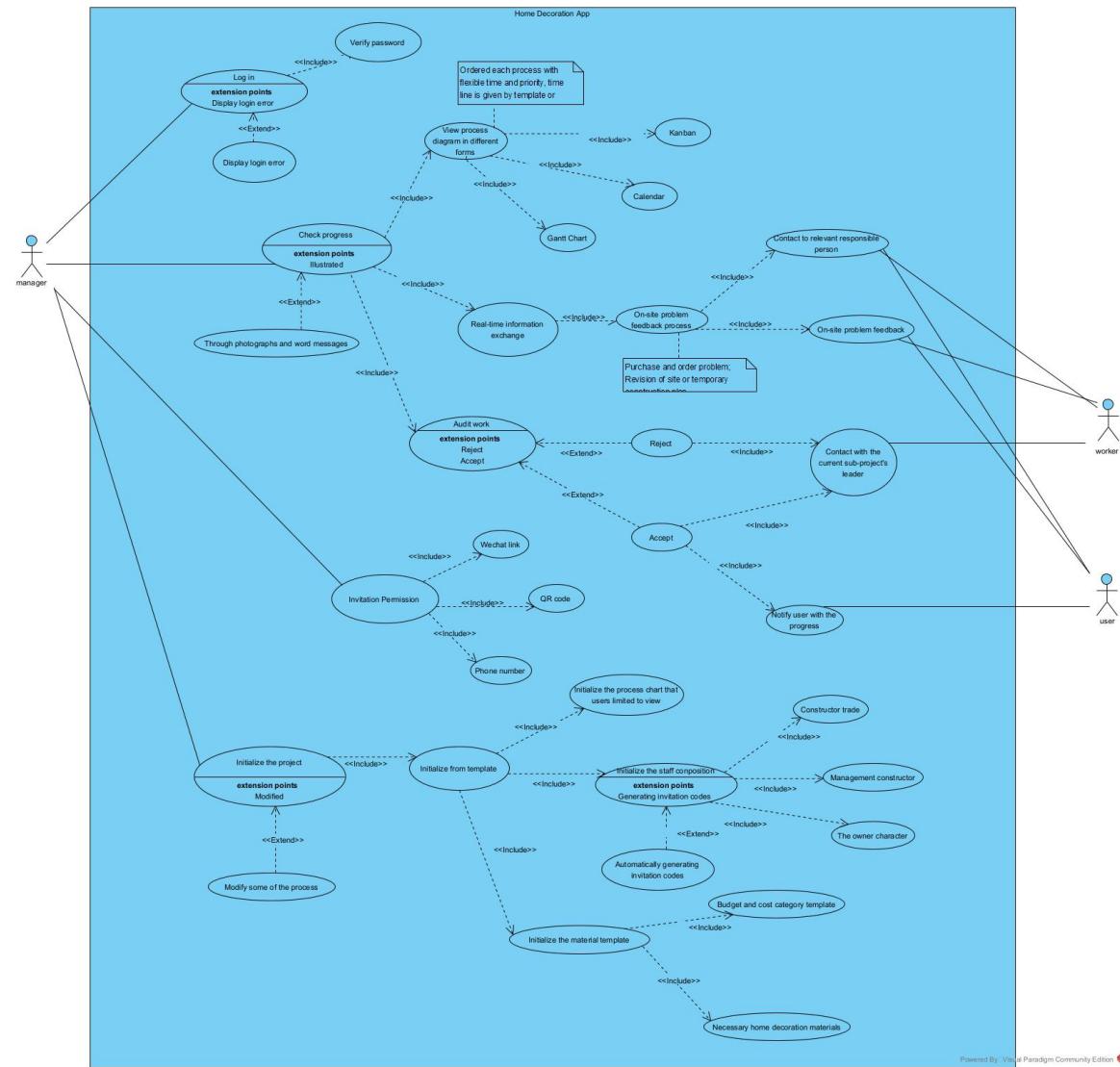
Use case diagram: Administrator

The above diagram illustrate how the administrator would interact with the system, which implements the functional requirements mentioned in requirements specification for [Administrator](#).



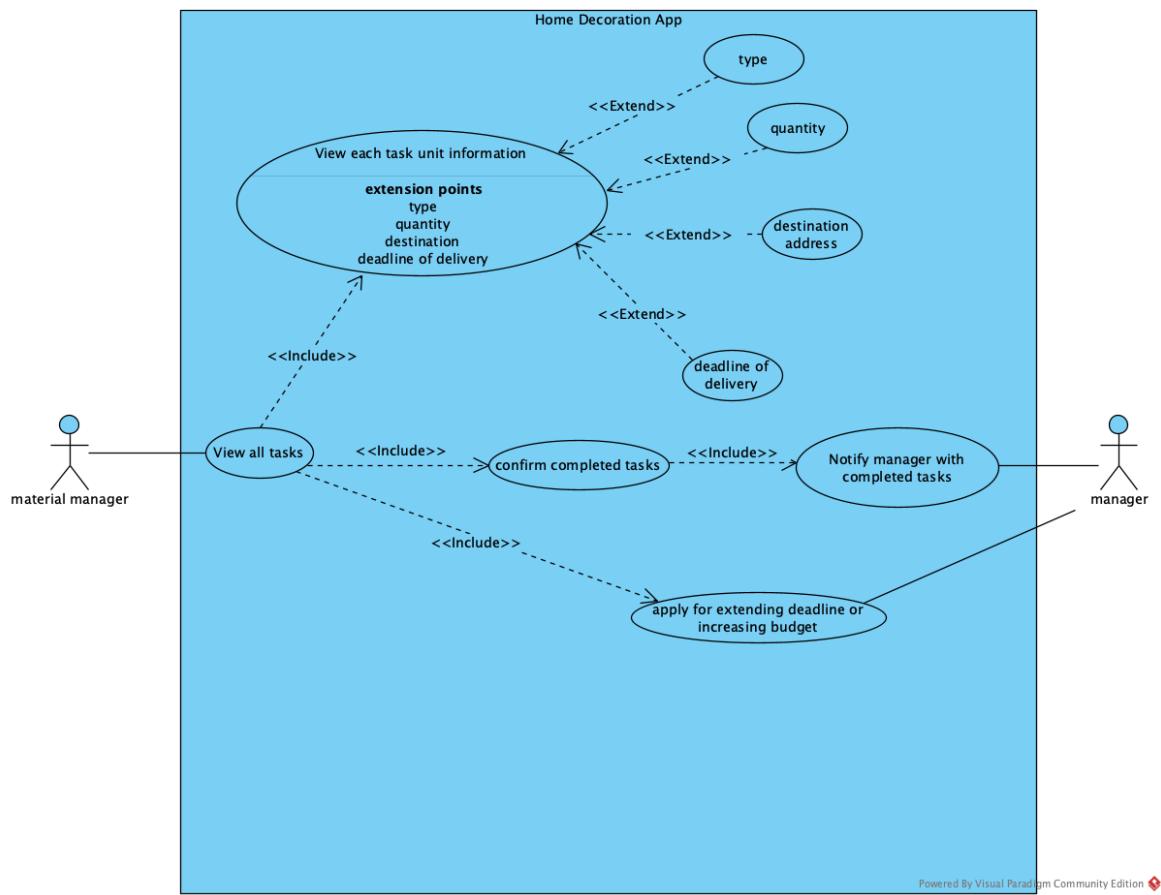
Use case diagram: House Owner

The above diagram illustrate how the house owner interact with the system, which implements the functional requirements mentioned in requirements specification for ***House Owner***.



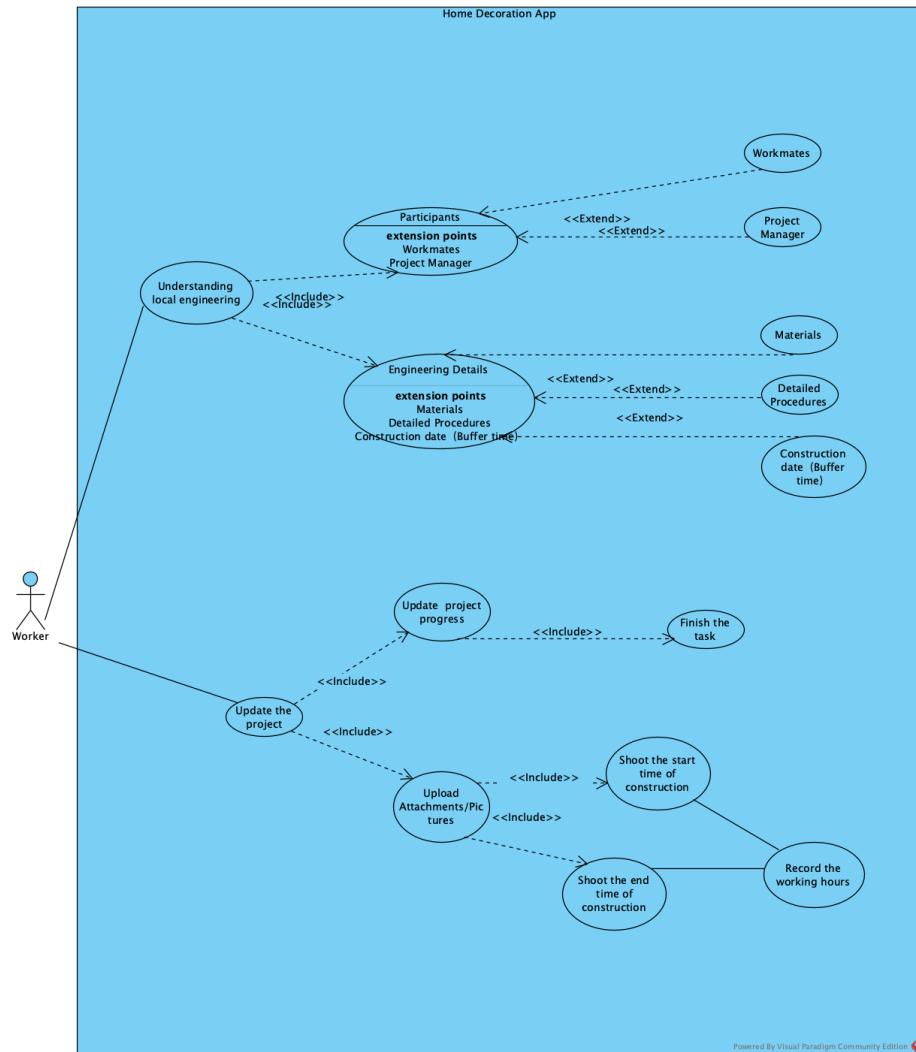
Use case diagram: Project Manager

The above diagram illustrate the relation between the project manager and the system, which implements most of the functional requirements mentioned in requirements specification for [**Project Manager**](#).



Use case diagram: Material Manager

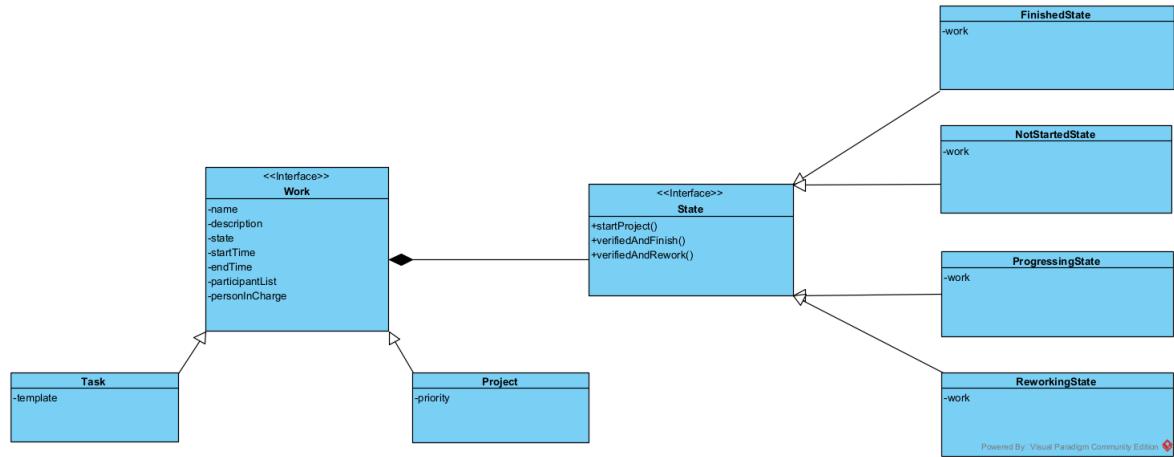
The above diagram illustrate the relation between the material manager and the system, which implements the functional requirements mentioned in requirements specification for [Material Manager](#).



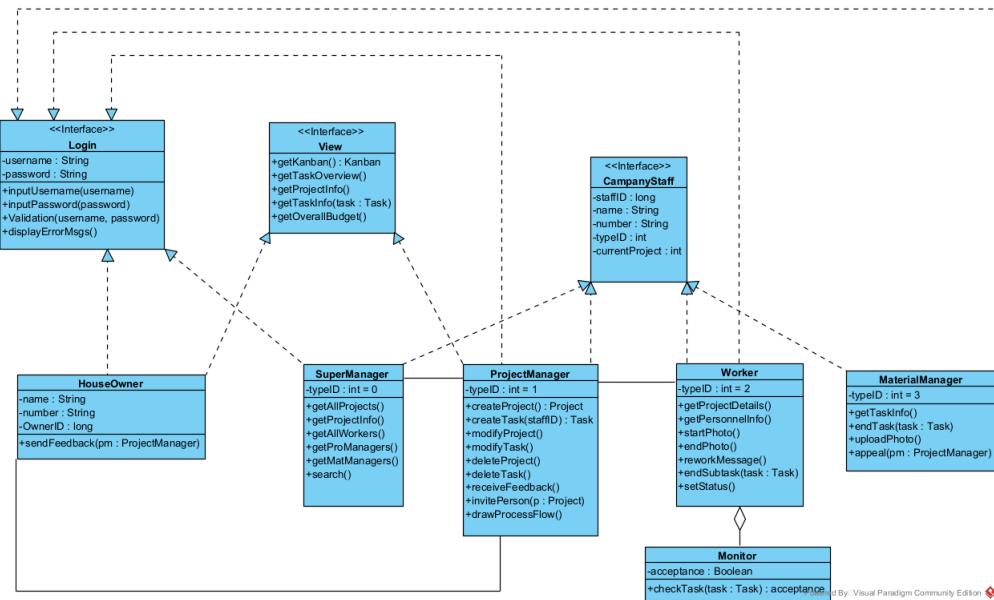
Use case diagram: Worker

The above diagram illustrate the relation between the project manager and the system, which implements the functional requirements mentioned in requirements specification for **Worker**.

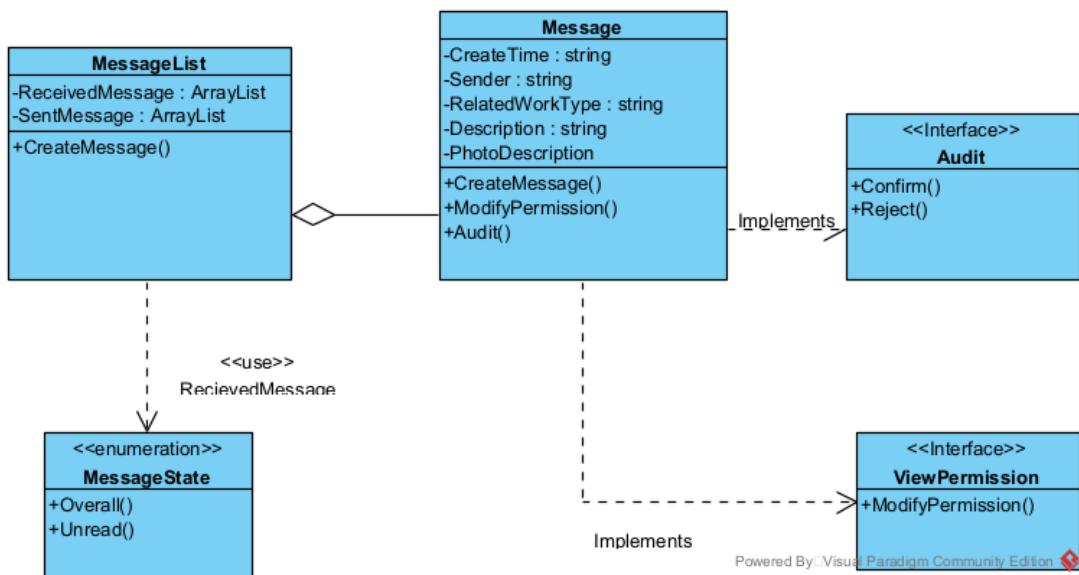
4.1.2 Class diagram



Class diagram: Project

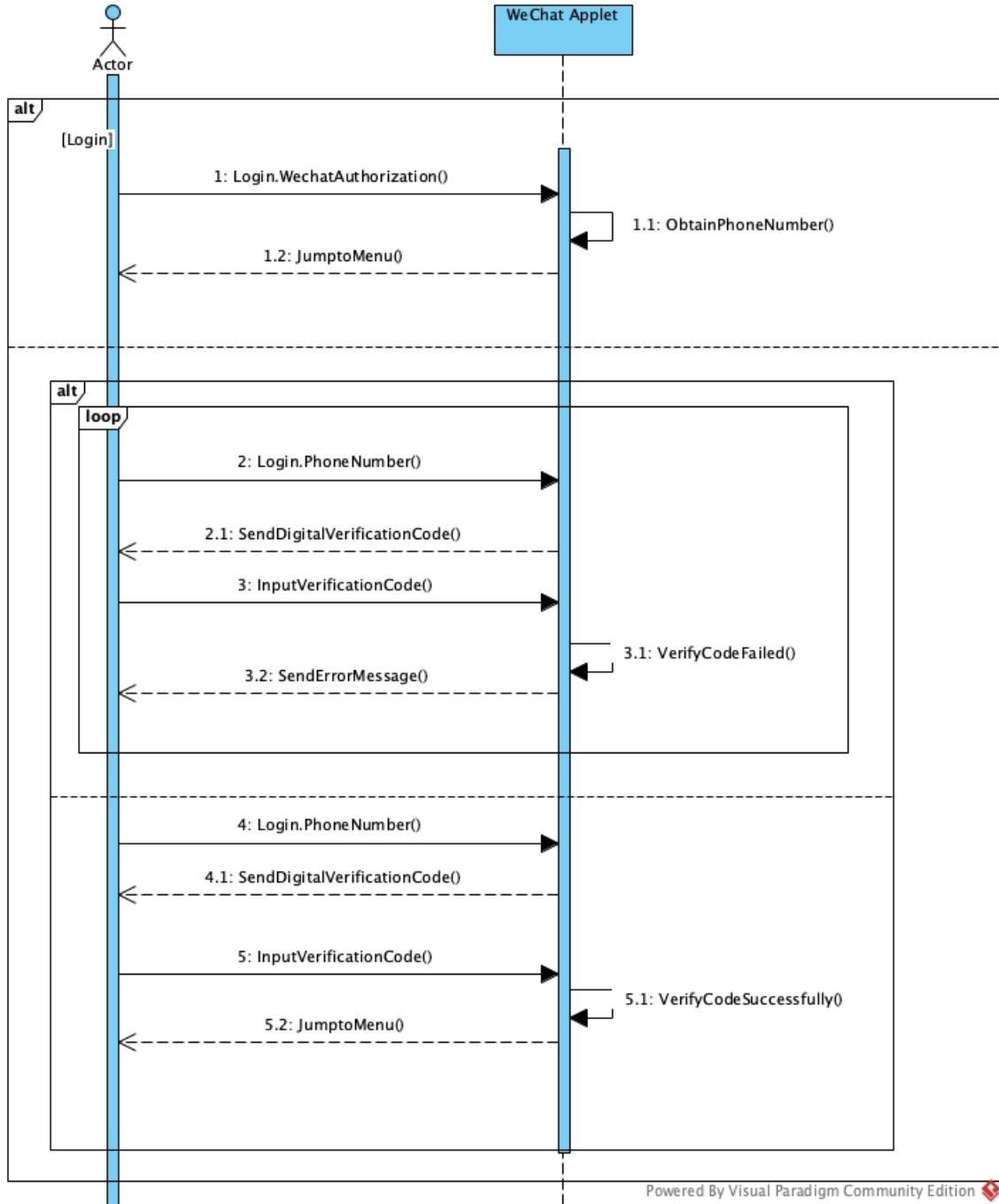


Class diagram: User

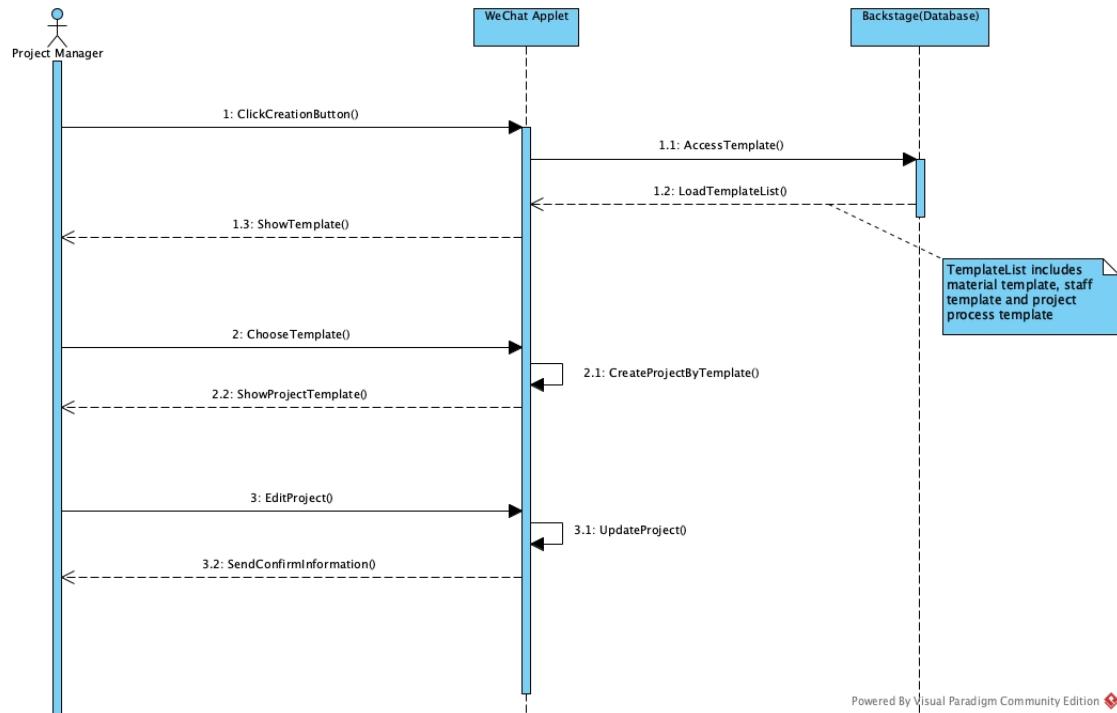


Class diagram: Message

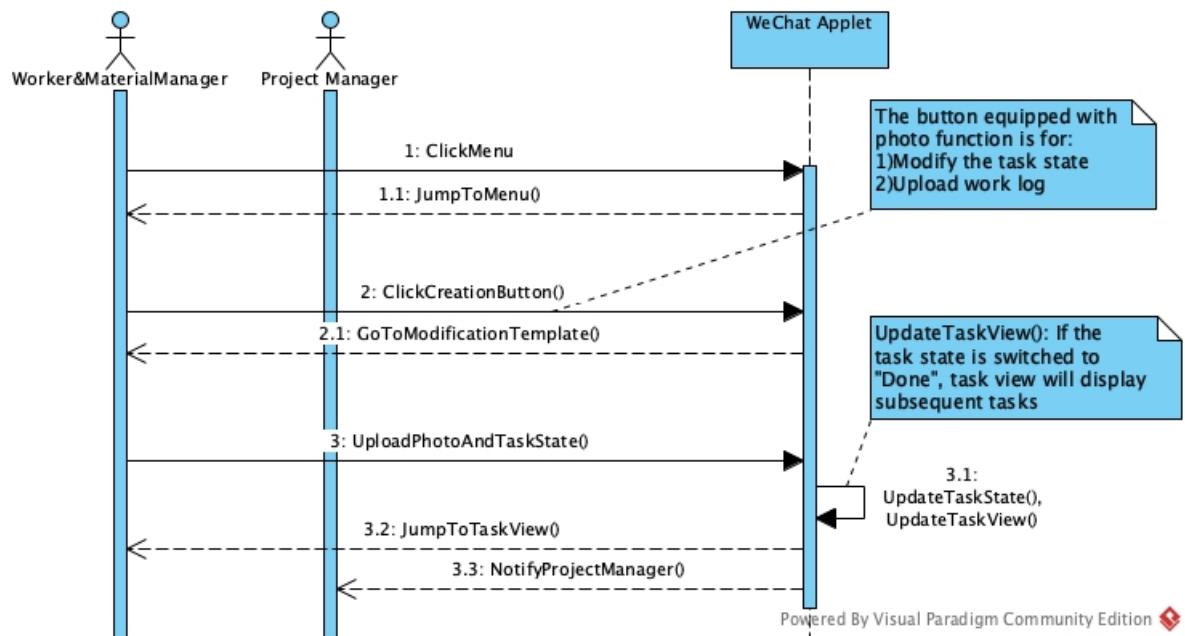
4.1.3 Sequence diagram



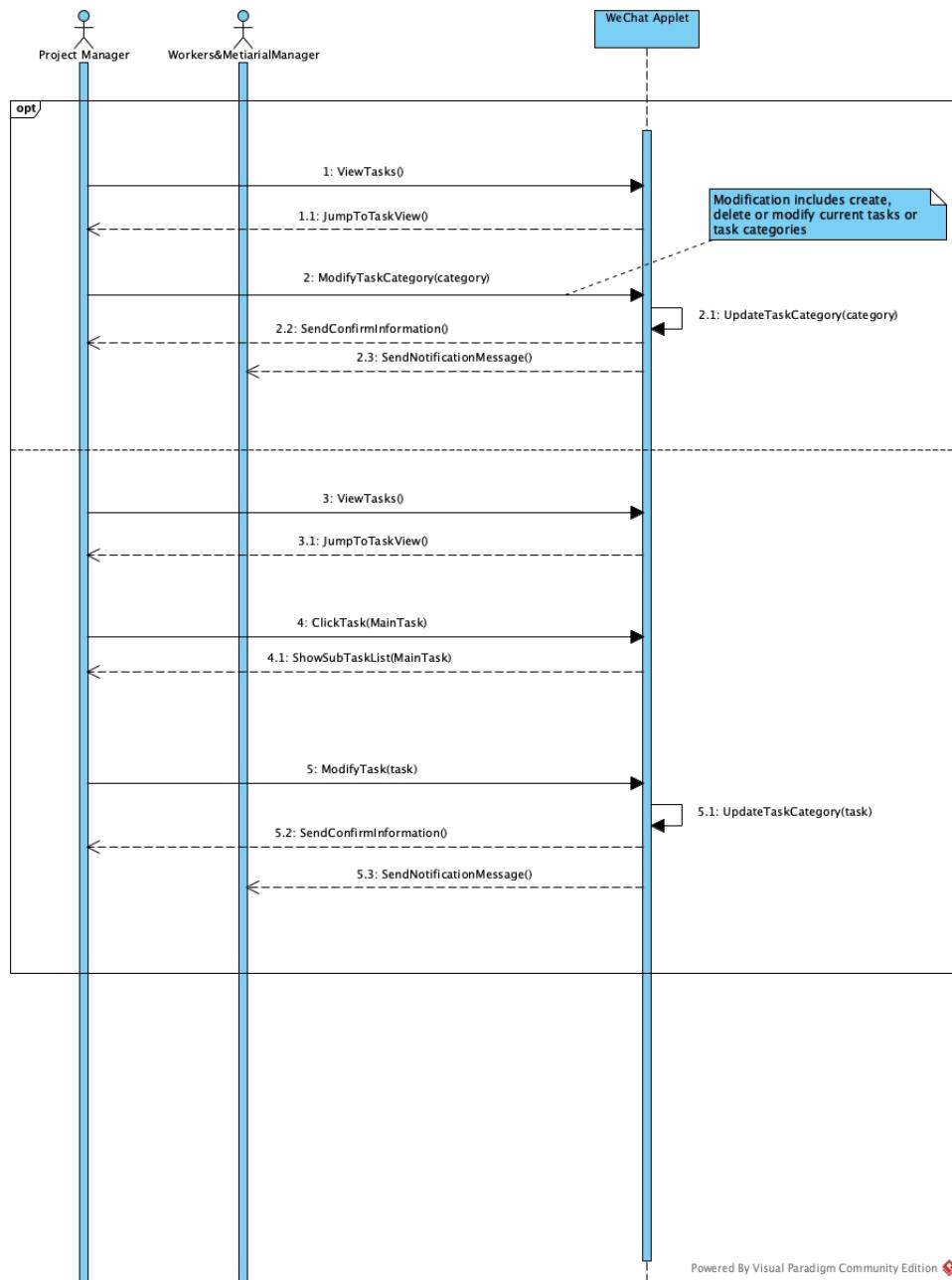
Sequence Diagram1: Log In



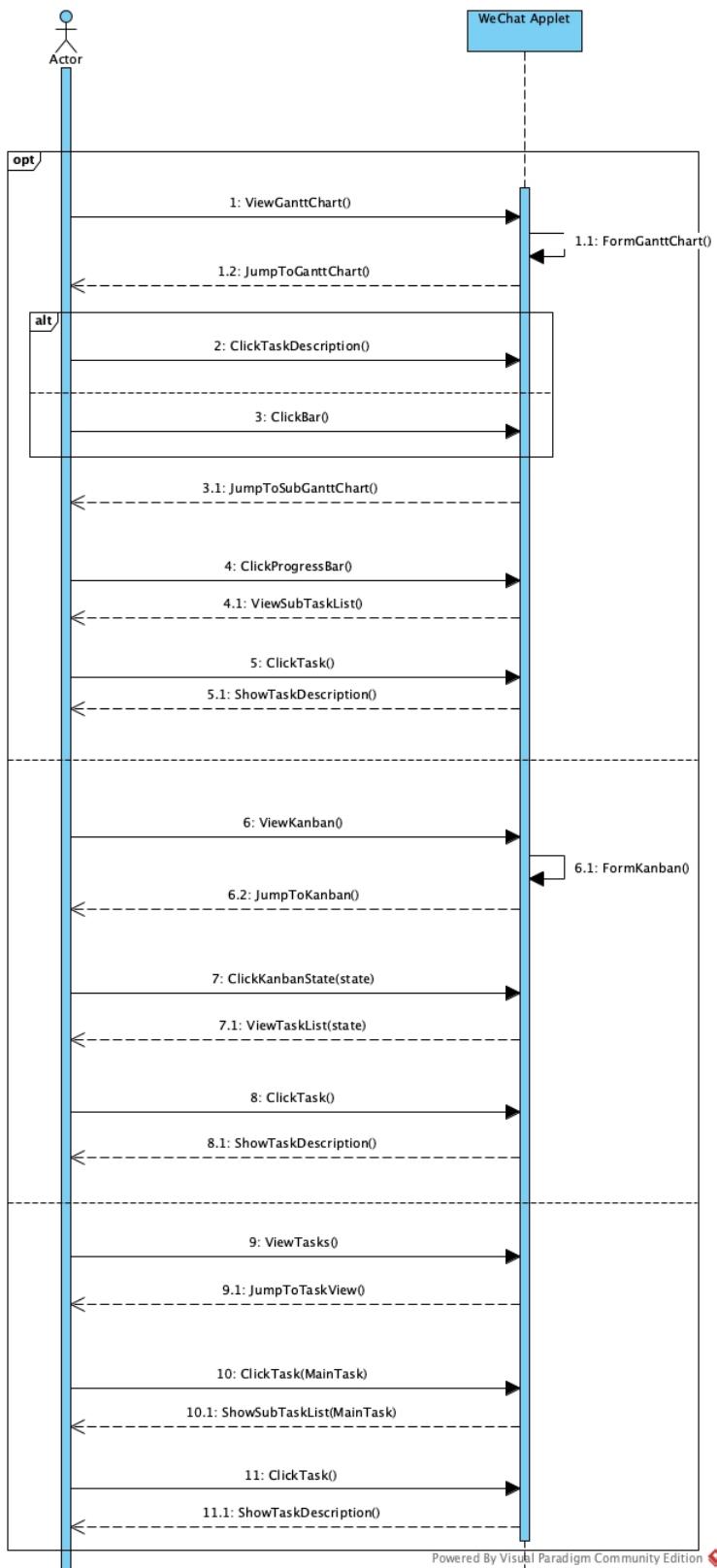
Sequence Diagram2: Initialize Project(Project Manager)



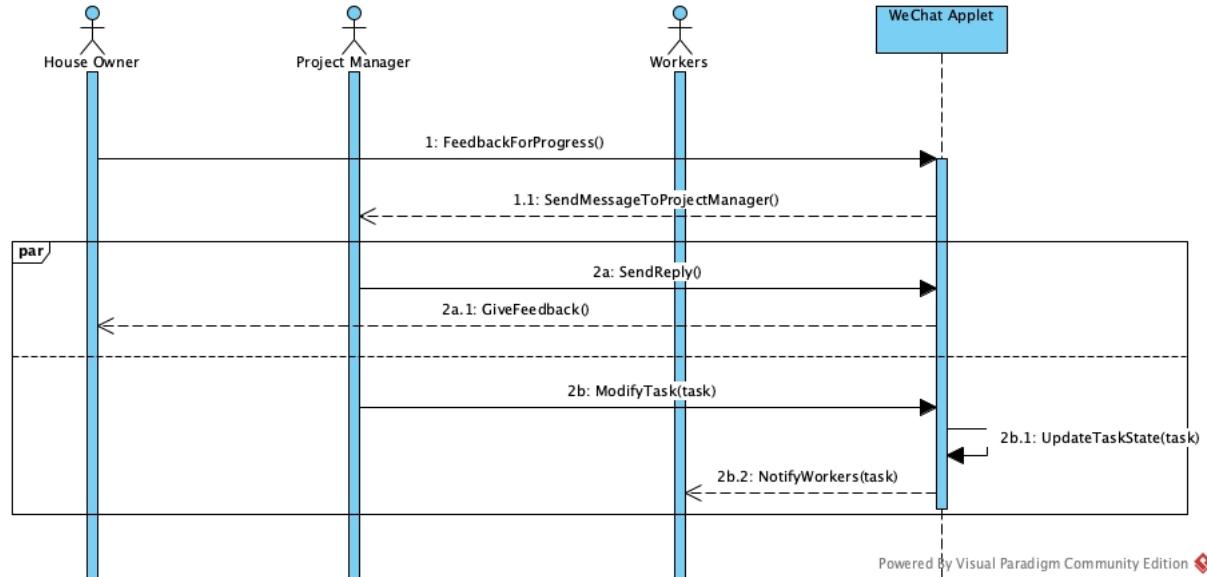
Sequence Diagram3: Modify Task State(Sequence Diagram1: WorkerMaterial Manager)



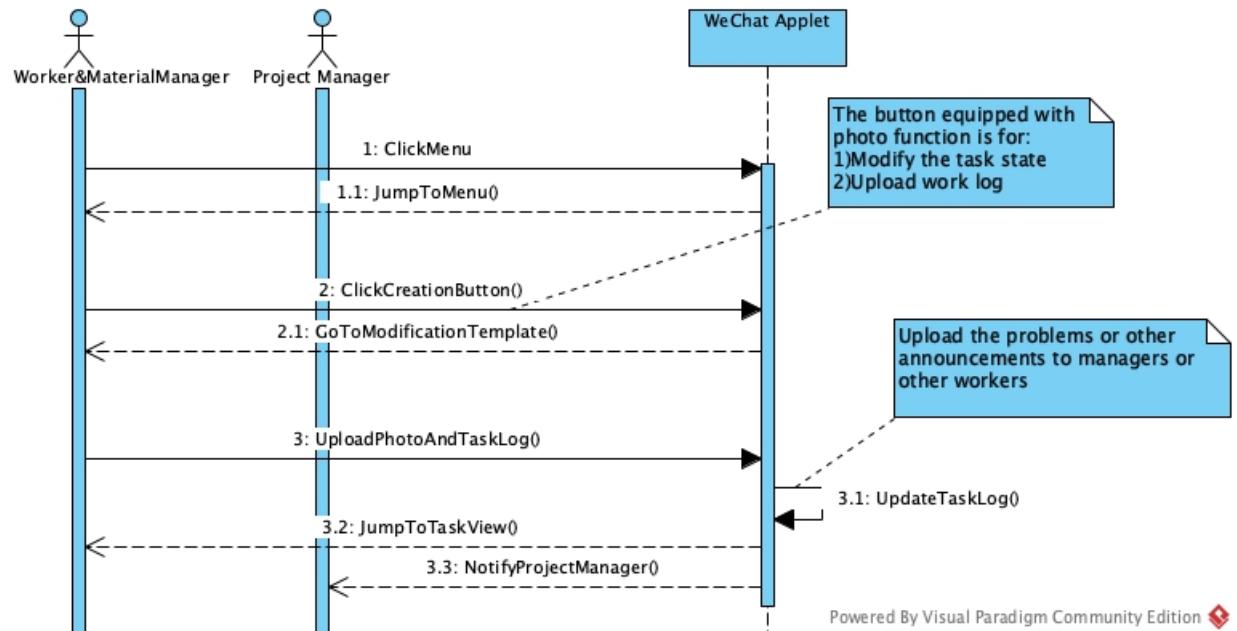
Sequence Diagram4: Modify Process(Project Manager)



Sequence Diagram5: Check Process



Sequence Diagram6: Real-time Information Exchange(House Owner)



Sequence Diagram7: Real-time Information Exchange(Worker)

4.2 Prototype

For more detailed prototype, please refer to the appendix.

19:04 ↕ ⚡ ⌂ ⚡



Project Management Tool

Chatting & Sharing

Create and exchange knowledge in
real-time collaboration

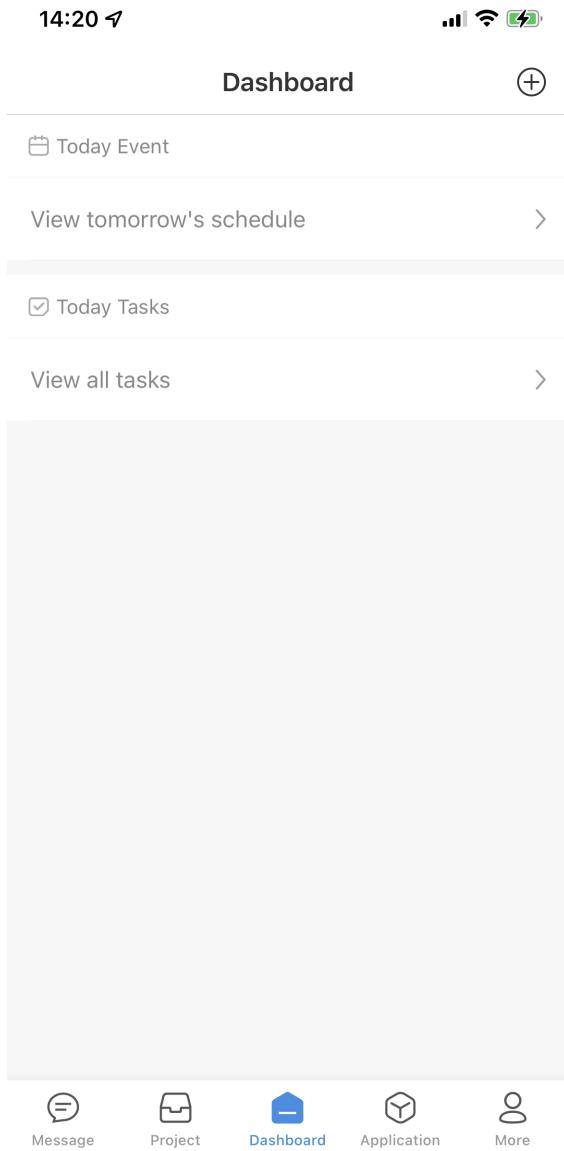


Initial page of the applet

Scene ID: [Scene00_initialPage]

Scene name: Initial page of the applet

Functionality allowed: Allow user to Sign in or Sign up

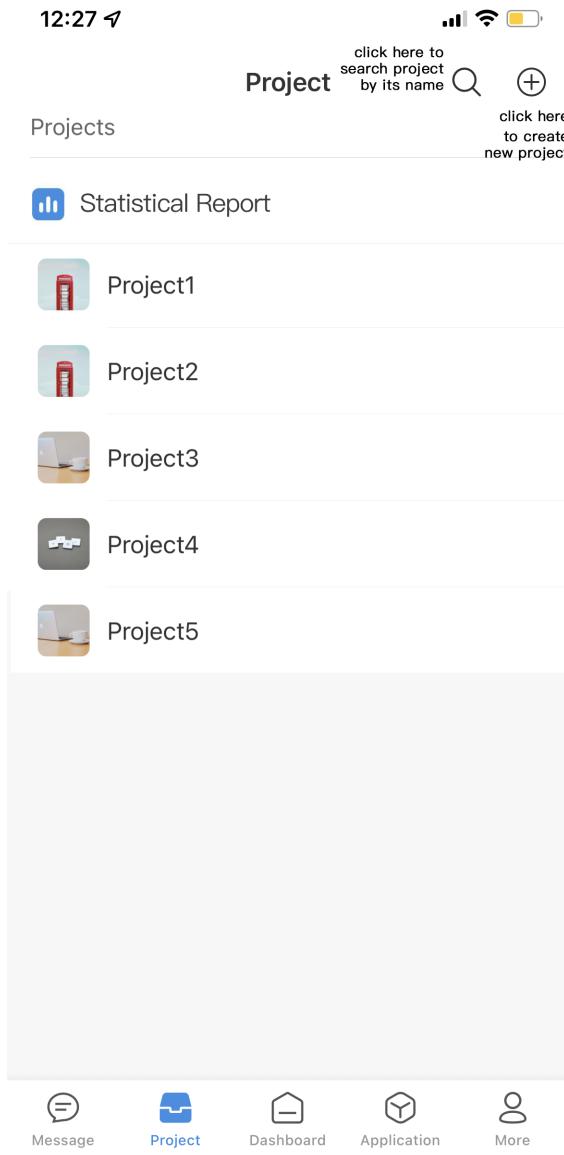


Dash board of the applet

Scene ID: [Scene09_dashBoard]

Scene name: Dashboard of the applet

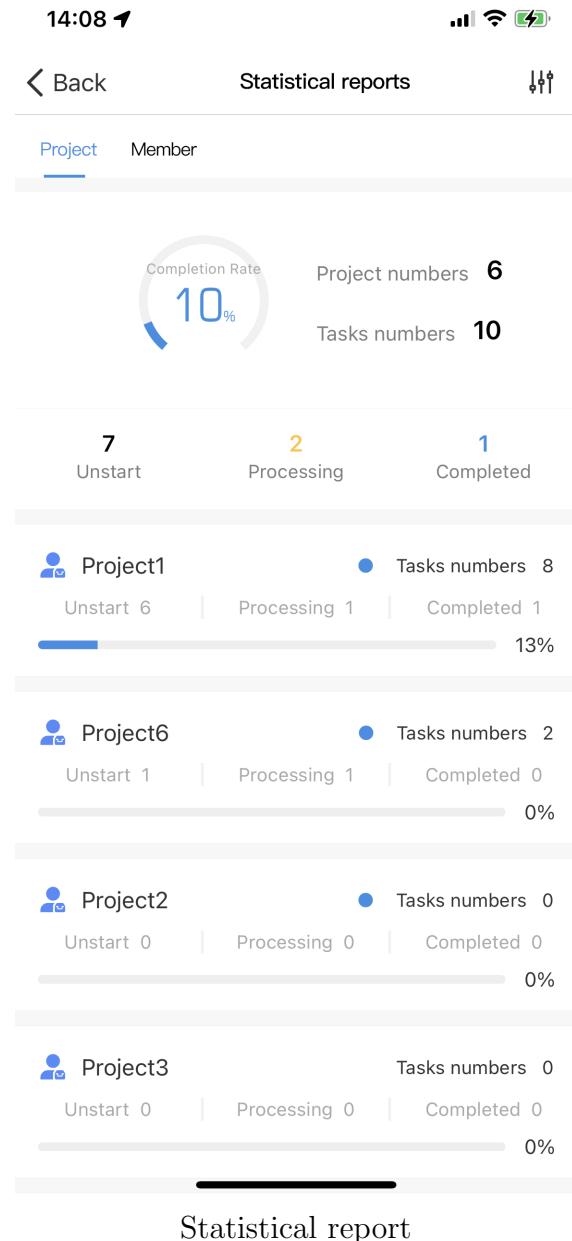
Functionality allowed: Click view all tasks to check all the ongoing tasks click project button to switch to project panel to view all the projects' detail



Scene ID: [Scene10_projectTable]

Scene name: Project table

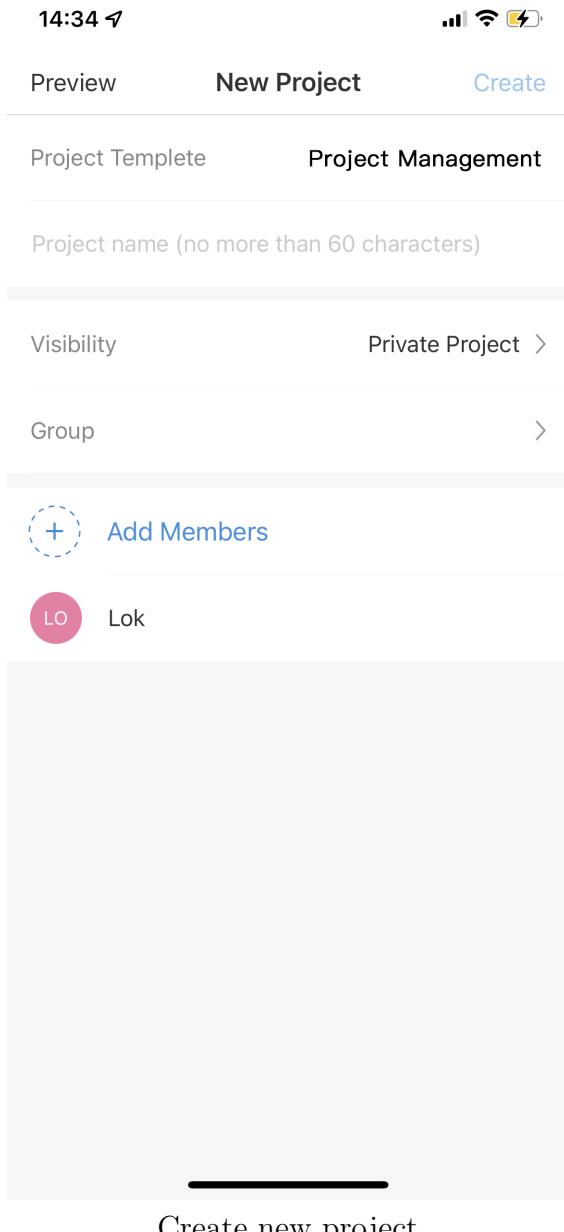
Functionality allowed: Allow user to check all the projects under his control and could view detailed information when clicked in.



Scene ID: [Scene25_statisticReportProject]

Scene name: Statistical report

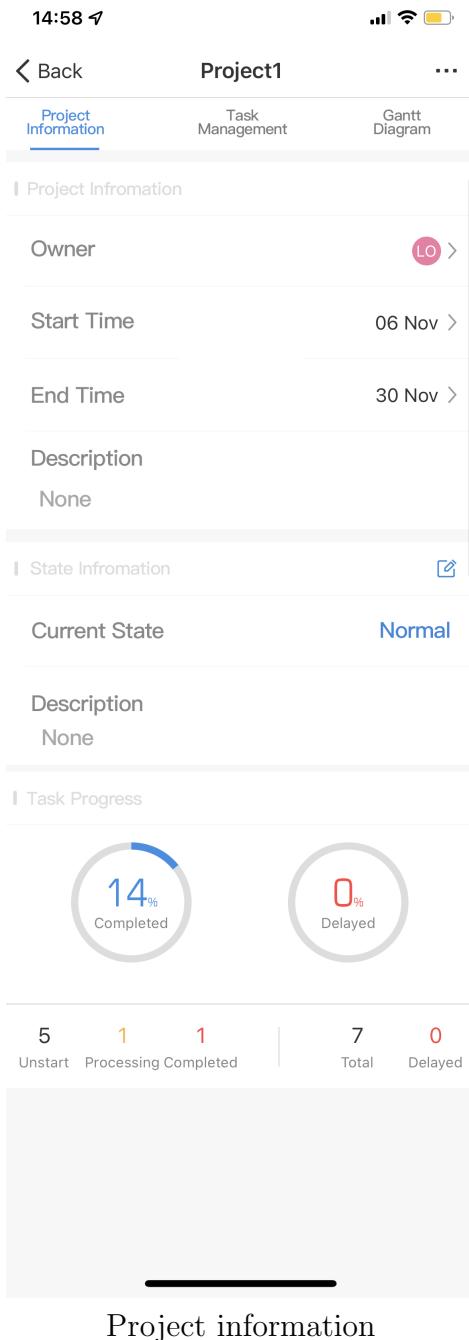
Functionality allowed: Allow project manager to check the state of all the ongoing projects, which may include total task number, not started task number, processing task number...



Scene ID: [Scene11_createProject]

Scene name: Create new project

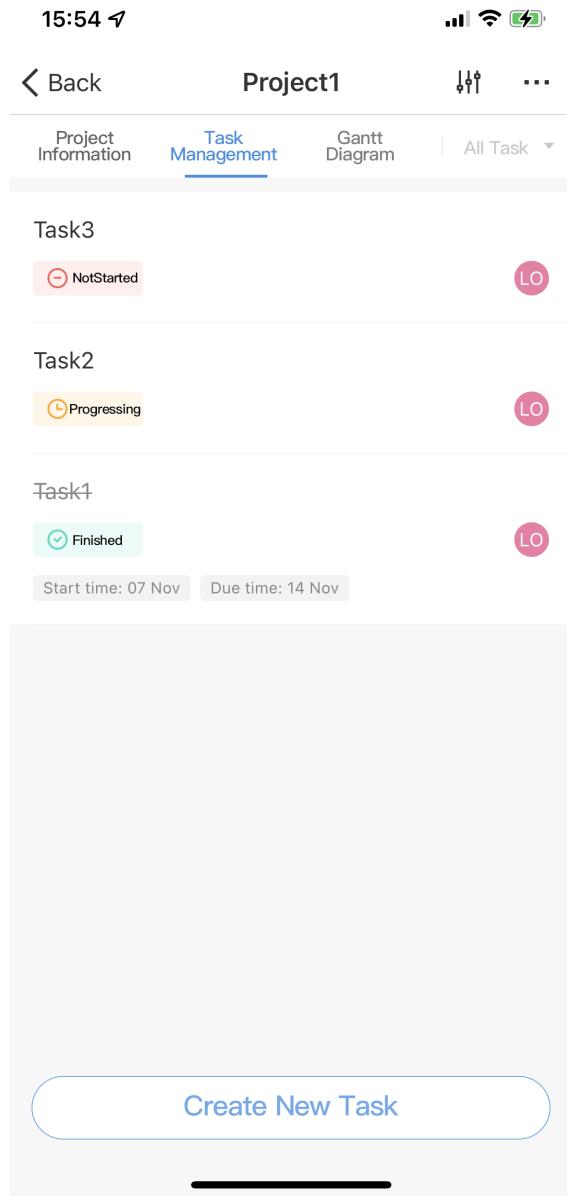
Functionality allowed: Allow project manager to create a new project from a build-in template, and could have modifications on it.



Scene ID: [Scene13_projectInfo]

Scene name: Project information

Functionality allowed: Allow project manager to view the detail of the project and allows modification towards it.

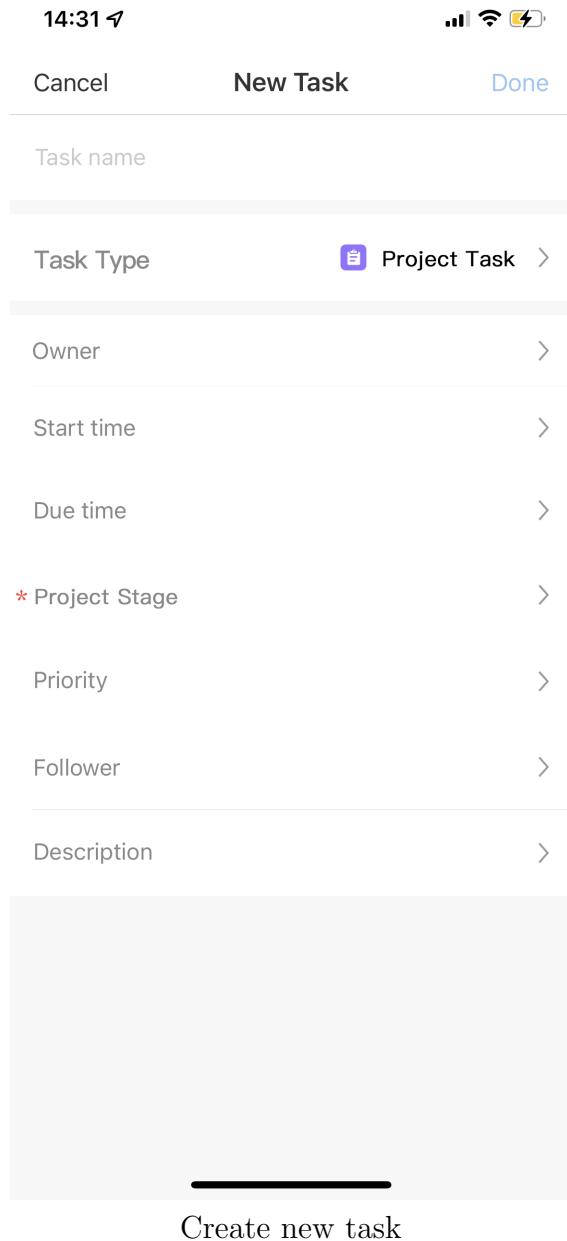


Project's task overview

Scene ID: [Scene16_taskOverview]

Scene name: Project's task overview

Functionality allowed: Allow project manager to view the detail of the project's task and allows modification towards it.



Scene ID: [Scene24_createTask]

Scene name: Create new task

Functionality allowed: Allow project manager to create a new task for one project with a set of specific settings include start/end time, priority...

16:25 4G

Back Task1 ...

Task1

Finished State | Lok Owner

Start time 07 Nov >

Due time 14 Nov >

Subordinate Project1

Project Stage Start Stage >

Priority !!! Highest >

Subtask 2 >

Follower >

Material Included >

Security Level >

Comment... Like

Task information

Scene ID: [Scene17taskInfo]

Scene name: Task information

Functionality allowed: Allow project manager to view the information of the task and allows modification towards it.

5 Key Implementation

In this section, we will discuss how we made key decisions and the reasons behind all these decisions, for example, which programming language will be used and how we made the decisions.

5.1 Development Platform

5.1.1 Initial Idea

The first step in our progress is to decide which development platform to use to build our WeChat-based applet. The good news is that developing on WeChat does not require much pre-knowledge of Android or IOS systems, as WeChat applets provide a detailed and consistent API for developers to use, meaning that functionality for different systems is already encapsulated with APIs.

5.1.2 Issues

Since we need to draw a class diagram to further specify the structure of our project, we start with Java as the main development language. However, it is difficult to handle certain applets, such as embedding touch-based mobile interactions, for example.

5.1.3 Discussion and solution

After realizing this problem, we quickly change our strategy. The applets will be developed and tested mainly on the official WeChat development tool, which is a bit like an IDE. The reason for this decision is that this development tool is supported by detailed official API documentation. By introducing a modern development process, the development effort is more focused on core generation and provides a sound approach to code checking.

5.2 Programming Language

Second, we share our thoughts on certain languages regarding front-end and back-end. There are many languages we can use. After comparing and discussing with our teammates, we finally decide on the front-end and back-end languages for the project.

5.2.1 Front End Language

So, for the front-end, the development of WeChat applets is very much like web-based development, and the languages related to WeChat development contain WXML, WXSS and JavaScript. here, WXML and WXSS are like HTML and CSS in web development. after discussions, we decided to use the above mentioned languages.

All these decisions were made based on the official WeChat development tool, as this tool provides some front-end templates (WXML and WXSS are also considered powerful tools in the area of small applications).

5.2.2 Back End Language

For the backend, node.js is our first choice. This is because it is easy to learn, adaptable, and has high performance for real-time applications. But most importantly, it's widely used, which means we have plenty of advice and help on the web to build a polished project. It can be effective when we can get an example of a problem on the web. For databases, which are still far from us, we would recommend using MySQL or SQLite, as we all went through the DBI module in our qualifying year. We can get familiar with them as soon as possible, which will accelerate our progress.

5.3 Management Strategy

Management strategy is used to evaluate the time of the whole project. It is of great significance to the project.

5.3.1 Issues

Given the specificity of project management, we must choose an appropriate management strategy. Projects can be complex, require a series of consecutive tasks and run in parallel with other projects. Therefore, understanding time plays a crucial role when executing a project. Project managers usually base their decisions on time on other factors, such as budget and task delegation.

5.3.2 Solution

Therefore, the algorithm that will be used involves PERT, which is short for Program Evaluation and Review Technique. To perform a PERT analysis, three time estimates (optimistic, pessimistic, and most likely) are obtained for each activity on the critical path[8]. These estimates are then used in the following equation to calculate how much time is needed for each project phase[9].

$$\text{Formula: } (P + 4M + O)/6$$

Optimistic Time (O): the minimum possible time required to accomplish a task, assuming everything proceeds better than is normally expected.

Pessimistic Time (P): the maximum possible time required to accomplish a task, assuming everything goes wrong (excluding major catastrophes).

Most likely Time (M): the best estimate of the time required to accomplish a task, assuming everything proceeds as normal.

The reason why we finally choose this strategy is claimed by Tague (2005, p93)[10]:

1. It help maximize the use of resources.
2. It makes project planning more manageable.
3. It is useful even if there is little or no previous schedule data.
4. It enables project managers to better estimate or determine more complex data.

5.4 Additional Software

5.4.1 iMap-Builder

- **Issues**

It should be of vital importance to draw diagrams such as Sequential diagram, Use Case diagram, State Machine diagram and Class diagram to better understand the overall structure of our project.

- **Initial Idea and Conflicts**

In the beginning, we used Visual Paradigm to draw all these diagrams. After implementing it in this way, we found that Visual Paradigm only works for use case diagrams, state machine diagrams, and class diagrams, because these diagrams are relatively simpler than sequential diagrams. It is useful to draw a diagram with clear relationships. Admittedly, conflicts arise when it comes to sequential diagrams, and some argue that if it is valid, using Visual Paradigm is fine. Others, however, did not agree. It took us quite a while to finally reach the same idea.

- **Solution**

Then we switched to iMap Builder as the main tool to create sequence diagrams. This tool is embedded with various functions and is considered powerful to some extent. We could choose different colors to represent different people at each stage. In addition, it enables us to add a sub-branch to the diagram to make it more clear than we expected. The most important point is that it really helped when we tried to clarify the idea of the project process.

5.4.2 Efficient Online Documentation Tool - Overleaf

- **Initial Idea**

At the very beginning, all elements of the report are written in a Word document. However, it may not be satisfied with this, because of the inefficiency of using Word. And it is difficult to display some formulas in Word. Since all our teammates are computer science majors, we are strongly recommended to follow the saying: what you mean is what you get.

- **Solution**

As a result, writing Latex with Overleaf quickly became our first choice. Overleaf is an online Latex editor with hundreds of features and templates pre-installed. It embeds powerful features to create reports or documents in a more academic way. Team members can focus more on the content of the report without having to pay too much attention to the format or context of the report. In addition, because Overleaf is an online tool, it allows more than one team member to work on reports simultaneously in a remote repository, which in turn enhances team collaboration.

5.4.3 Team Work Organisation Tool - Teambition

- **Initial idea**

To better improve the quality of the project, the first thing we started doing is to find a powerful tool to distribute the work.

- **Solution**

This is a powerful team collaboration tool that can be very similar to our GRP project. This software really give us a lot of useful information when our team was trying to build a project management tool.

1. We are provided with the functionality to assign tasks to different teammates, and in each unit, 2e are provided with the functionality to create sub tasks to specify the tasks in detail.
2. As teammates, we are provided with the functionality to provide comments on specific tasks and give feedback on them, improving the quality of each task.
3. Setting meeting in this software is also another useful function, teammates are reminded of the time and the location of the meeting.

6 Scenario

Jack is the super manager of a company specialising in home improvements and he has a management account. Through this WeChat applet, he is able to control view an overview of all the company's ongoing projects, details of specific projects and a list of project managers for all the work teams that are currently inactive. In addition, super permissions enable him to access the details of each specific project. Incidentally, assigning projects to project managers is also one of the things he is responsible for. One day, the company had a new client called Tom. Therefore, Jack assigned Bob a new project to help Tom decorate the house.

Bob is the project manager for this home improvement company. One day he logged into the applet with his account and received a new notification that he had become Jack's project manager for a new project. After receiving this message, Bob decided to contact Jack first. After that, he learned about all the available work teams, which meant he could assign tasks. He then created a new project based on the templates in the database, initialised the staff composition list and the materials management list and created an invitation link to invite workers and homeowners to participate in the project. His main responsibility is to monitor the progress of the entire project in the Kanban or task overview. His daily routine is to log into the home improvement applet and use it to check the progress of the entire project, creating new tasks to move the project forward based on the current progress.

As Tom was one of the homeowners Bob was responsible for, the company provided Tom with a unique account and wanted him to use the applet to monitor the whole process. At the same time, the applet helped Tom to communicate with Bob easily. At the end of a working day, when opening the applet, Tom received a notification that the wall decorations had been completed and that a new task would be progressed. However, after looking at the photos uploaded by the workers, Tom was unhappy with the wall decoration as he thought the quality of the wall did not seem to be very well.

Throughout the renovation process, Bob was responsible for flexible scheduling control in order to adjust possible change requests based on feedback from the homeowner, workers or materials manager. As a result, he gave feedback to Bob expressing his dissatisfaction. Bob then contacted Tom to ask about the wall finishes. Tom points out the problems and asks the workers to rework them. After some thought, Bob agreed to the request.

Bob revised the project stages and informed Sam, the workman team leader, to prepare for rework and George, the materials manager, to move the materials to

the same address again. He then postponed the start and due date of the next task and set the highest priority for the wall finishes. Finally, he confirmed the current project status and uploaded the records.

George is a material supplier and works with a home improvement company. He logs into the app and finds a new task given to him by Bob, the project manager, in the task overview. He is asked to transport masonry materials such as bricks and cement. At the same time, information about the quantity of materials, the destination address and the delivery deadline can be found in the system. However, for some reason this task could not be completed on time. He had to request an extension of the deadline and an increase in the budget. Bob approved his application.

Sam is the head of a team of workers. He needs to use the system to obtain construction-related information and to report on the progress of his team's work. However, he can only see task information for the part of the project he is responsible for. He logs into the application and receives a notification from Bob, the project manager, that the wall should be reworked. He then notifies his team members to return to work and changes the status of the task progress. He reviews the presentation of his part of the task and assigns the task to his team member.

After the task was adjusted, George successfully transported the materials and confirmed the completion of the task via mobile phone. During the daily work, Sam records the start time and uploads photos at the beginning of the construction. When the daily work is completed, he records the end time and uploads photos at the end of the construction. In order to complete the task within the time limit, his main responsibility is to monitor the workers to complete the work on time and to update the progress of the task. When the task is completed, he updates the progress of the task's completion. In the renovation company's manager's office, Bob also receives notification messages from George and Sam about the completion of the task.

7 Encountered Problems

7.1 Personal problem

7.1.1 Description

Sometimes a group member complained that the leader gave him/her too many tasks and the other members too easy, or even expressed dissatisfaction with this uneven distribution by not completing tasks on time.

7.1.2 Analysis

This situation arose because the difficulty and workload of individual tasks were incorrectly estimated in the process of assigning them. Another reason that cannot be overlooked was the academic pressure of the semester, which may trigger a negative mindset of some member.

7.1.3 Solution

As the project progressed the group members gradually adapted the working pattern of division of labor. Moreover, it is communication that leaded us to overcome these difficulties. We have grown to understand each other, which is reflected in the fact that we help our teammates when they are in trouble rather than just complaining. At the same time, we have gained valuable experience in requirements engineering and learned how to collaborate with others.

7.2 Management problem

7.2.1 Description

At the beginning of the group project, the project leader gave the two team members the task of creating the project website. However, at the next informal meeting, the other members of the group were not too happy with the style of the website, and the group leader bluntly stated that the two were not serious about their work. The two members were angry at the other members for not respecting the fruits of their work and the meeting broke up.

7.2.2 Analysis

The causes of this conflict can be summarized as follows: Firstly, the two team members responsible for creating the web pages did not communicate and collaborate on this task, which resulted in a disjointed style of web pages. Secondly, the group leader's emotional response further deepened the conflict. Eventually, disappointment and frustration give rise to anger and a confrontation is inevitable.

7.2.3 Solution

We had an extra meeting. Everyone acknowledged their problems and discussed ways to solve the problem face to face in a calm and neutral environment. Members share their front-end development experience and practical development tools with each other. In the end, the webpage was successfully completed before the deadline.

7.3 Technical problem 1

7.3.1 Description

The supervisor requested us to implement the function that dynamically generate flow charts displaying each decoration step as the project progresses. However, the specific decoration process seemed too complicated to exhibit all steps in a single diagram.

7.3.2 Analysis

There are two main aspects of difficulties:

1. A complete decoration project consists of seven main steps, such as wood engineering, mud engineering and paint engineering. While each main step contains numerous subtasks so that it is not desirable to exhibit all these subtasks in one diagram.
2. Although the mains steps of each project are confirmed, the subtasks and their priorities will be allocated according to actual situation. Therefore, we are not able to take all situations into consideration in advance. That is the reason why it is almost impossible to generate the flow chart dynamically.

7.3.3 Solution

After discussion, we determined to enable house owners and project managers to click seven step nodes and then check their corresponding subtasks. These subtask items are also clickable to show detailed information. In addition, the dynamic flowchart generation part is something we'll decide when we start writing the code.

7.4 Technical problem 2

7.4.1 Description

To show task progress in real time, we defined four types of task status, including Not begin, Progressing, Completed and Accepted. Nevertheless. sometimes the workers are required to rework on account of unsanctioned acceptance or house owner's unsatisfaction. For this reason, how to deal with the parts that need to rework become a problem.

7.4.2 Analysis

Since it is unlikely to arrange rework part in advance, it tends to disrupt the project schedule. There are various schemes to resolve this situation.

One possible solution is to create a new rework task template to assign this part. While considering that it is not worth establishing an independent partition, we finally give up this suggestion.

Additionally, a member put forward an opinion that the not passed work can be directly reset to “Progressing” status and the following steps remain the same. However, this proposal is rejected as well because it does not reflect the specification of rework.

7.4.3 Solution

Define a new task status, “Need rework”. The project manager can utilize original task template to republish the task and set task status to “Need rework”. Workers is responsible for changing it to “Complete” when their rework is finished and waiting secondary acceptance.

8 Summary and reflections

8.1 Project management

Under the guidance of the supervisor, our group project has been going on for about two months. It is gratifying that we have successfully accomplished the autumn semester goals. For this period, our team has **created the project website**, searched and studied several mature project management applications and worked hard at **requirement specifications** and **prototypes**. Significant time and energy were spent on the process since we attached great importance to the preparatory work before coding.

It has to be admitted that cooperation between team members did not go well at first. One of the most serious problems is the unequal distribution of assignments, which is mainly due to inaccurate estimation of task workload. Sometimes differences of opinions among team members can also result in extra work. For instance, in the initial stage, group members utilized diverse criteria to categorize the stakeholders in the requirement analysis. To reach an agreement, some members had to make a lot of changes to their previous work. Fortunately, it is communication that leaded us to overcome these difficulties. As the project progressed, all the members accumulated valuable experience in conducting requirement engineering and how to collaborate with one another as a team.

8.2 Future plans

Maintain the project website and add new project information on web pages. Prepare for coding according to our class diagrams.

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10 Appendix

10.1 Meeting minutes

10.2 Time Table

Timeline For Project

Week 1 (10.15-10.21)	Research on existing systems that address similar problems. Confirm the primary requirement of project.
Week 2 (10.22-10.28)	Reached an agreement about the process diagram with related material and characters indicated. Set up the team website.
Week 3 (10.29-11.04)	Research on existing systems and find related market research. Research on the satisfaction of users on website without any personal information. Identify user requirements. Draw the Use Case Diagram that fit user requirements.
Week 4-5 (11.05-11.18)	Discuss and identify the techniques and framework used for the project. Assign different parts of project to individuals. Design the overall system structure (Class level). Design prototype (general appearance). Draw class diagrams for further use.
Week 6-7 (11.19-12.02)	Design the prototype in delicate way in front-end. Review previous works. Organise the documents and write the Interim Group Report. Discuss the content of Interim Report with supervisor.
Week 8 (12.03-12.09)	Keep communicate with supervisor to revise our different parts of report. Finalise Interim Group Report and Submit
Week 9-10 (12.10-12.23)	Prepare for code-based part of project. Continue on optimising the overall system structure. Set up the environment and get familiar with the data science techniques introduced.
Week 11-12 (12.24-01.06)	Write concrete code for front-end, can reserve some APIs for further use. Thinking about optimal way to create data base which can store the case information used this system. Discuss about the workflow which fits everyone's daily life and balance the workload of individuals.
Week 13-16 (01.07-02.03)	Focus on individual task assigned from informal and formal meeting. Continue on developing database. Assign 2 people for front-end, 2 for back-end, 1 for framework update and 1 for optimisation.
Week 17-19 (02.04-02.24)	Re-assign people to check the problem in 4 parts of different works. Update the different modules of the draft system .
Week 20-21 (02.25-03.07)	Gather problems to improve (front-end design or code optimality). Once found some questions, exchange ideas and discuss with supervisor. Peer review for all parts.
Week 22 (03.08-03.14)	Partially connect the modules and update the test case.
Week 23 (03.15-03.21)	Do integral test. Required to finish the whole system with full requirements.
Week 24 (03.22-03.28)	Peer review again. Do some delicate update to the system. Gather necessary documents together for final report.
Week 25-26 (03.29-04.12)	Organise all the work which done before. Prepare for Open-day, final report, final representation and promotional artefacts.

10.2.1 Formal meeting

Meeting Record(Formal)

Location	Time	Attendance
PMB 449	4pm - 5pm 21/10/2021	All attendance

Main topic

- Each member introduces himself.
- The supervisor explains the details of the project to us.
- Discuss the content of requirement specifications.
- Raise questions about ethical survey.

Progress made

- Search and learn about several project management applications through the Internet.

Problem met

- The team members did not understand the relevant knowledge of project management.

Job assignment

- Everyone: Learn related knowledge about project management. Done by Oct 27.
- Draw construction flow chart according to Excel table. Done by Oct 27.
- Find out involved people and resources in Excel table. Done by Oct 27.

Formal meeting: Oct 21

Formal meeting: Oct 27

Meeting Record

Location	Time	Attendance
supervisor's office	2pm - 3pm 28/10/2021	All attended

Main topic

- Show our achievements concerning scheduling analysis and flow diagram, which is mainly introduced by Yizhou Liu.
- Exhibit our team's web page and ask for further suggestions from supervisor.
- Supervisor give us more details about the project.
- Supervisor verify the contents of ethical survey.

Progress made

- Yizhou Liu, Ming Kai, Zixiang Hu and Yuzhe Zhang analyzed every item in excel given by supervisor and draw a diagram in detail. Yizhou Liu did a lot of work.
- Zixiang Hu and Yuzhe Zhang filled in the ethical investigation report.
- Yuhong Wei and Yuanshi Wang improved the website created before, including beautifying appearance, appending reference and deploying it onto cslinux.

Problem met

- We cannot afford the usage of Microsoft Visio, which is a powerful tool to create all kinds of charts.
- Tools for developing We-chat applets have not yet been determined.
- It is difficult in generating flow charts dynamically during a project.

Job assignment

- Yuhong Wei and Yuanshi Wang continue to modify website, mainly highlighting key words in order to make the focal points stand out. Done by Oct 29
- Each member prepares a few questions about his/her part. Done by Oct 29.
- Each team of two writes requirement specifications and draws a use case diagram for corresponding stakeholder respectively. Done by Oct 31.

Meeting Record

Location	Time	Attendance
PMB 449	4pm - 5pm 4/11/2021	All attended

Main topic

- Show our use case diagrams to supervisor and explain some details about them.
- Summarize a few questions about the flow chart, Excel table and requirements. Then these questions will be send to our client for accurate answers.
- Decide on the development language and environment. (Language: HTML, CSS, JavaScript, Java; Platform: We-chat developer tools)

Progress made

- We have draw Use Case diagrams for each type of stakeholder.
- Create a fundamental frame of requirement specifications (by Zixiang Hu).
- Review knowledge concerning requirement specification give by SE course in last term.

Problem met

- We need to consider how to deal with the situation that house owner request rework since it would disrupt original scheduling.
- How to make prototype? What should the main interface look like?

Job assignment

- Yuanshi Wang and Yuhong Wei: draw Use Case diagram for admin and material manager. Done by Nov 7.
- Zixiang Hu: write functional requirements for manager. Done by Nov 7.
- Yizhou Liu: write functional requirements for house owner. Done by Nov 7.
- Ming Kai: write functional requirements for Worker. Done by Nov 7.
- Yuanshi Wang: write functional requirements for material manager and admin. Done by Nov 7.
- Yuhong Wei: draw Use case diagram. Done by Nov 7.
- Yuzhe Zhang: make prototype for log in interface. Done by Nov 7.

Formal meeting: Nov4

Meeting Record

Location	Time	Attendance
PMB 449	4pm - 5pm 11/11/2021	All attended

Main topic

- Supervisor shares acceptance manual and material offering list with us.
- Ask some questions and discuss the details concerning requirements of our client.
- Show our prototype and explain design ideas to the supervisor.
- Supervisor gives us a few suggestions in terms of writing the interim report.
- Supervisor provides theoretical knowledge of project management for us.

Progress made

- Drew class diagrams.
- Made prototypes.
- Improved requirements analysis
- Wrote some parts of interim report.

Problem met

- With the half of the term gone, more and more coursework is released. That means we may allocate less time to GRP than before.
- Disagreement over changing task status or creating different categories.
- It is not determined which methodology would be adopted for our project.

Job assignment

- Zixiang Hu: technical research(400-500) and integration of class diagrams. Done by Nov 14.
- Ming Kai: technical research and modify market research. Done by Nov 14.
- Yizhou Liu: sequences diagram. Done by Nov 14.
- Yuzhe Zhang: key implementation steps(500-600). Done by Nov 14.
- Yuanshi Wang and Yuhong Wei: User class diagram and scenario(800). Done by Nov 14.

Formal meeting: Nov 11

Meeting Record

Location	Time	Attendance
PMB 449	4pm - 5pm 18/11/2021	All attended

Main topic

- Supervisor indicates that this project has great difficulty. Therefore, we need to draw a clear distinction between the primary and the secondary. Based on this idea, we are supposed to first strive to realize the function of the project manager.
- Supervisor points out problems and offers suggestions in terms of technical research, key implementation steps, description of problems and scenario.

Progress made

- keep working on our interim report, including key implementation steps, technical research, scenario, class diagrams and sequence diagram.

Problem met

- The realization of dynamic drawing flow chart is very difficult.

Job assignment

- Ming Kai: collect data from the official website. Done by Nov 25.
- Yuanshi Wang: enhance description of problem, paraphrase Chapter 6. Done by Nov 25.
- Zixiang Hu: explanation of diagrams, technical research. Done by Nov 25.
- Yuzhe Zhang: enhance key implementation steps. Done by Nov 25.
- Yuhong Wei: write nonfunctional requirements(250), system analysis. Done by Nov 25.
- Yizhou Liu: draw UI map, static flow chart, enhance system analysis, improve sequence diagram. Done by Nov 25.

Formal meeting: Nov 18

Meeting Record

Location	Time	Attendance
PMB 449	4pm - 5pm 29/09/2021	All attended

Main topic

- The supervisor discuss the content of Interim report in detail.
- We draw the conclusion that: View tasks in one of the two forms, drop - down menus or click on flowchart nodes

Progress made

- Each member revise their parts of the interim report.
- Write the report in latex syntax on Overleaf

Problem met

- Flowchart is difficult to implement.

Job assignment

- Everyone continues to revise the report. Done by Nov 28.

Formal meeting: Nov 25

10.2.2 Informal meeting

Meeting Record

Location	Time	Attendance
Starbucks	2.30pm - 3.15pm 01/10/2021	All attended, Lok & Christina online

Meeting Record

Location	Time	Attendance
Project Room 07	2pm - 3pm 29/09/2021	All offline, except Ming Kai online

Main topic

- Share everyone's strength and interests.
- Zack: Web develop, Machine learning(NLP)
- Lok: GUI, AI
- Christina: Data processing/ Datamining
- Johnny Wang: Deep learning and Embed system, java backend
- Yuhong Wei: Web develop, video processing
- Ming Kai: UI design
- Preliminary Confirmation of our first priority project.

Progress made

- Nope, as is the first week.

Problem met

- One member from Northeast of China was trapped in hotel due to the outbreak of COVID-19, he has to wait for another two day to come out, thus we had meeting both online and offline, caused a little bit problem.

Job assignment

- Everyone: according to the CV template, made own CV, as part of bid document.
 - DDL: 10. 01 before next meeting
- Zack, Lok, Ming Kai: prepare for second bid documentation.
 - DDL: 10. 01 before next meeting
- Johnny Wang, Christina, Yuhong Wei: prepare for third bid documentation.
 - DDL: 10. 01 before next meeting

Main topic

- Remind to send agenda to supervisor before formal meeting, and to compile notes into minutes after meeting asap.
- Make sure everyone in our project and are able to clone the project repo.
- Remind that the timeline of our project in national holiday(10.3 for CV and repo profile, 10.6 for bid reason).
- ...

Progress made

- Build up our repo for further use.
- Decided on which project as our first target.
- Made our minutes & agenda template.
- Prepared CV for bids.
- ...

Problem met

- It seems like everything proceed as expected. We are waiting for the hurdle and can't wait to handle it!
- ...

What need to handle next

- Build the web for our team
- Compile all the idea from group into bid documentation.
- ...

Job assignment

- Everyone: according to the CV template, made own CV and repo profile, as part of bid document.
 - Deadline: **10.03**
 - Importance: **minor**
- Everyone: Write formal reasoning for why we choose this project and what is our strength.
 - Deadline: **10.06**
 - Importance: **medium**

Informal meeting: Sep 29

Informal meeting: Oct 01

Meeting Record

Location	Time	Attendance
Project Room 07	2pm - 3pm 10/10/2021	All offline, except Ming Kai

Main topic

- Draw up a plan and make a schedule
- Assign new tasks to each member
- Summarize everyone's work in the past week

Progress made

- Set up a repository of our team in Git-Lab
- All of team members uploaded their profile
- Determined the contents of the bid after consultation
- The draft of the bid was completed

Problem met

- Worry about not allocating time in detail
- Cannot estimate how long Interim Group Report will take to complete

Job assignment

- All members: Correct or add personal information in first bid. Done by 10 Oct.
- Zixiang Hu, Yuzhe Zhang, Ming Kai: Complete second bid. Done by 11 Oct.
- Yuanshi Wang, Yuhong Wei, Yizhou Liu: Complete third bid. Done by 11 Oct.

Meeting Record

Location	Time	Attendance
Microsoft Teams	16:00 - 16:20 15/10/2021	All attended online

Main topic

- Since DWS coursework will be released on Nov 1, resulting in having less time to do GRP, we made a decision to move all the plans forward a week.
- Negotiate when to have a conference with our supervisor.
 - 2pm - 3pm, Wednesday
 - 3pm - 5pm, Thursday
 - 2pm - 5pm, Friday
 - Decide some details about the welcome letter.

Progress made

- Earned the project that we want!

Problem met

- Coordinate the time of members and supervisor.

Job assignment

- Everyone searches two or three applications/webpages concerning process management and provide the feedback of the application/webpage. Done by Oct 22.

Informal meeting: Oct 10

Informal meeting: Oct 15

Meeting Record

Meeting Record

Location	Time	Attendance
SAIC B25	2pm - 4pm 20/10/2021	All attendance

Main topic

- Each member talks about the pros and cons of the project management software they found, then provides suggestions for our project.
- Discuss the content of tomorrow's meeting with supervisor. (Details of our project)
- Complete Ethics: Preliminary Checklist together.

Progress made

- Submit our bid and successfully gain our first choice!
- Everyone searched for an application concerning project management through the Internet and wrote a feedback to analysis the advantages and disadvantages in order to find out what we can learn from them.

Problem met

- There are many questions about ethical investigations.

Job assignment

- Yuanshi Wang and Yuhong Wei: Create a web page for team01. Done by: Oct 28.

Informal meeting: Oct 20

Informal meeting: Oct 21

Location	Time	Attendance
PMB room	5pm - 5:30pm 21/10/2021	All offline

Main topic

- Summarize the formal meeting and assign works

Progress made

- Confirm the primary requirement of project
- Website(first version) completed

Problem met

- Lack the understand of specific decoration process
- Don't have clear mind about character and material requirement during the process

Job assignment

- For Everyone:
 - Learn knowledge related to project managers
 - Learn the process during home decoration according to the schedule (provided by supervisor)
 - Clarify relevant personnel information for each procedure
 - DDL: 10. 24 before next meeting
- Yuanshi Wang, Yuhong Wei: Update the website.
 - DDL: 10.24 before next meeting
- Lok, Ming Kai: Draw process diagram with related material and characters indicated.
 - DDL: 10. 24 before next meeting
- Zack, Christina: Draw process diagram with related material and characters indicated.
 - DDL: 10. 24 before next meeting

Meeting Record

Location	Time	Attendance
PB 213	5pm - 7pm 31/10/2021	All offline

Main topic

- Detailed several topics should included in the Interim Report
 1. Updated and expanded description of the problem to be solved in Interim Report. - 300
 2. Background information search - 1000
 - existing systems- 300-400
 - market research - 200-300
 - technical research - 300-400
 3. requirement specification - 1800
 - 4.
 5. User Interface & Prototyping - 200+Picture
 - Brief introduction to the proposed system
 6. key implementation steps - 500
 7. Key implementation steps 200-300
 - Language we use
 - Operation System
 - Additional software and hardware to be used
 - Reasons for those decisions.
 8. Discussion of any problems encountered500
 - Mac Or Windows
 - Working Sequence
 - Flex time (earliest/latest beginning/end time)
 - ...
 9. detailed timeline 400/Picture (Based on word-limitationn)
 10. Meeting minutes
- Determine the echelon of actors

Progress made

- Zack and Christina finished the Use Case Diagram about Project Manager and Users
- Lok and Ming Kai finished the Use Case Diagram about Workers
- Yuhong Wei and Yuanshi Wang finished the Use Case Diagram about Company

Problem met

- Lack the understand of detailed requirement specification.
- Specific requirements between company and material supporter
- How to communicate with material supporters
- Material Manager????????Dose it really need?
- Material Manager: One person is in charge of a single material or multiple materials

Job assignment

- For Everyone:
 - Learn the elements which should be included in the report of requirement specification part
 - DDL: 11/07/2021
- Yuanshi Wang:
 - Updated and expanded description of the problem to be solved in Interim Report.
 - DDL: 11/07/2021
- Yuhong Wei:
 - Analysis any existing web-based systems that address similar problems in Interim Report.
 - DDL: 11/07/2021
- Christina:
 - Analysis any existing mobile-based systems that address similar problems in Interim Report.
 - DDL: 11/07/2021
- Lok:
 - Time plan for the project in Interim Report..
 - DDL: 11/07/2021
- Ming Kai:
 - Background information and research in Interim Report.
 - DDL: 11/07/2021
- Zack:
 - Background information and research in Interim Report.
 - DDL: 11/07/2021

Meeting Record

Location	Time	Attendance
PB 103	5pm - 6pm 24/10/2021	All offline

Main topic

- Share everyone's work results.
 - Yuanshi Wang, Yuhong Wei: Update the website.
 - Lok, Ming Kai: Draw process diagram with related material and characters indicated.
 - Zack, Christina: Draw process diagram with related material and characters indicated.
- Discuss how to improve work results and how to prepare next formal meeting.

Progress made

- All team members have reached an agreement about the process diagram with related material and characters indicated.
- Website(second version) completed

Problem met

- The specific decoration process seemed too complicated to exhibit all steps in a single diagram.

Job assignment

- For Everyone:
 - Learn knowledge related to project managers
 - Learn the process during home decoration according to the schedule (provided by supervisor)
 - Clarify relevant personnel information for each procedure
 - DDL: 10. 27 before next meeting
- Yuanshi Wang, Yuhong Wei: Improve the team website and publish it.
 - DDL: 10.27 before next meeting
- Lok, Ming Kai, Zack, Christina: Improve process diagram with related material and characters indicated.
 - DDL: 10. 27 before next meeting

Location	Time	Attendance
Project Room17	4pm - 6pm 07/11/2021	All Attended

Main topic

- Shared the prototype made by Lok and check if there's something could do better.
- Shared the format to write the user requirement specification.

Progress made

- Finished most part of the prototype.
- Had written the introduction part of the interim report.
- Had written the first version of requirement specification.

Problem met

- How detailed the prototype should be & is it worth that much for us to make one?
- We thought that though there may exist inconsistency between the prototype and final project, but it's worth the effort to make one, as it does provide a deeper insight. And the prototype could guide us to implement the detail.

Job assignment

- Everyone:
 - Modify the own part of report and give it to another member for further check.
 - DDL: 11.10 next formal meeting.
 - Modify the requirement specification using formatted language(imperative sentence with an actor) and upload the use case diagram into repo.
 - DDL: 11.10 next formal meeting.
- Lok: keep on working with the prototype, modifying the mentioned problem and adding worker part.
 - DDL: 11.10 next formal meeting.
 - Zack: Draw class diagram, Project part.
 - DDL: 11.10 next formal meeting.
 - Christina: Draw class diagram, Message part.
 - DDL: 11.10 next formal meeting.
 - Ming Kai: Draw class diagram, Diagram part.
 - DDL: 11.10 next formal meeting.
 - Yuhong Wei & Yuanshi Wang: Draw class diagram, User part.
 - DDL: 11.10 next formal meeting.

Informal meeting: Oct 24

Informal meeting: Nov 07

Meeting Record

Location	Time	Attendance
Microsoft Teams	16:00 - 16:20 15/10/2021	All attended online

Main topic

- Since DWS coursework will be released on Nov 1, resulting in having less time to do GRP, we made a decision to move all the plans forward a week.
- Negotiate when to have a conference with our supervisor.
 - 2pm - 3pm, Wednesday
 - 3pm - 5pm, Thursday
 - 2pm - 5pm, Friday
- Decide some details about the welcome letter.

Progress made

- Earned the project that we want!

Problem met

- Coordinate the time of members and supervisor.

Job assignment

- Everyone searches two or three applications/webpages concerning process management and provide the feedback of the application/webpage. Done by Oct 22.

Informal meeting: Oct 15

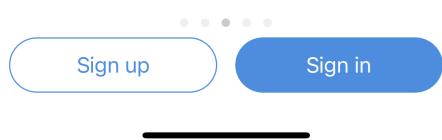
10.3 Detailed prototype

19:04 ⌛ ⚡

Project Management Tool

Chatting & Sharing

Create and exchange knowledge in
real-time collaboration



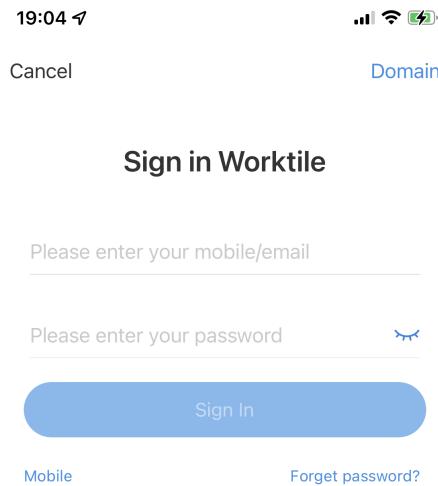
Scene Explanation: The above scene is shown when the applet is opened from WeChat

Scene Before: *NONE*

Scene After:

Scene01.signIn, click "Sign in" button to sign in and would jump to it.

Scene05.signUp, click "Sign up" button to sign up and would jump to it.



Trying to create a team? [Sign up](#)

Scene: *Scene01_signIn*

Scene Explanation: This scene allows user to sign in the applet

Scene Before: *Scene00_initialPage*

Scene After:

Scene02SignIn_forgetPassword, click "**Forget Password**" to reset password and would jump to it

Scene05_signUp, click "**Sign up**" button to sign up and would jump to it.

Scene09_dashBoard, sign in with project manager's account would jump to the dash board

Notes: here, click EYE sign would show the hidden password



Your Phone Number

+86 ▾ | Your phone number

SMS verification code

Already registered team, [Sign in](#)

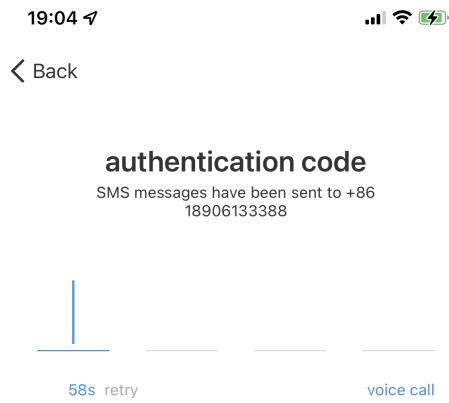
Scene: *Scene02_signIn_forgetPassword*

Scene Explanation: The above scene is shown when user forgets its password and want to reset it with phone number validation

Scene Before: *Scene01_signIn*

Scene After: *Scene03_signIn_authorityCode*, click "SMS verification code" to send message to the phone and would jump to scene03 for verification.

Notes; here, click "+86" would allow you to choose region you are from.

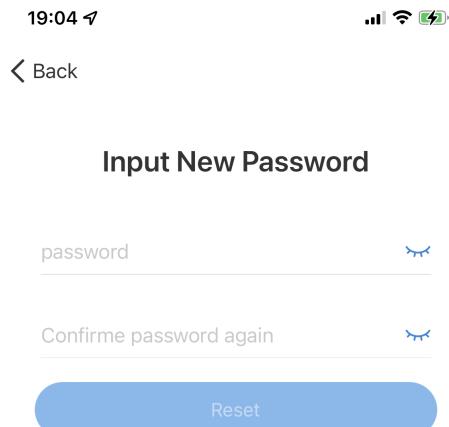


Scene: *Scene03_signIn_authorityCode*

Scene Explanation: The above scene is to verify phone number by input authentication code

Scene Before: *Scene02_signIn_forgetPassword*

Scene After: *Scene04_signIn_setNewPassword*, once code is validated, jump to set new password



Scene: *Scene04_signIn_setNewPassword*

Scene Explanation: The above scene allows user to reset the password

Scene Before: *Scene03_signIn_authorityCode*

Scene After: *Scene01_signIn*, if the input password is in valid form, it would jump back to let user sign in

19:03 ⓘ ⚡ ⌂ ⌂

Cancel

Your Phone Number

+86 ⓘ | Your phone number

SMS verification code

Already registered team, [Sign in](#)

Scene: *Scene05_signUp*

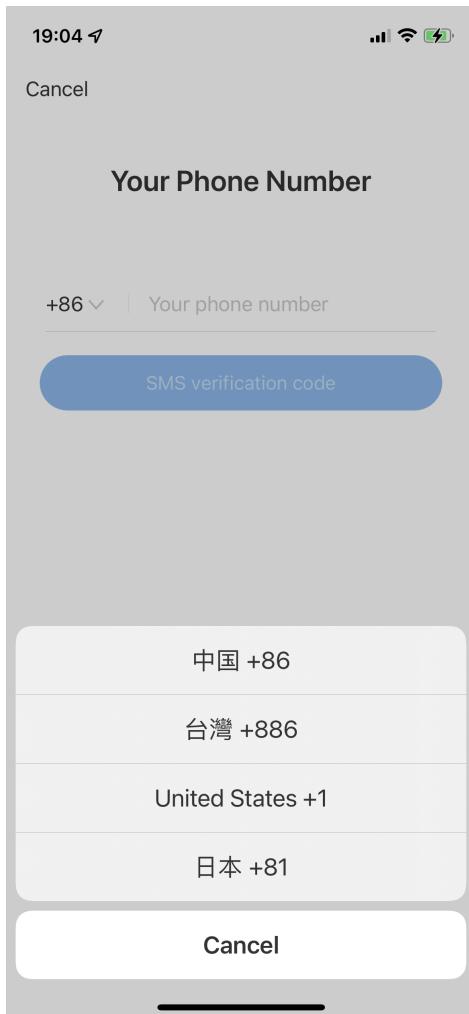
Scene Explanation: The above scene is to let user sign up an account with its phone number

Scene Before: *Scene00_initialPage*

Scene After:

Scene06_signUp_chooseRegion, if click "+86" to choose region

Scene07_signUp_authorityCode, if click "SMS verification code" button and had input the phone number

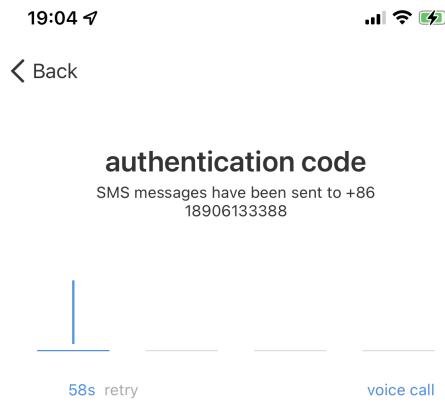


Scene: *Scene06_signUp_chooseRegion*

Scene Explanation: The above scene is shown when the user click "+86" button from *Scene05_signUp*

Scene Before: *Scene05_signUp*

Scene After: *Scene05_signUp*, choose a region and would jump back to let user input phone number

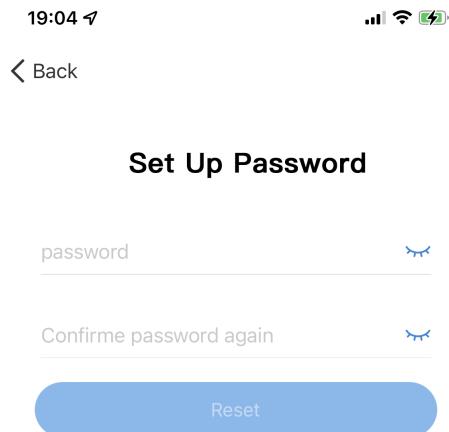


Scene: *Scene07_signUp_authorityCode*

Scene Explanation: The above scene is to let user verify its phone number with authentication code

Scene Before: *Scene05_signUp*

Scene After: *Scene08_signUp_setPassWord*, if the phone number is valid, let the user set his password

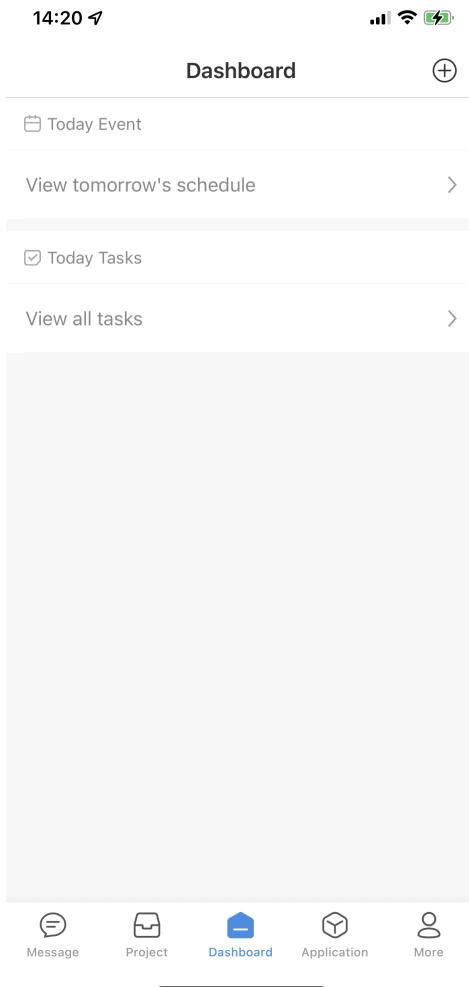


Scene: *Scene08_signUp_setPassWord*

Scene Explanation: Here, user could set up his own password for his account

Scene Before: *Scene07_signUp_authorityCode*

Scene After: *Scene01SignIn*, after sign up, jump to sign in page



Scene: *Scene09_dashBoard*

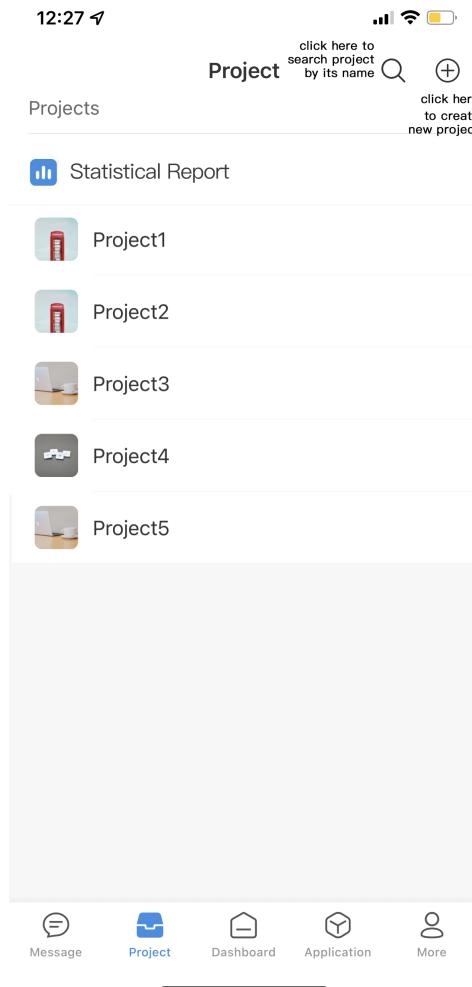
Scene Explanation: The above scene is displayed when project manager signed in

Scene Before: *Scene01_signIn*

Scene After:

Scene10_projectTable, click the project button at bottom and jump to view the project table

Scene_messageTable, click the message button at bottom and jump to view the message table



Scene: *Scene10_projectTable*

Scene Explanation: All the projects managed by the manager are listed here.

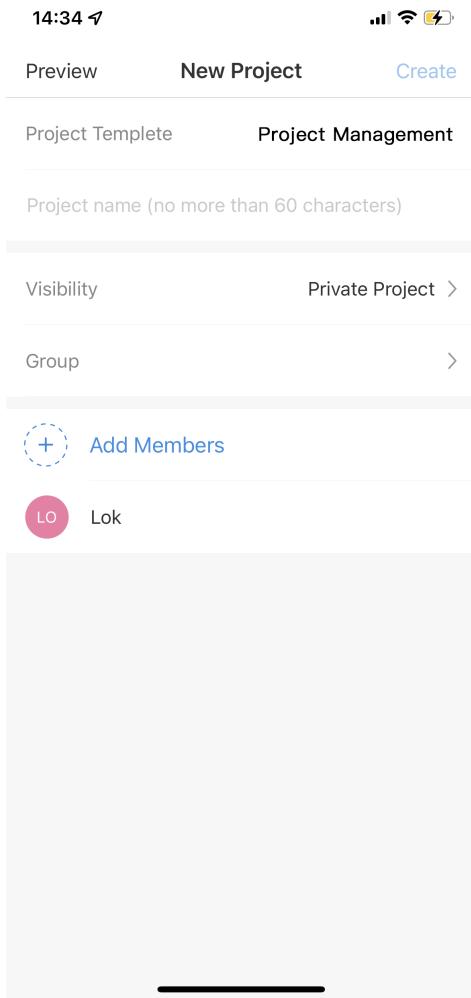
Scene Before: *Scene09_dashBoard*

Scene After:

Scene11_createProject, click "+" at right upper corner to create a new project

Scene13_projectInfo, click specific project in the table and would display the specific project's info page

Scene25_statisticReportProject, click "Statistical Report" and would display the statistic report of all the projects.



Scene: *Scene11_createProject*

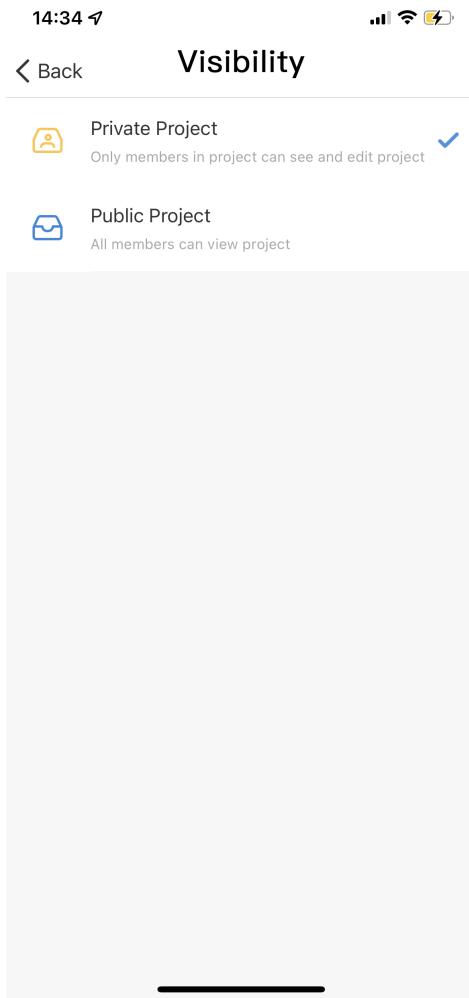
Scene Explanation: Project can be created here with specific template, name, description, visibility and add relevant member

Scene Before: *Scene10_projectTable*

Scene After:

Scene12_setVisibility, click "Visibility" to modify the project's visibility

Scene10_projectTable, after creation, jump back to project list

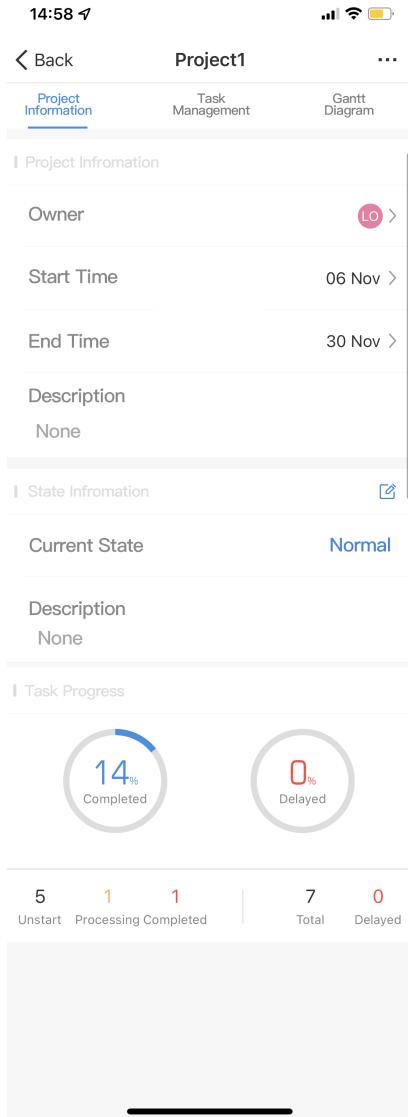


Scene: *Scene12_setVisibility*

Scene Explanation: Project manager could choose the visibility of the newly created project

Scene Before: *Scene11_createProject*,

Scene After: *Scene11_createProject*, after setting, back to project creation page



Scene: *Scene13-projectInfo*

Scene Explanation: Project specific information could be view in this page, which includes start/end time, description, current state, and pie diagram which shows the percentage of completed, delayed tasks.

Scene Before: *Scene10_projectTable*

Scene After:

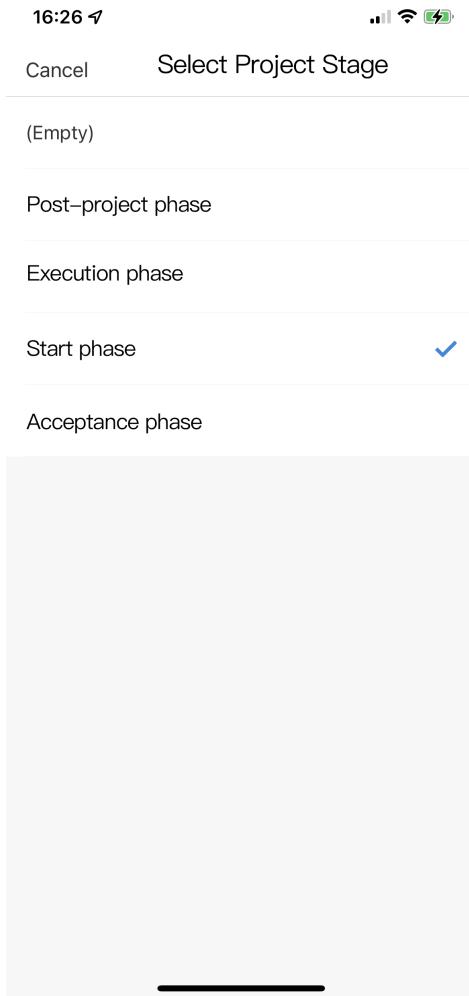
Scene10_projectTable, click "Back" would jump back to project table.

Scene14-selectProjectStage, click "Current stage" would allow user to set current task stage.

Scene15-selectStartTime, click "Start time" or "End time" would jump to this

sceen.

Scene16_taskOverview, click "Task management" to view detailed task in the project.

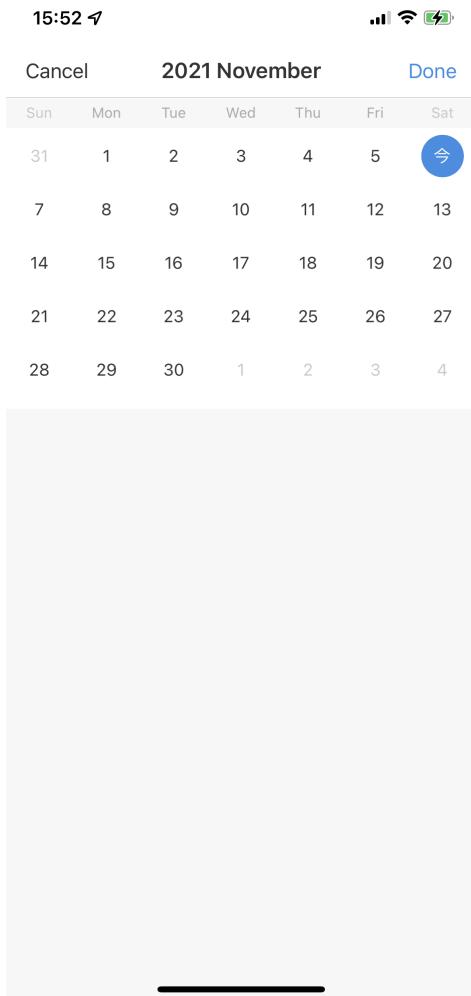


Scene: *Scene14-selectProjectStage*

Scene Explanation: Project manager could modifythe project current stage at this scene

Scene Before: *Scene13-projectInfo*

Scene After: *Scene13-projectInfo*, after modify the stage, jump back to last page

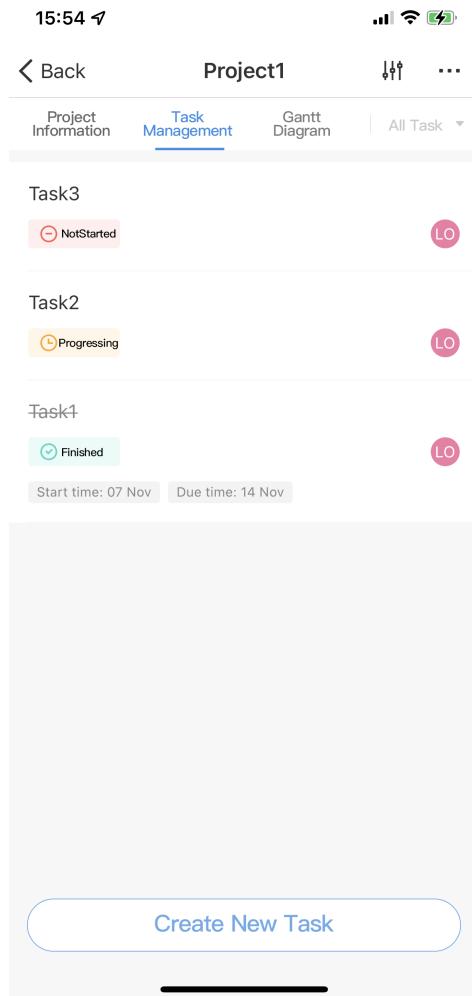


Scene: *Scene15_selectStartTime*

Scene Explanation: Project manager could modify the start time and end time of the project

Scene Before: *Scene13_projectInfo*

Scene After: *Scene13_projectInfo*, after modify the date, jump back to last page



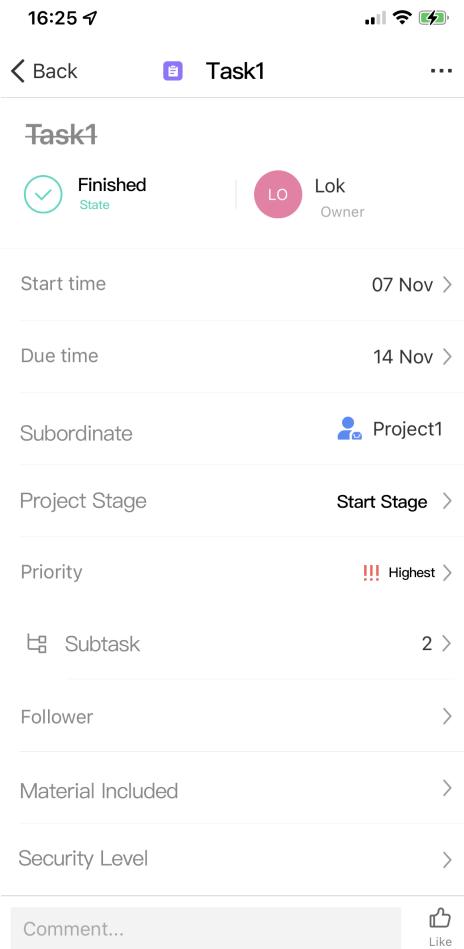
Scene: *Scene16_taskOverview*

Scene Explanation: All the tasks of this project are listed here, project manager could display tasks through different ways, such as by creation time, by finish time, by task stage, by priority of task, by type of task...

Scene Before: *Scene13_projectInfo*

Scene After: *Scene17_taskInfo*, click one specific task to view the detailed information

Scene24_createTask, click "Create New Task" to create a new task



Scene: Scene17_taskInfo

Scene Explanation: This scene displayed all the relevant information about a task, which includes start time, due time, subordinate to which project, the stage of task, the priority of the task and its sub task.

Scene Before: Scene16_taskOverview

Scene After:

Scene15-selectStartTime, click "**Start time**" or "**Due time**" to modify these timing

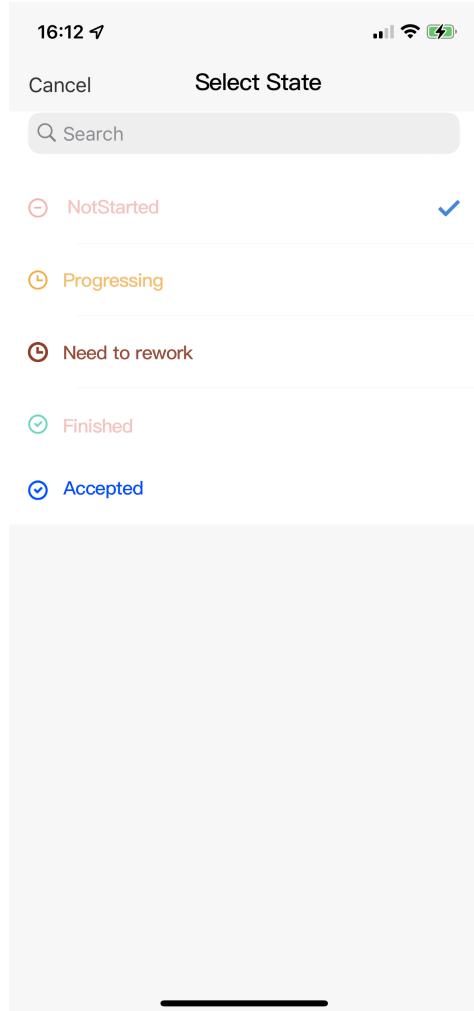
Scene18-changeTaskState, click "**Project Stage**" allows project manager to modify task stage manually

Scene19-setPriority, click "**Priority**" allows project manager to modify task's priority manually

Scene20-setSecurityLevel, click "**Security Level**" to modify security level of the

task by project manager

Scene21_subTask, click "Subtask" to view all the subtask of this task.

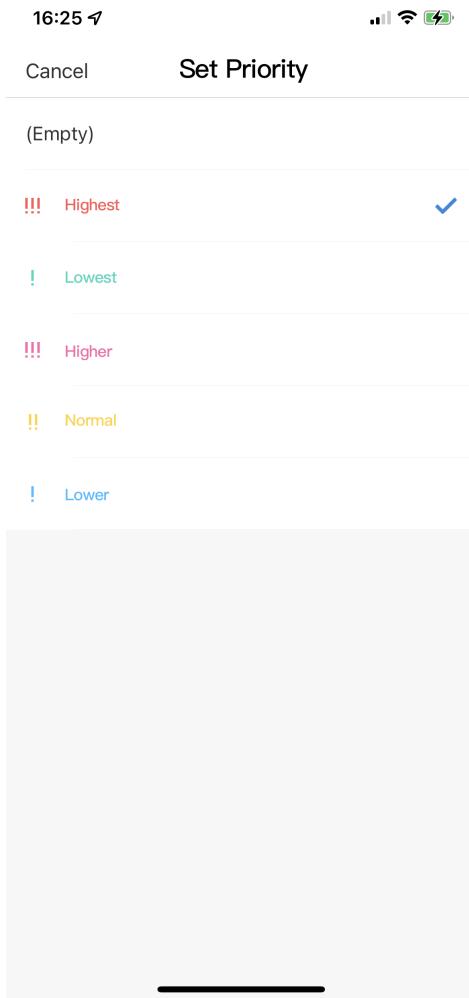


Scene: *Scene18_changeTaskState*

Scene Explanation: This scene allows project manager to set task's state manually

Scene Before: *Scene17_taskInfo*

Scene After: *Scene17_taskInfo*, back to the task page after modification

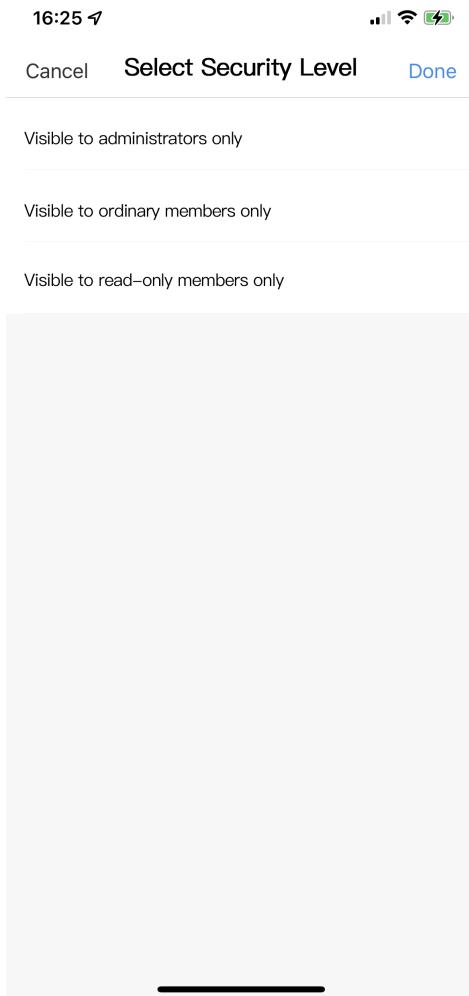


Scene: *Scene19_setPriority*

Scene Explanation: This scene allows project manager to set task's priority manually

Scene Before: *Scene17_taskInfo*

Scene After: *Scene17_taskInfo*, back to the task page after modification

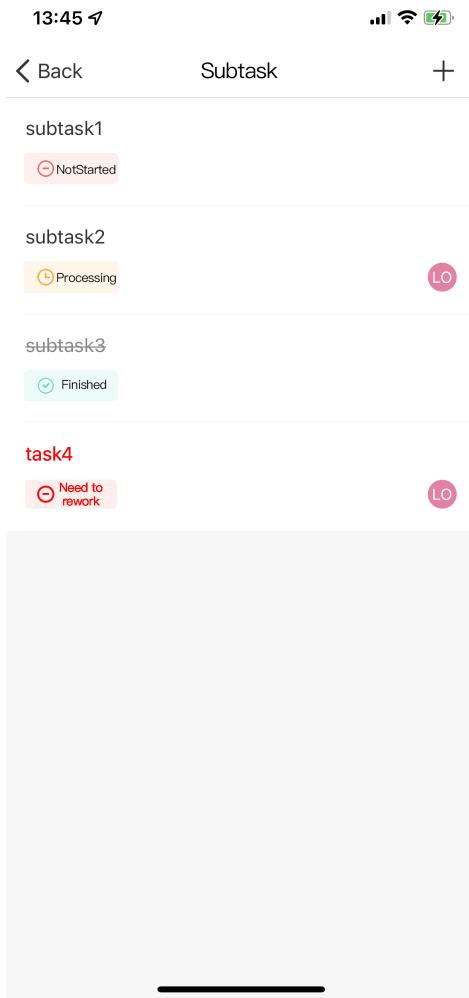


Scene: *Scene20_setSecurityLevel*

Scene Explanation: This scene allows project manager to set task's security level manually

Scene Before: *Scene17_taskInfo*

Scene After: *Scene17_taskInfo*, back to the task page after modification



Scene: *Scene21_subTask*

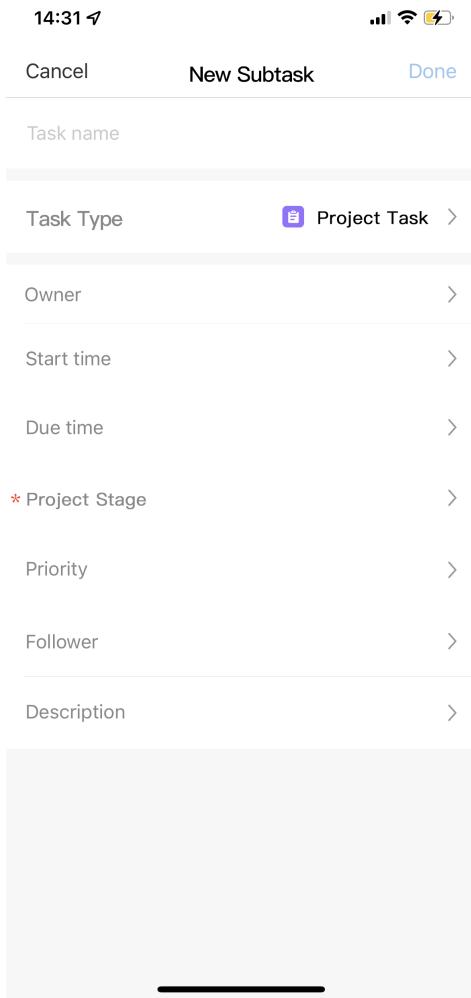
Scene Explanation: This scene would display a list of all the subtasks of that task

Scene Before: *Scene17_taskInfo*

Scene After:

Scene17_taskInfo, click "Back" to jump back to the task information page

Scene22_createSubTask, click "+" at right upper corner to create a new subtask



Scene: *Scene22_createSubTask*

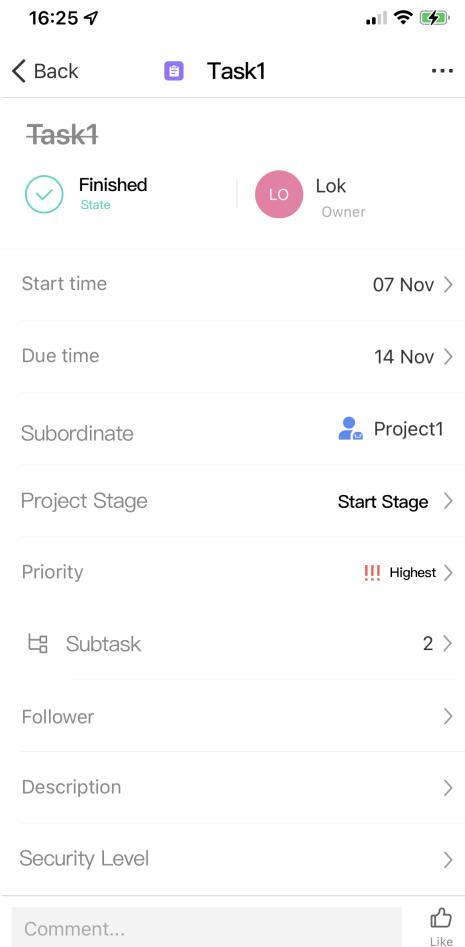
Scene Explanation: This scene allows project manager to create a new subtask

Scene Before: *Scene21_subTask*

Scene After:

Scene22_createSubTask, click "Done" at right upper corner to finish creating a new subtask and jump back

Other scenes are duplicate with previous ones so we would skip them



Scene: Scene23_subtaskInfo

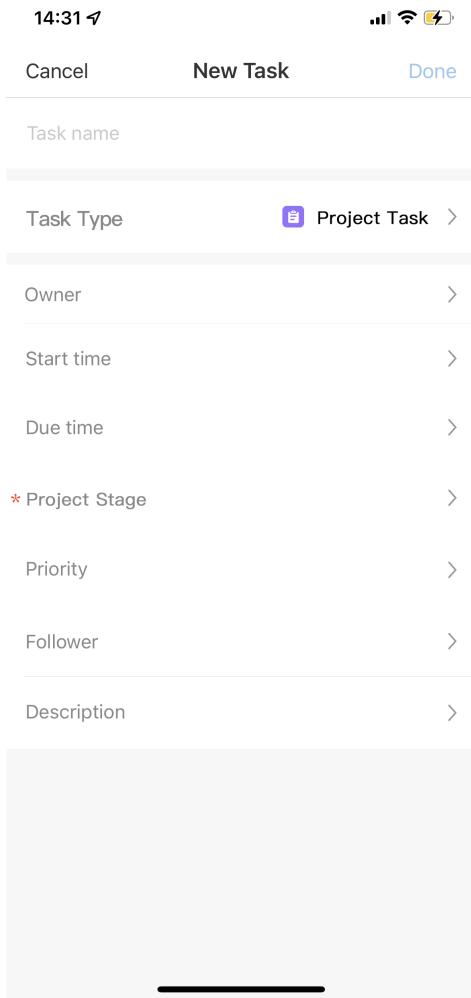
Scene Explanation: The information displayed in subtask are just the same with task

Scene Before: Scene21_subTask

Scene After:

Scene21_subTask, click "Back" to jump back to the list of subtask

Other scenes are duplicate with previous ones so we would skip them



Scene: *Scene24_createTask*

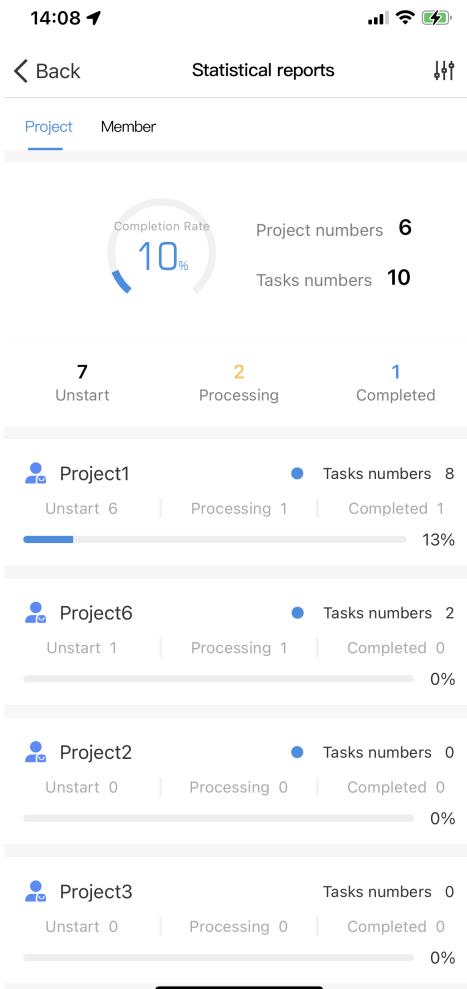
Scene Explanation: The information displayed in subtask are just the same with task

Scene Before: *Scene21_subTask*

Scene After:

Scene16_taskOverview, click "Done" to jump back to the list of subtask

Other scenes are duplicate with previous ones so we would skip them

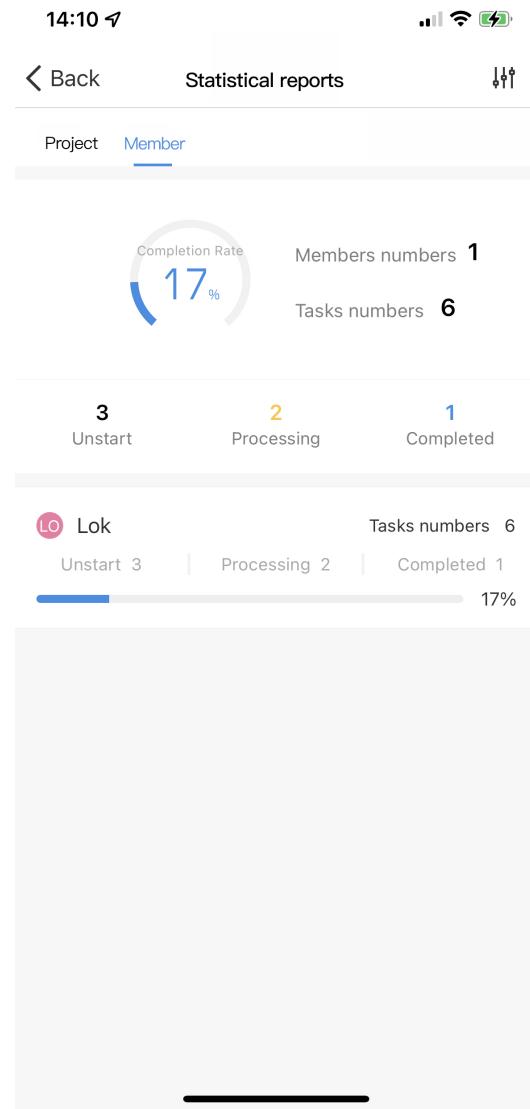


Scene: *Scene25_statisticReportProject*

Scene Explanation: This scene would display all the ongoing projects of a project manager, and would show each project's specific information including total task num, unstart task num, processing task num...

Scene Before: *Scene10_projectTable*

Scene After: *Scene26_statisticReportMember*, click "Member" button at the top bar to view the member information of all the projects.



Scene: *Scene26_statisticReportMember*

Scene Explanation: This scene would display all the subtask managers and team leader who is under project manager's control. Each member's task number, task state would be displayed.

Scene Before: *Scene25_statisticReportProject*

Scene After: *Scene10_projectTable*, click "Back" to jump back to the initial page of project table