VIET NAM NATIONAL UNIVERSITY - HO CHI MINH CITY
UNIVERSITY OF TECHNOLOGY
FACULTY OF COMPUTER SCIENCE AND ENGINEERING

Software Engineering (CO3001)

URBAN WASTE COLLECTION AID - UWC 2.0

Task 2: System modelling

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Contents

1 Task Assignment

Nguyễn Minh Khỏe	Draw "Dashboard" sequeue diagram and describe it
Nguyễn Tấn Thanh	Draw class diagram and describe it .
Lê Bảo Quốc	Draw "Login" sequence diagram and write report
Lê Ngọc Hòa	Draw and describe activity diagram
Lữ Hoàng Anh	Draw "Coordinate" sequence diagram and describe it
Cù Thanh Bằng	Draw class diagram and describe it
Nguyễn Thanh Sang	Draw "Communication" sequence diagram and describe it

2 Activity diagram

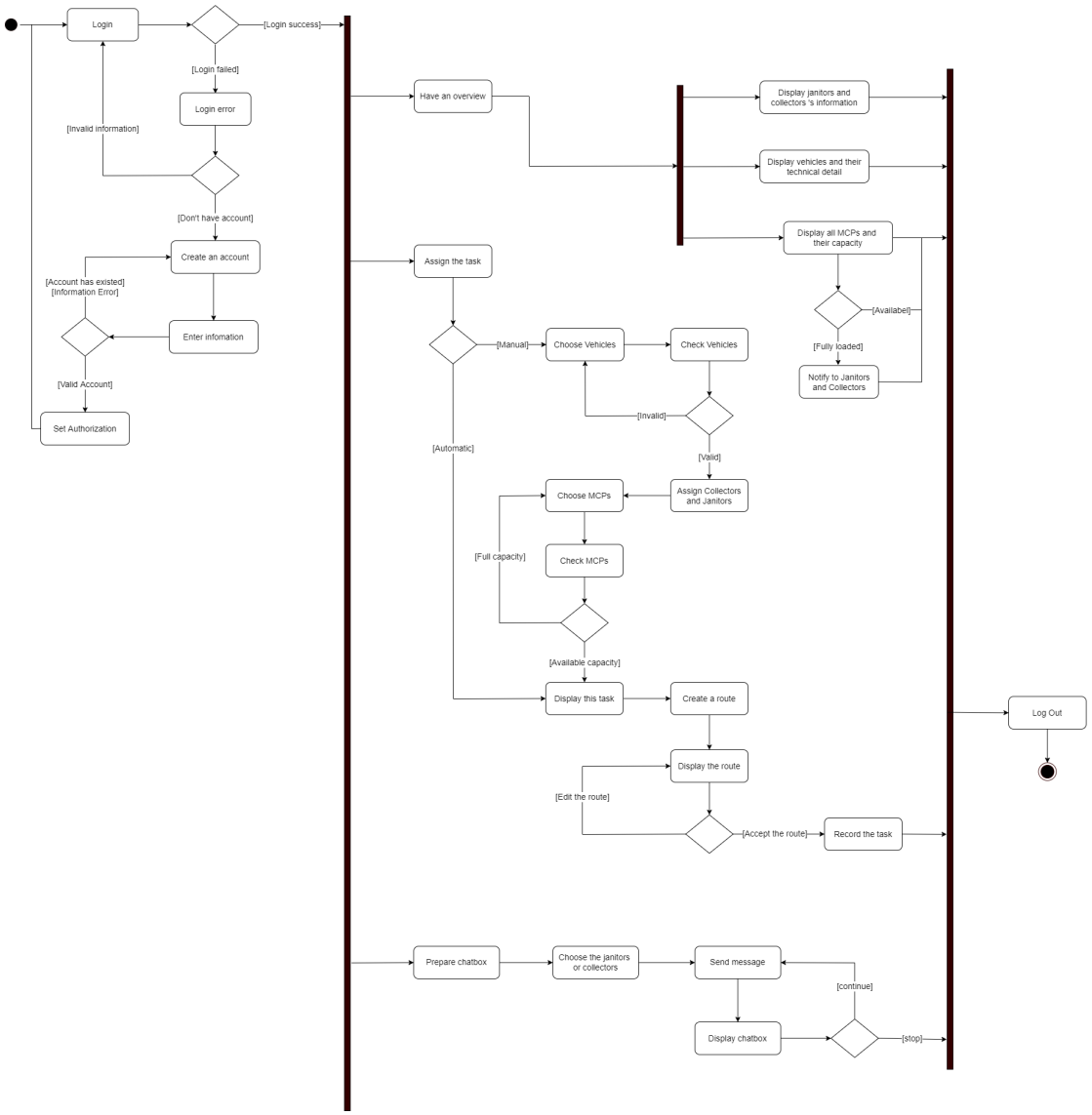

Figure 1: The activity diagram for Back office

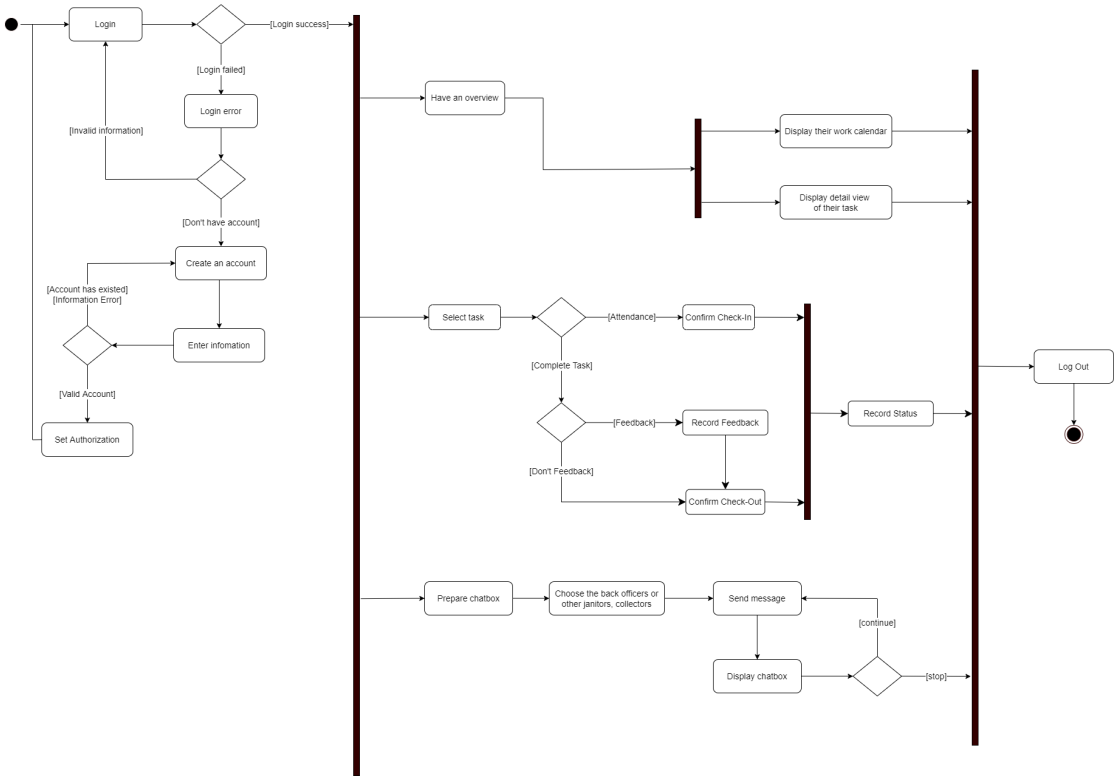

Figure 2: The activity diagram for collector janitor

Description

+ Back Officer

  - If they have the account and enter information correctly, the login will succeed. Otherwise, they have to create an account to log in.
  - After successful login, they will see the overview of all tasks. They can click on small items to know about detailed information.
  - Next, they have to assign jobs to collectors and janitors. First, they choose Vehicles, People and MCPs. If everything is suitable or available, they can see the details of this task.
  - Then create a route displayed on the screen. They can edit the route until feeling satisfied. Finally, the system records the task and they can check again.
  - Besides, while the collectors and janitors are working, they can communicate with each other by choosing the receiver and sending the messages.

+ Collector and Janitor

  - If they have the account and enter information correctly, the login will success. Otherwise, they have to create an account to log in.
  - After successful login, they will see the overview of their tasks. They can click on the calendar to see their working day or click on the centre screen to display detailed view of tasks.
  - Before working, they have to check-in in tab "Account". After completing this task, they have to confirm check-out and send feedback if they want to say something.
  - While they are working, they can communicate with each other or back officer by choosing the receiver and sending the messages.

Link Drive Photo:

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3 Sequence Diagram

3.1 Login

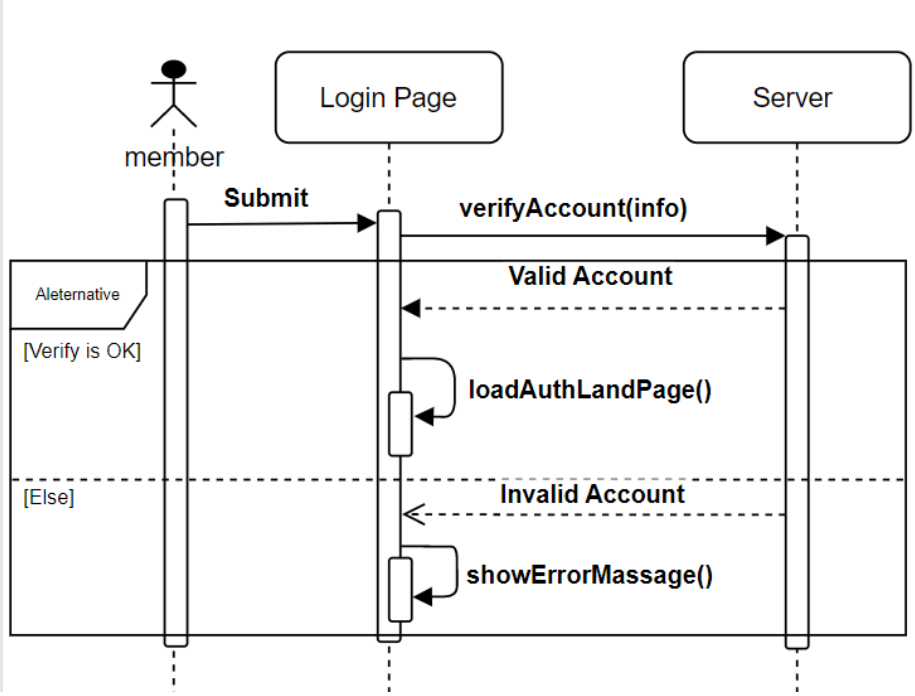

Figure 3: The sequence diagram of login

Description:

- In the interface for login page. Employees who have an account and want to log in will enter this page MemberID and their password.
- Sever stores a list of member accounts (members) including MemberID and corresponding passwords. After customers enter the login information, the data is sent to the server, where the server proceeds to search in the list to find an account with matching data.
- In case of searching for successful results, the server notified the login successfully and navigate employees to the member interface with the information of that account.
- In the case of failure, the server issued a failed login notice and failed error report.

3.2 Dashboard

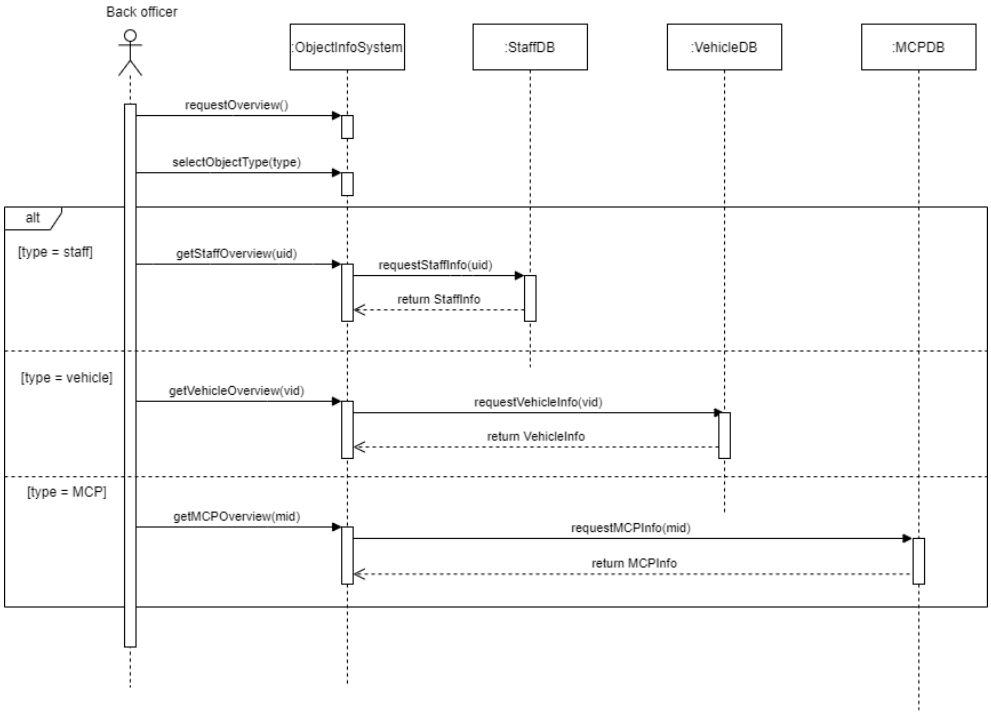

Figure 4: The sequence diagram of dashboard for Back Officer

Description

- Back Officer sends a request to see an overview of an object ObjectInfoSystem().
- Back Office then select the type of object to view:
  + If the object is an employee (collectors janitors): BO enter the staff's ID and submit ObjectInfoSystem(). This system will then require information from the StaffdB database via UID, StaffdB returns the Overview data needed and displays on the system.
  + If the object is the vehicle: enter the car's ID and submit for objectinfosystem, this system will then require information from the VehicleLedB database via VID, VehicleB Returns the Overview data needed and displayed on the system
  + If the object is MCP: enter the ID of MCP and Submit for Objectinfosystem, this system will then require information from the MCPDB database via MID, MCPDB returns the necessary Overview data and displays on the system.

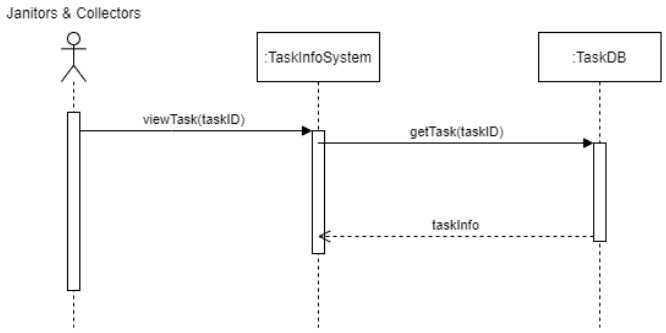

Figure 5: The sequence diagram of dashboard for J&C

Description

- Collectors and Janitors click to see Task (call the viewtask function (taskid) to the taskinfosystem system)
- TaskInfoSystem requires Task information from TaskDB database via taskID
- TaskDB returns task information to the system and displays on the screen

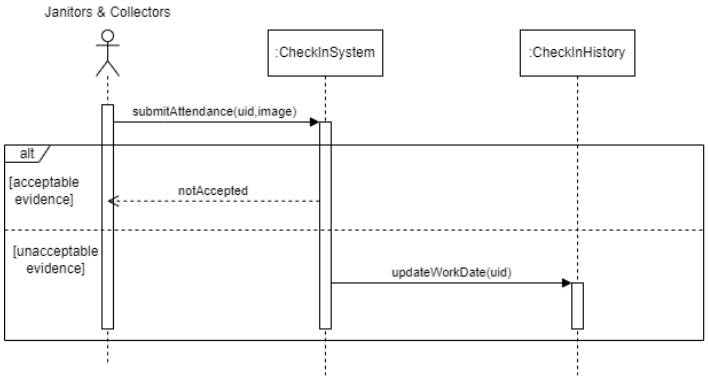

Figure 6: The sequence diagram of check in/out system

Description

- Collectors and Janitors send their attendance to the checkin system (including UID and proof images):
  + If the proof is not accepted: the system returns the screen the result is not accepted.
  + If the proof is accepted: the daily information update system is up to the CheckInHistory database

3.3 Coordinate

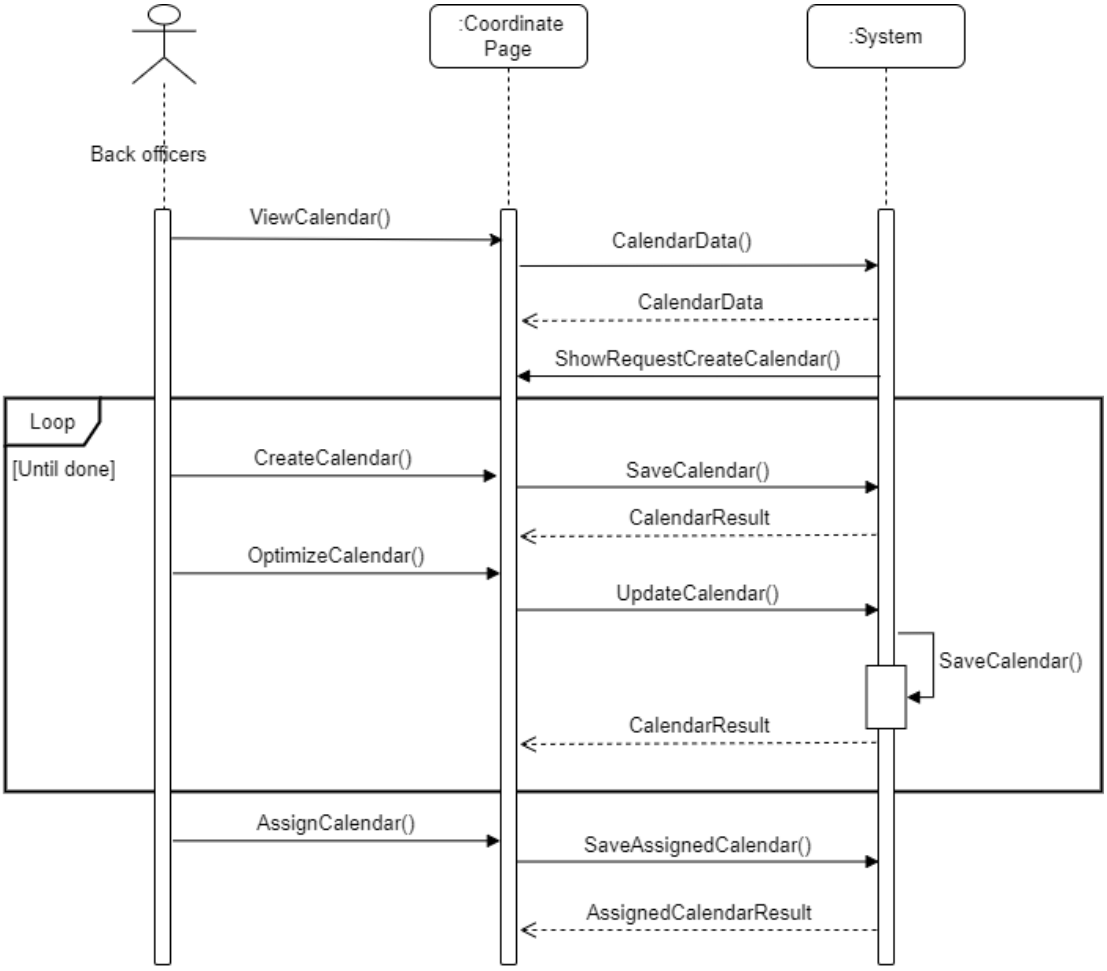

Figure 7: The sequence diagram of Coordinate - Create Calendar

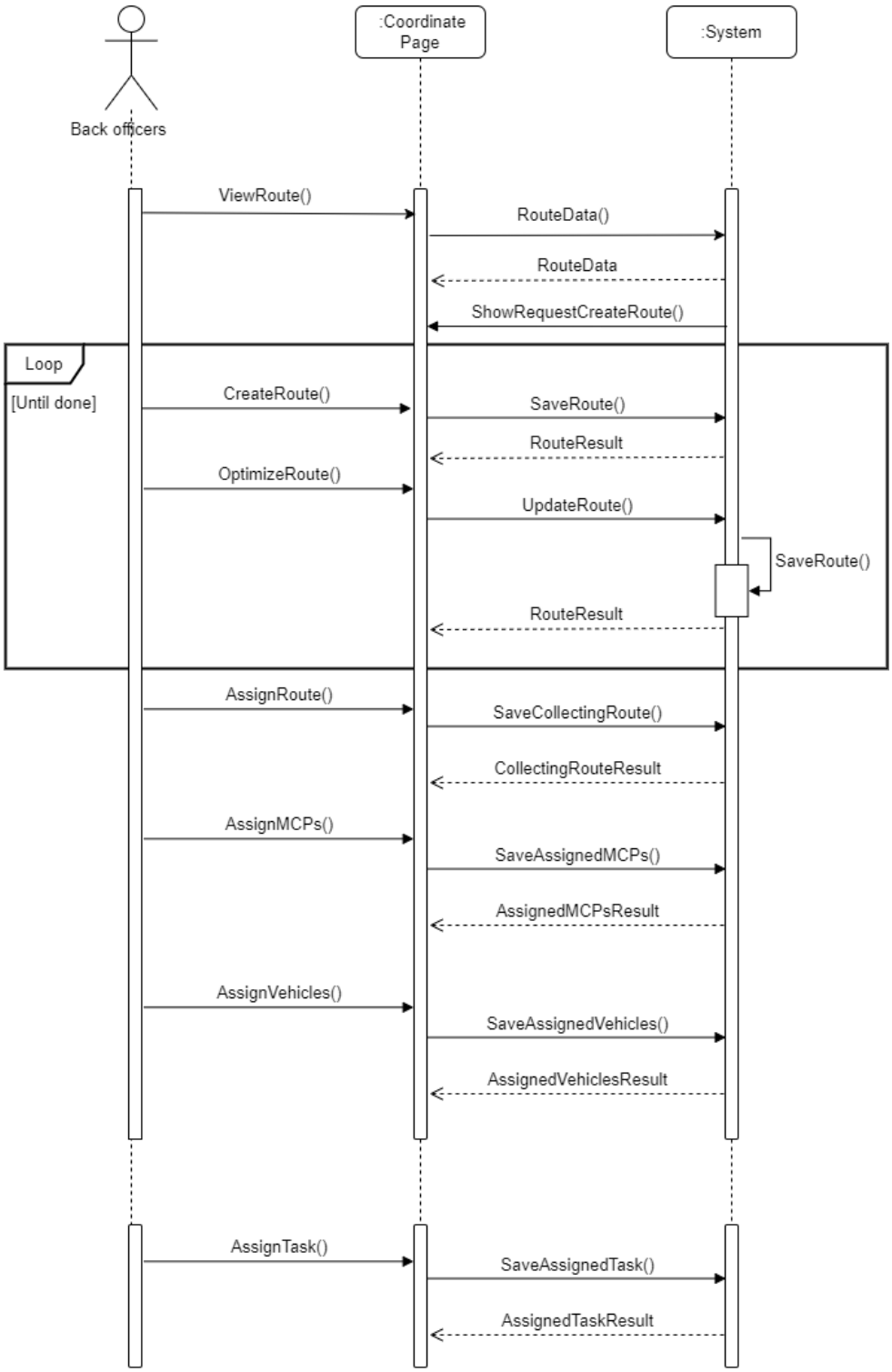

Figure 8: The sequence diagram of Coordinate - Route and Task

Description

- Back officers use Coordinate Page in order for viewing Calendar. The system will return the data of the Calendar along with sending CreateCalendar demand.
- Back officers will create a new calendar via Coordinate Page, then the system saves and optimizes it which will be returned to Coordinate Page later. This process will be done repeatedly until the Calendar is optimized.
- After that, Back officers assign the calendar to staff through Coordinate Page, saved in the system which will send the result back to Coordinate Page and view to Back officers at last.
- Similarly to the Calendar process, Back officers will again and again do above steps to create, optimize and assign Route to Janitors and Collectors. Within the Route process, Back officers also assign MCPs along the Route thanks to Coordinate Page, the system then saves the data and send the result back to Back officers.
- Last but not least, tasks will be assigned via Coordinate Page by Back officers, and saved by the system when Coordinate Page sends a signal to the system. Back officers are able to see the result viewed in that Page.

3.4 Communication

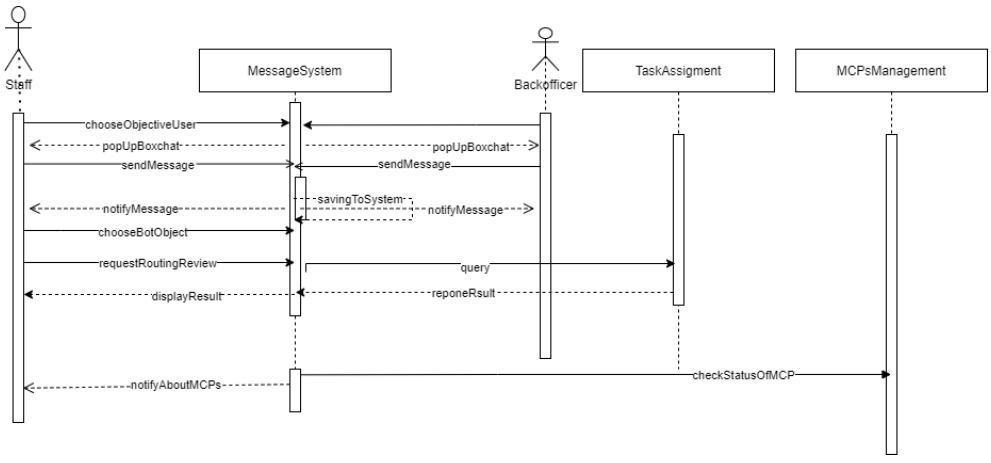

Figure 9: The sequence diagram of Communication

Description

- Staff can send/receive messages to/from back officers by choosing an objective user and typing in box chat then clicking send, these messages will be transferred to destination and saved in the system, when you come back it will still display in box chat

- Message system will notify your account and back officer side when a new message comes
- Staff can review their route on this day by sending a request to the bot system.
- Staff can be notified about the status of their MCPs through message or sound. System will check the status of MCPS(if the capacity is greater equal than 95% in user's routing and send notification to staff in order to clear this as soon as possible.

Link Drive Photo:

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4 Class diagram

4.1 Whole system

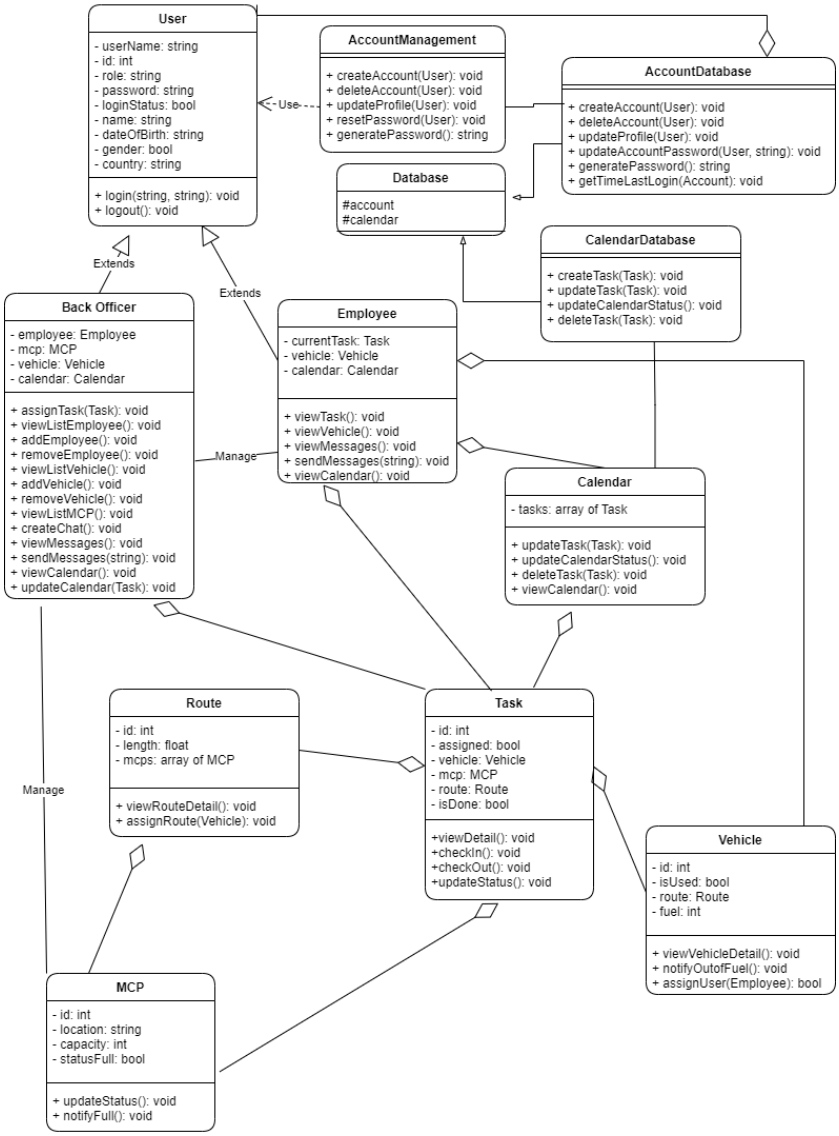

Figure 10: The class diagram of whole system

4.2 Login

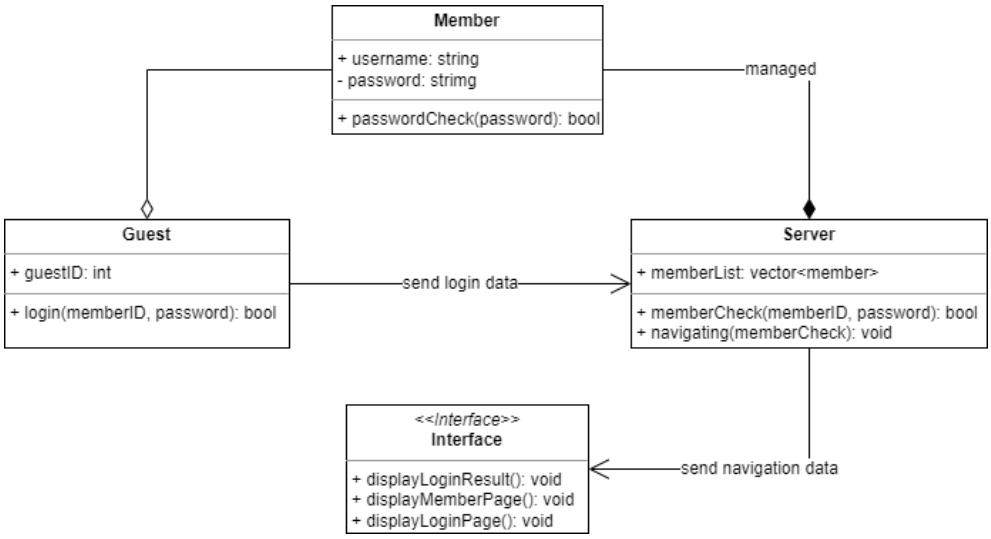

Figure 11: The class diagram of login

Description

- In the interface for the application there is a login page. Members (back officers, collectors and janitors) who already have an account and want to login will enter their memberID and password on this page.
- Server stores a list of member accounts (Member) including memberID and corresponding password. After the Members enter the login information, the data is sent to the Server, here, the Server conducts a search in the list to find the resource accounts with matching data
- In case the search returns successful results, the Server will notify you to log in successfully and navigate member to the member interface with information of that account
- In case the search fails, the Server gives a failed login message and direct guest to the login page interface

4.3 Manage

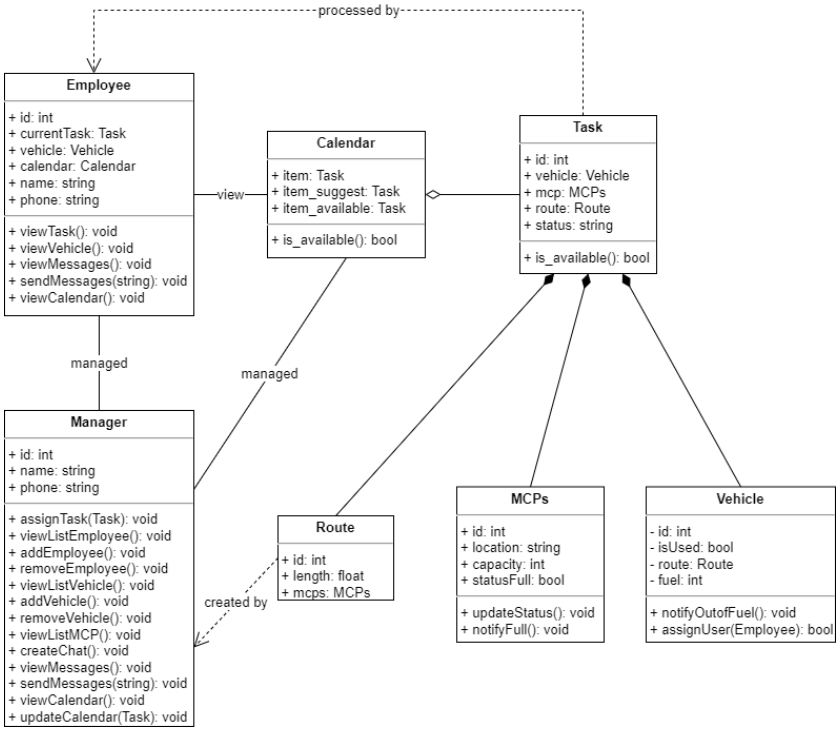

Figure 12: The class diagram of manage

Description

- The employee (Collectors and Janitors) can go on the calendar to see their working day and display detailed view of tasks.
- The task class includes information about the task id, vehicle type, route used, and status of the task.
- The Manager (Back officers) can assign janitors and collectors to MCPs (task), create a route for each collector and the assigned route is optimized in terms of fuel consumption and travel distance.
- notifyFull(): to notify about the MCPs if they are fully loaded
- notifyOutofFuel(): to notify about the vehicles if they are out of fuel

Link Drive Photo:

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