

Task 3.1

As an overview for this architecture, these will be the main challenges that need to be solved, which also can be considered the main modules (or features?) for this Task Assignment module:

- Information access.
- Task assignment.
- Communication.

These modules can be elaborated in details as below:

- The availability of an MCP should be sent to back officers and front employees that has the upcoming task related to it every 15 minutes.
- Real-time messages should arrive to recipients within 1 second after being sent.
- Work calendar of front employees (janitors and collectors) should be presented in a calendar-based format for clarity.
- The information of vehicles should be categorized by their capacity for the most convenient route-constructing process.
- Task and route assignments should arrive to the front employees within 2 minutes after being sent from the back officers.
- The assignment of a day should be created and presented to the front employee at least 2 hours prior to that day (format?).

Next, we will explain how the main modules of the system are covered:

Database:

- Personal profiles and work schedule of front employees. Work schedule will be updated on a daily and weekly basis.
- Information of vehicles (weight, capacity, fuel consumption, etc).
- Information of MCPs (current capacity, maximum capacity).
- All of the above will be sent to a database.

Task assignment:

1. Input:
 - All of the latest information from the database.
2. Output:

- Daily task and route for all available employees on that day as well as check in/check out function for each employee.

Information access:

1. Input:
 - All of the latest information from the database.
2. Output:
 - Each employee's task and route can be viewed by themselves and by back officers.
 - Front employees' personal profile can be viewed by front officers for work-related demands.
 - Current status of the vehicles (positions, user and technical information) can be viewed by back officers.
 - Current status of MCPs (positions, assigned employees, capacity) can be monitored by back officers.

Communication:

1. Input:
 - Each user's username, password, position (to create an account).
 - Messages sent from a user to another.
2. Output:
 - A real-time messaging system for communication among back officers and front employees.

Task 3.2

Implementation diagram of Task Assignment module:

