

BTL Công Nghệ Phần Mềm - Quản lý rác thải đô thị UWC 2.0

Nhóm:

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1.Task1

1.1. Identify the context of this project. Who are relevant stakeholders? What are their current needs? What could be their current problem? In your opinion, what benefits UWC 2.0 will be for each stakeholder?

- **Context:** Urban waste collection aid (environmental project)
- **Relevant stakeholders:** Back Officers, Collectors, Janitors, Organization X, Service provider Y
- **Current needs:**
 - Back Officers: managing workers' schedules, vehicles, route and MCPs, sending info to janitors & collectors
 - Collectors and Janitors: individual schedules, communication with each other and the back officers, info about MCPs, vehicles or trollers
 - Organization X: need source code of version 1.0 to begin development
- **Current problems:**
 - Back officers: scheduling & routing, communication
 - Collectors and Janitors: info about MCPs, communication
 - Organization X: new system is expected to import and use pre-existing data from version 1.0, should be as compatible as possible to 1.0, should be able to handle at least 1000 MCPs, and 10000 MCPs in 5 years, Vietnamese interface, English version in the future
- **Benefits of UWC 2.0:**
 - Back Officers: better management of schedules and routes

- System Provider X: able to handle larger data, ease of using system due to Vietnamese interface and being similar to version 1.0 in Task Manager

1.2 Describe all functional and non-functional requirements that can be inferred from the project description. Draw a use-case diagram for the whole system

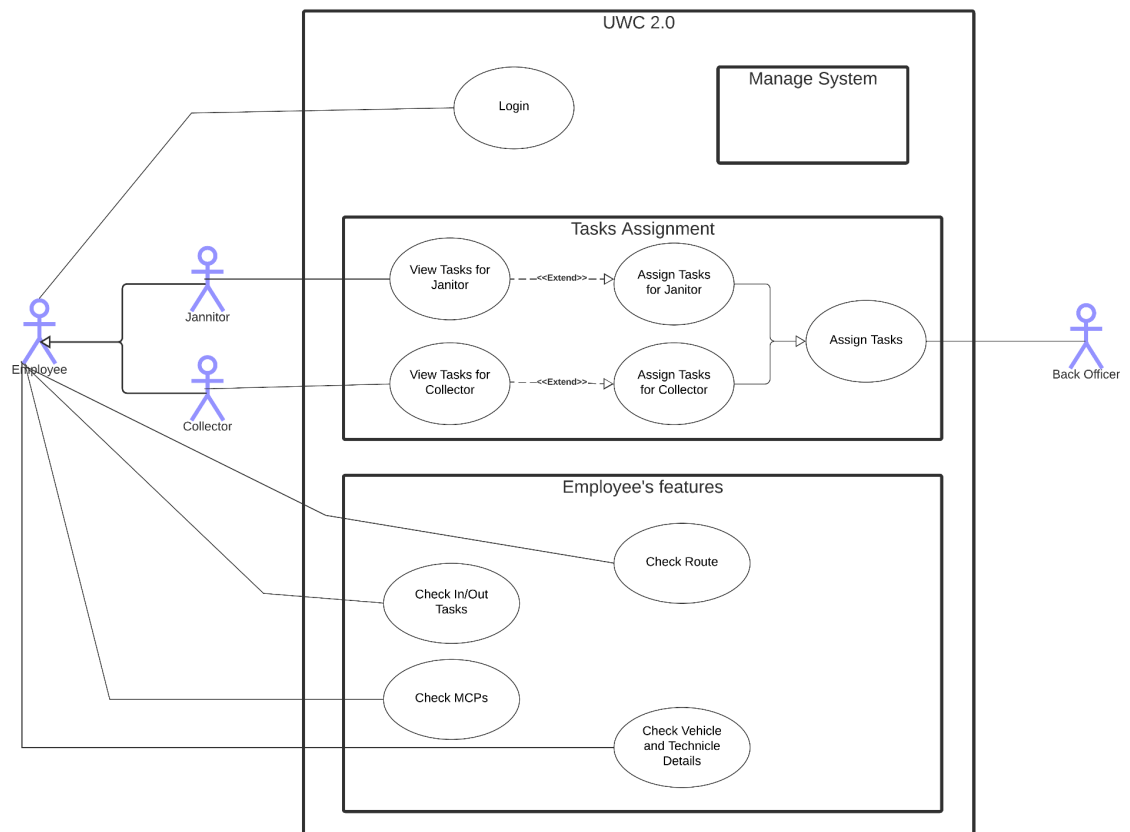
1.2.1. Functional Requirements

- Back officers
 - check information and schedule of collectors and janitors
 - check vehicle specs
 - check information and capacity of MCPs
 - Assign vehicles to collectors and janitors
 - Assign janitors and collectors to MCPs
 - Create a route for each collector
 - Be able to send message to collectors and janitors
- Collectors và janitors
 - Have an overview of their work calendar
 - Have a detail view of their task on a daily and weekly basic
 - Be able to communicate with collectors, other janitors and back officers
 - Check in / check out task every day
 - Be notified about the MCPs if they are fully loaded

1.2.2. Non-functional Requirements

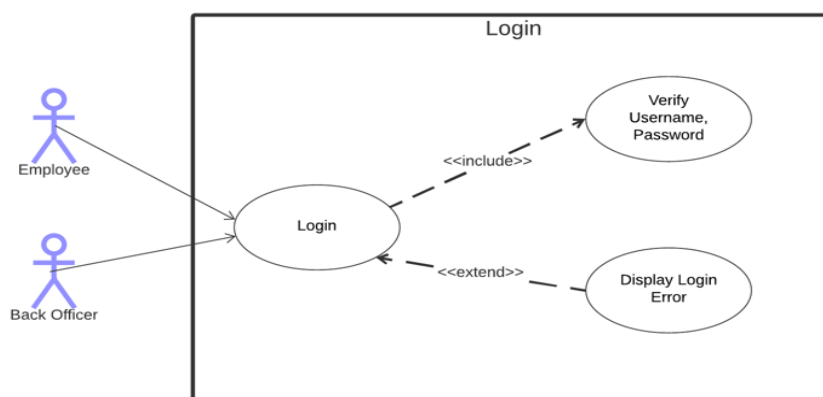
- *Performance efficiency:*
 - Information should be updated from MCPs every 15 minutes with the availability of at least 95% of their operating time
 - All delay should be less than 1 second
 - Assigned route is optimized in term of fuel consumption & travel distance
 - Handling real-time data from at least 1000 MCPs at the moment & 10000 MCPs in 5 years
- *Maintainability:*
 - Should be able to import and use the existing data from UWC 1.0
 - Should be compatible with the UWC 1.0 as much as possible

- **Usability:**
 - All important information should be displayed in one view (without scrolling down)
 - UWC 2.0 system interface should be in Vietnamese, with an opportunity to switch to English in the future
- **Use-case diagram**



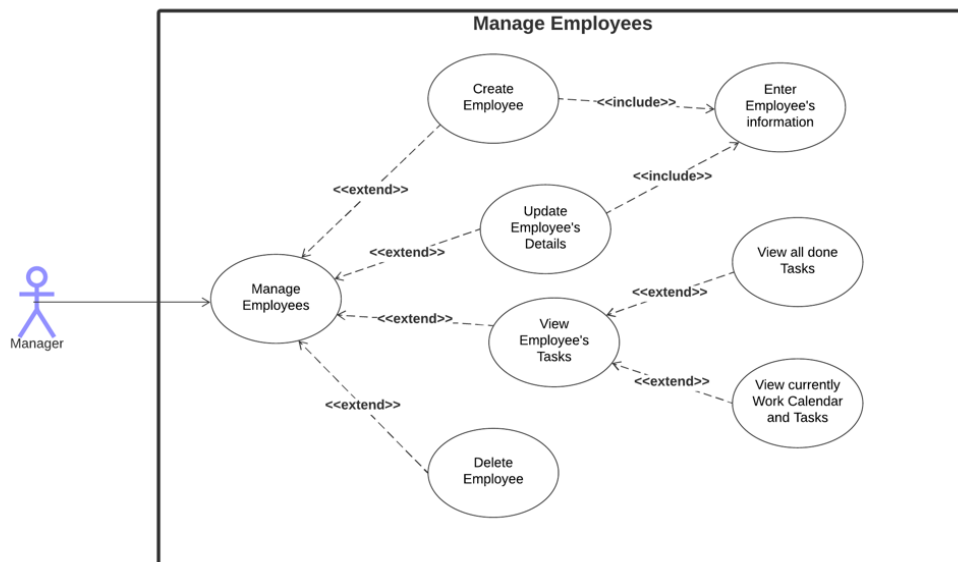
1.3. For the Task assignment module, draw its use-case diagram and describe the use-case using a table format

1.3.1. Login



Use-case name	Login
Actor	Employee, Back Officer
Description	User (Employees and Back Officers) uses this function to login into the system
Trigger	User clicks “Login” button
Pre-conditions	None
Normal Flow	<ol style="list-style-type: none"> 1. System displays Login screen 2. User enters Username and Password 3. After entering all login informations, User enters “Login” button to verify login action, include (Verify Username, Password) 4. System moves to Member’s features screen
Exceptions	<p>Exception 1: at step 3</p> <p>3a. If User has not completed informations or the account has not been existed after verifying, the system will display a message “Please enter all information needed”, extend (Display Login Error), User fills in the missing information, <i>Continue to step 3 in Normal Flow</i></p>
Alternative Flows	None

1.3.2. Manage Employee



Use-case name	Manage Employees
Actor	Manager
Description	Manager want to manage all Employee’s informations

Trigger	Click “Employees Management” button
Pre-conditions	User is logged in as Manager
Normal Flow	<ol style="list-style-type: none"> 1. System displays Employees Management screen and shows 4 options: <ul style="list-style-type: none"> - Create Employee - Update Employee’s Details - View Employee’s Tasks - Delete Employee 2. Manager click 1 of 4 options 3. System move to the screen of the options chosen 4. Manager clicks “Submit” button to save all the change 5. System return to main interface
Exceptions	None
Alternative Flows	<p>Alternative Flow 1: at step 2</p> <p>2a. Manager choose “Create Employee”, System implements use-case “Create Employee”</p> <p>2b. Manager choose “Update Employee’s Details”, System implements use-case “Update Employee’s Details”</p> <p>2c. Manager choose “View Employee’s Tasks”, System implements use-case “View Employee’s Tasks”</p> <p>2d. Manager choose “Delete Employee”, System implements use-case “Delete Employee”</p>

1.3.2a. Create Employee

Use-case name	Create Employee
Actor	Manager
Description	Manager want to add a new Employee account in system
Trigger	Click “Create Employee” button
Pre-conditions	User is logged in as Manager
Normal Flow	<ol style="list-style-type: none"> 1. System displays Create Employee screen and shows Employee’s information input, include: Fullname, Username, Phone Number, Email, Employee ID 2. Manager enters all requested informations 3. After entering all informations, Manager click “Create” button 4. System displays a message “Are you sure to create a new Employee account?” 5. Manager click “Yes” button to verify the action 6. System update new Employee’s information to Database

	7. System displays message “Create Employee successful” 8. Manager click “OK” button 9. System returns to Employees Management screen
Exceptions	Exception 1: at step 3 3a. If Manager has not completed all informations, the system will display message “Please complete all information requested”, Manager input all information, <i>Continue to step 3 in Normal Flow</i>
Alternative Flows	Alternative Flow 1: at step 3 3a. If Manager don’t want to create this employee account anymore, then click “Cancel” button, System returns to Employees Management screen Alternative Flow 2: at step 5 5a. If Manager don’t want to verify informations anymore, then click “No” button, System returns to Create Employee screen, <i>Continue to step 3 in Normal Flow</i>

1.3.2b. Update Employee’s details

Use-case name	Update Employee’s details
Actor	Manager
Description	Manager want to edit Employee’s details
Trigger	Click “Update Employee’s details” button
Pre-conditions	User is logged in as Manager
Normal Flow	1. System displays Update Employee’s detail screen and shows all Employee’s information 2. Manager edits all informations to be modified 3. After entering all informations, Manager click “Save” button 4. System displays a message “Are you sure to save new Employee’s information?” 5. Manager click “Yes” button to verify the action 6. System update new Employee’s information to Database 7. System displays message “Update Employee’s detail successful” 8. Manager click “OK” button 9. System returns to Employees Management screen
Exceptions	None
Alternative Flows	Alternative Flow 1: at step 3 3a. If Manager don’t want to update this employee’s

	<p>information anymore, then click “Cancel” button, System returns to Employees Management screen</p> <p>3b. If Manager want to restore all initial information, then click “Restore” button, System shows all initial employee’s information, <i>Continue to step 2 in Normal Flow</i></p> <p>Alternative Flow 2: at step 5</p> <p>5a. If Manager don’t want to verify all informations anymore, then click “No” button, System returns to Update Employee’s detail screen, <i>Continue to step 2 in Normal Flow</i></p>
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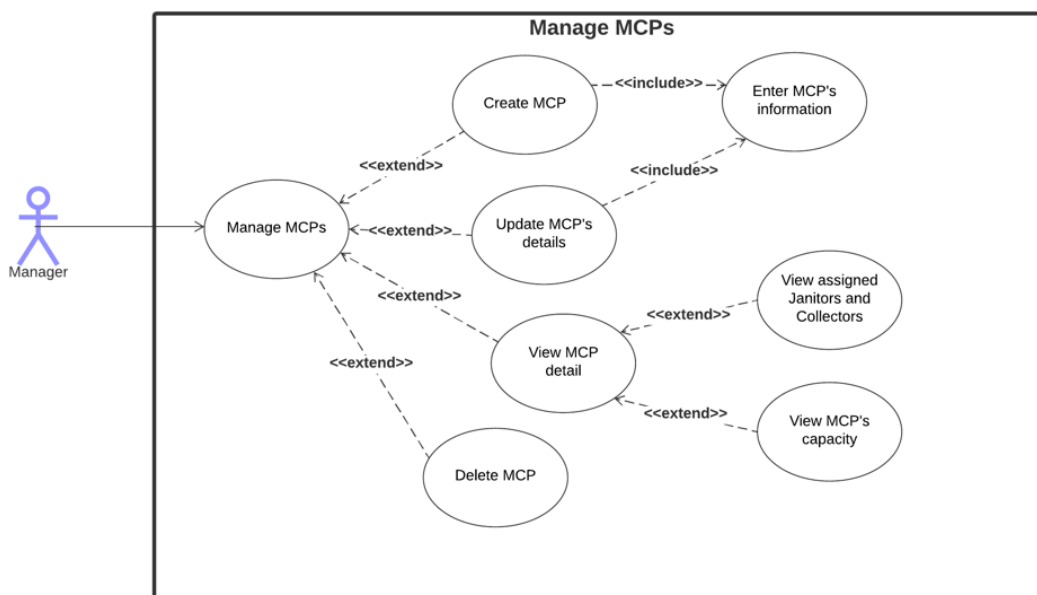
1.3.2c. View Employee’s Tasks

Use-case name	View Employee’s Tasks
Actor	Manager
Description	Manager want to see all completed or in-progress tasks of a employee
Trigger	Click “View Employee’s Tasks” button
Pre-conditions	User is logged in as Manager
Normal Flow	<p>1. System displays View Employee’s Tasks screen and shows 2 options:</p> <ul style="list-style-type: none"> - View all Tasks done - View currently work calendar and in-progress tasks <p>2. Manager choose 1 of 2 options</p> <p>3. System move to the screen of the option chosen</p> <p>4. Manager clicks “OK” after completed viewing Employee’s task action</p> <p>5. System returns to Employee Management screen</p>
Exceptions	None
Alternative Flows	<p>Alternative Flow 1: at step 2</p> <p>2a. Manager choose “View all Tasks done”, System displays all Task done by this Employee, Manager clicks “OK” button after completed viewing, System returns to View Employee’s Task screen, <i>Continue to step 2</i></p> <p>2b. Manager choose “View currently work calendar and in-progress tasks”, System displays all information (calendar, route, vehicle) of the in-progress task of this Employee, Manager clicks “OK” button after completed viewing, System returns to View Employee’s Task screen, <i>Continue to step 2</i></p>

1.3.2d. Delete Employee

Use-case name	Delete Employee
Actor	Manager
Description	Manager want to delete an Employee account in system
Trigger	Click “Delete Employee” button
Pre-conditions	User is logged in as Manager
Normal Flow	<ol style="list-style-type: none"> 1. System displays list of the Employee accounts in system and request manager choose the Employee to delete 2. Manager clicks to checkboxes beside Employees to delete 3. Manager clicks to “Delete” button 4. System displays the message “Are you sure to delete these employees from the system?” 5. Manager clicks “OK” to verify the deleting action 6. System updates status of selected accounts to “Deleted” in the Database 7. System displays the message “Delete Employees successful” 8. Manager clicks “OK” button” 9. System returns to Employee Management screen
Exceptions	None
Alternative Flows	<p>Alternative Flow 1: at step 5</p> <p>5a. If Manager don’t want to delete these Employee accounts anymore, then Manager clicks “Cancel” button, <i>Continue to step 2 in Normal Flows</i></p>

1.3.3. Manage MCPs



Use-case name	Manage MCPs
Actor	Manager
Description	Manager want to manage all MCP's informations
Trigger	Click "MCPs Management" button
Pre-conditions	User is logged in as Manager
Normal Flow	<ol style="list-style-type: none"> 1. System displays MCPs Management screen and shows 4 options: <ul style="list-style-type: none"> - Create MCP - Update MCP's Details - View MCP's Tasks - Delete MCP 2. Manager click 1 of 4 options 3. System move to the screen of the options chosen 4. Manager clicks "Submit" button to save all the change 5. System return to main interface
Exceptions	None
Alternative Flows	<p>Alternative Flows 1: at step 2</p> <p>2a. Manager choose "Create MCP", System implements use-case "Create MCP", <i>Continue to step 3 in Normal Flows</i></p> <p>2b. Manager choose "Update MCP's Details", System implements use-case "Update MCP's Details", <i>Continue to step 3 in Normal Flows</i></p> <p>2c. Manager choose "View MCP's Detail", System implements use-case "View MCP's Detail", <i>Continue to step 3 in Normal Flows</i></p> <p>2d. Manager choose "Delete MCP", System implements use-case "Delete MCP", <i>Continue to step 3 in Normal Flows</i></p>

1.3.3a. Create MCP

Use-case name	Create MCP
Actor	Manager
Description	Manager want to add a new MCP in system
Trigger	Click "Create MCP" button
Pre-conditions	User is logged in as Manager
Normal Flow	<ol style="list-style-type: none"> 1. System displays Create MCP screen and shows MCP's information input, include: Address, MCP ID, capacity 2. Manager enters all requested informations

	3. After entering all informations, Manager click “Create” button 4. System displays a message “Are you sure to create a new MCP?” 5. Manager click “Yes” button to verify the action 6. System update new MCP’s information to Database 7. System displays message “Create MCP successful” 8. Manager click “OK” button 9. System returns to MCPs Management screen
Exceptions	Exception 1: at step 3 3a. If Manager has not completed all informations, the system will display message “Please complete all information requested”, Manager input all information, <i>Continue to step 3 in Normal Flow</i>
Alternative Flows	Alternative Flow 1: at step 3 3a. If Manager don’t want to create this MCP anymore, then click “Cancel” button, System returns to MCPs Management screen Alternative Flow 2: at step 5 5a. If Manager don’t want to verify informations anymore, then click “No” button, System returns to Create MCP screen, <i>Continue to step 3 in Normal Flow</i>

1.3.3b. Update MCP’s details

Use-case name	Update MCP’s details
Actor	Manager
Description	Manager want to edit MCP’s details
Trigger	Click “Update MCP’s details” button
Pre-conditions	User is logged in as Manager
Normal Flow	1. System displays Update MCP’s detail screen and shows all Employee’s information 2. Manager edits all informations to be modified 3. After entering all informations, Manager click “Save” button 4. System displays a message “Are you sure to save new MCP’s information?” 5. Manager click “Yes” button to verify the action 6. System update new MCP’s information to Database 7. System displays message “Update MCP’s detail successful” 8. Manager click “OK” button 9. System returns to MCP Management screen

Exceptions	None
Alternative Flows	<p>Alternative Flow 1: at step 3 3a. If Manager don't want to update this MCP's information anymore, then click "Cancel" button, System returns to MCP Management screen 3b. If Manager want to restore all initial information, then click "Restore" button, System shows all initial MCP's information, <i>Continue to step 2 in Normal Flow</i></p> <p>Alternative Flow 3: at step 5 5a. If Manager don't want to verify all informations anymore, then click "No" button, System returns to Update MCP's detail screen, <i>Continue to step 2 in Normal Flow</i></p>

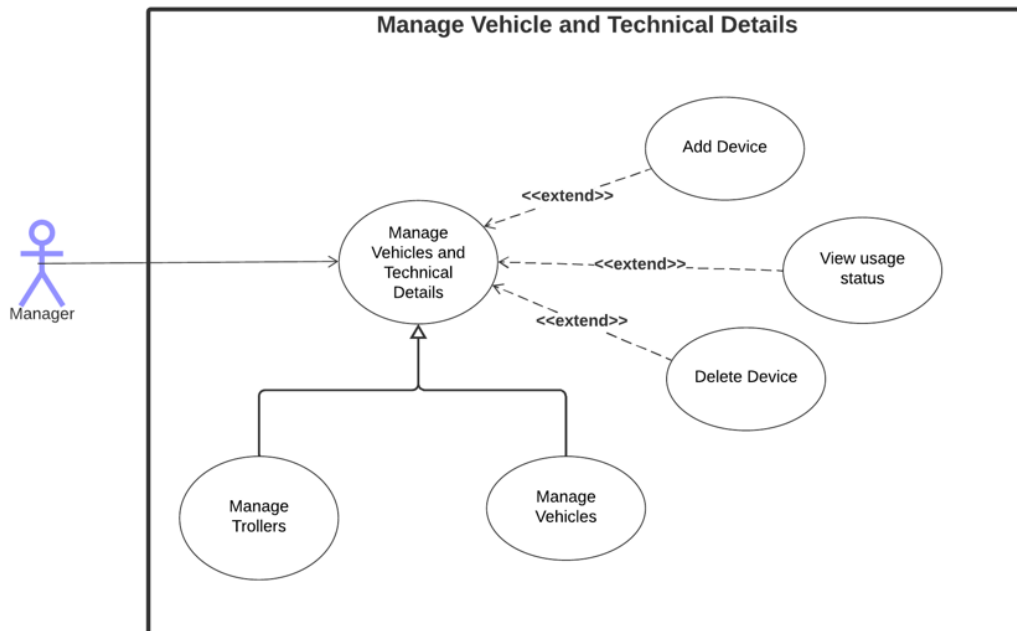
1.3.3c. View MCP's detail

Use-case name	View MCP's Detail
Actor	Manager
Description	Manager want to see all information of a MCP
Trigger	Click "View MCP's Detail" button
Pre-conditions	User is logged in as Manager
Normal Flow	<ol style="list-style-type: none"> 1. System displays View MCP's Detail screen and shows 2 options: <ul style="list-style-type: none"> - View assigned Janitors and Collectors - View capacity 2. Manager choose 1 of 2 options 3. System move to the screen of the option chosen 4. Manager clicks "OK" after completed viewing MCP's Detail action 5. System returns to MCP Management screen
Exceptions	None
Alternative Flows	<p>Alternative Flows 1: at step 2 2a. Manager choose "View assigned Janitors and Collectors", System displays all Janitors and Collectors assigned to this MCP, Manager clicks "OK" button after completed viewing, System returns to View MCP's Detail screen, <i>Continue to step 2</i></p> <p>2b. Manager choose "View capacity", System displays capacity of this MCP, Manager clicks "OK" button after completed viewing, System returns to View MCP's Detail screen, <i>Continue to step 2</i></p>

1.3.3d. Delete MCP

Use-case name	Delete MCP
Actor	Manager
Description	Manager want to delete a MCP from system
Trigger	Click “Delete MCP” button
Pre-conditions	User is logged in as Manager
Normal Flow	<ol style="list-style-type: none">1. System displays list of the MCPs in system and request manager choose the MCPs to delete2. Manager clicks to checkboxes beside MCPs to delete3. Manager clicks to “Delete” button4. System displays the message “Are you sure to delete these MCPs from the system?”5. Manager clicks “OK” to verify the deleting action6. System updates status of selected MCPs to “Deleted” in the Database7. System displays the message “Delete MCPs successful”8. Manager clicks “OK” button”9. System returns to MCPs Management screen
Exceptions	None
Alternative Flows	Alternative Flows 1: at step 5 5a. If Manager don’t want to delete these MCPs anymore, then Manager clicks “Cancel” button, <i>Continue to step 2 in Normal Flows</i>

1.3.4. Manage Vehicle and Technical detail



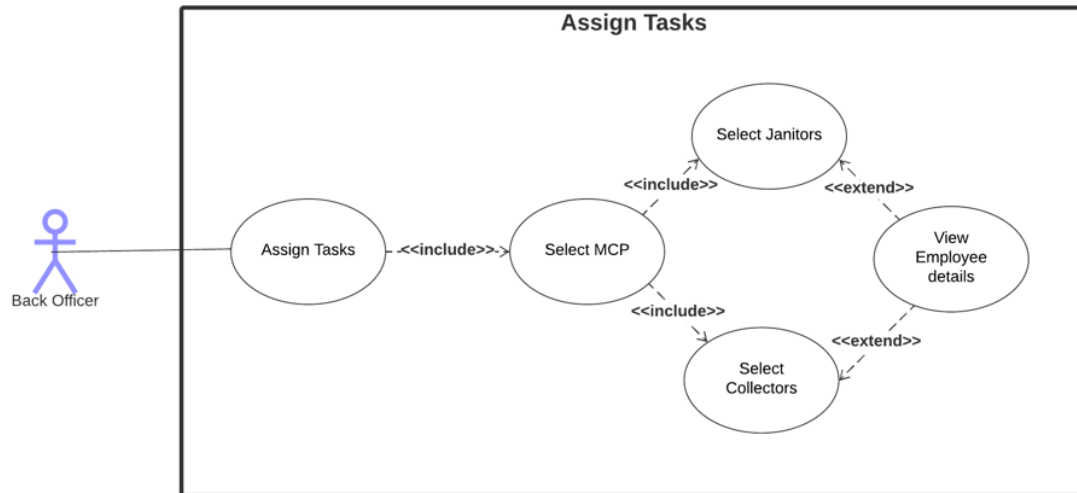
Use-case name	Manage Vehicles and Technical Details
Actor	Manager
Description	Manager want to manage all information of Vehicle and Technical detail owned
Trigger	Click “Manage Vehicles and Technical details” button
Pre-conditions	User is logged in as Manager
Normal Flow	<ol style="list-style-type: none"> 1. System displays Manage Vehicles and Technical details screen and shows 2 options: <ul style="list-style-type: none"> - Manage Vehicles - Manage Trollers 2. Choose 1 of 2 options 3. System displays screen with 3 options: <ul style="list-style-type: none"> - Add Device - View usage status - Delete Device 4. Manager click 1 of 3 options 5. System move to the screen of the options chosen 6. Manager clicks “Submit” button to save all the change 7. System return to main interface
Exceptions	None
Alternative Flows	<p>Alternative Flows 1: at step 4</p> <p>4a. Manager chooses “Add Device”, System moves to Add Device screen with device’s information (image, Device ID, weight, capacity, fuel consumptions,...) input, Manager enters all information needed, Manager clicks “Add” button, System</p>

	<p>returns to Manage Vehicle and Technical details screen.</p> <p>4b. Manager choose “View usage status”, System displays usage status (used by who, in which task,...), Manager clicks “OK” to completed viewing usage status, System returns to Manage Vehicle and Technical details screen</p> <p>4c. Manager choose “Delete Device”, System implements use-case “Delete Device”</p>
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1.3.4a. Delete Device

Use-case name	Delete Device
Actor	Manager
Description	Manager want to delete a Device from system
Trigger	Click “Delete Device” button
Pre-conditions	User is logged in as Manager
Normal Flow	<ol style="list-style-type: none"> 1. System displays list of the Devices in system and request manager choose the Devices to delete 2. Manager clicks to checkboxes beside Devices to delete 3. Manager clicks to “Delete” button 4. System displays the message “Are you sure to delete these Devices from the system?” 5. Manager clicks “OK” to verify the deleting action 6. System updates status of selected Devices to “Deleted” in the Database 7. System displays the message “Delete Devices successful” 8. Manager clicks “OK” button” 9. System returns to Manage Vehicle and Technical details screen
Exceptions	None
Alternative Flows	<p>Alternative Flows 1: at step 5</p> <p>5a. If Manager don’t want to delete these Devices anymore, then Manager clicks “Cancel” button, <i>Continue to step 2 in Normal Flows</i></p>

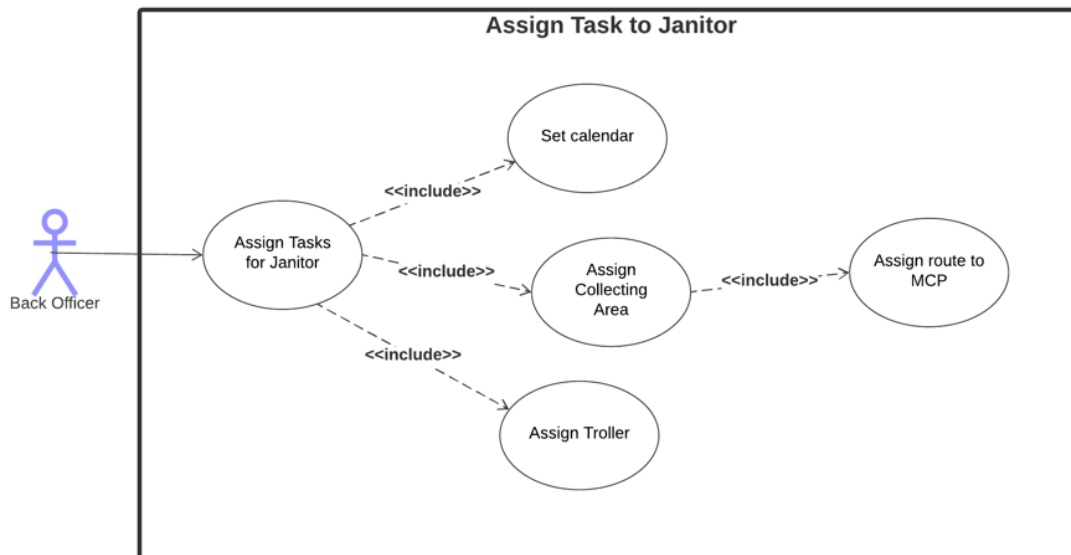
1.3.5. Assign Task



Use-case name	Assign Tasks
Actor	Back Officer
Description	Back Officer wants to assign work to employees
Trigger	Click “Assign Tasks” button
Pre-conditions	User is logged in as Back Officer
Normal Flow	<ol style="list-style-type: none"> 1. System displays Tasks Assignment screen and shows 2 request: <ul style="list-style-type: none"> - assign tasks to Janitors - assign tasks to Collectors 2. Manager click 1 of 2 options 3. System move to the screen of the option chosen 4. Manager clicks “Save” button to save the change of the option chosen 5. System return to Task Assignment screen 6. Manager choose the remaining option 7. System move to the screen of the option chosen 8. Manager clicks “Save” button to save the change of the option chosen 9. System return to Task Assignment screen 10. Manager clicks “Submit” button to save all the change 11. System return to main interface
Exceptions	Exception 1: at step 20 1a. If Manager hasn’t done all request, System show message: “You must done all request”, return to Task Assignment Screen
Alternative Flows	Alternative Flows 1: at step 2 2a. Back Officer choose “Assign tasks to Janitors”, System shows list of free Janitors, Back Officer choose 1 Janitor, Back Officer click “Assign task to Janitor” button, System

	implements use-case “Assign tasks to Janitor” 2b. Back Officer choose “Assign tasks to Collectors”, System shows list of free Collectors, Back Officer choose 1 Collector, Back Officer click “Assign task to Collector” button, System implements use-case “Assign tasks to Collector”
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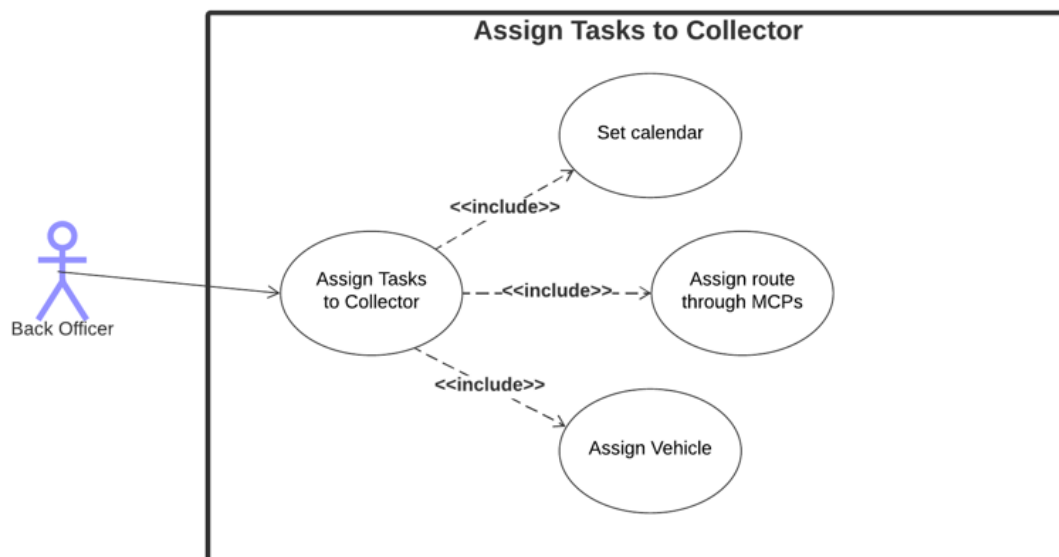
1.3.5.1. Assign Tasks to Janitor



Use-case name	Assign tasks to Janitor
Actor	Back Officer
Description	Back Officer wants to assign work to a Janitor
Trigger	Click “Assign task to Janitor” button
Pre-conditions	User is logged in as Back Officer
Normal Flow	<ol style="list-style-type: none"> 1. System displays Task Assignment to Janitor screen and shows information to fill in, include: <ul style="list-style-type: none"> - Set Calendar - Assign Collecting Area and Assign route to MCP - Assign Troller 2. Back Officer fill in all information needed 3. Back Officer clicks “Assign” button 4. System displays a message “Are you sure to assign these works to Janitor?” 5. Manager click “Yes” button to verify the action 6. System update new task’s information to Database 7. System displays message “Assign Tasks to Janitor successful” 8. Manager click “OK” button 9. System returns to Tasks Assignment screen

Exceptions	<p>Exception 1: at step 3</p> <p>3a. If Back Officer has not completed all informations, the system will display message “Please complete all information requested”, Back Officer input all information, <i>Continue to step 3 in Normal Flow</i></p>
Alternative Flows	<p>Alternative Flow 1: at step 3</p> <p>3a. If Back Officer don’t want to Assign Tasks to this Janitor anymore, then click “Cancel” button, System returns to Tasks Assignment screen</p> <p>Alternative Flow 2: at step 5</p> <p>5a. If Manager don’t want to verify informations anymore, then click “No” button, System returns to Tasks Assignment to Janitor screen, <i>Continue to step 3 in Normal Flow</i></p>

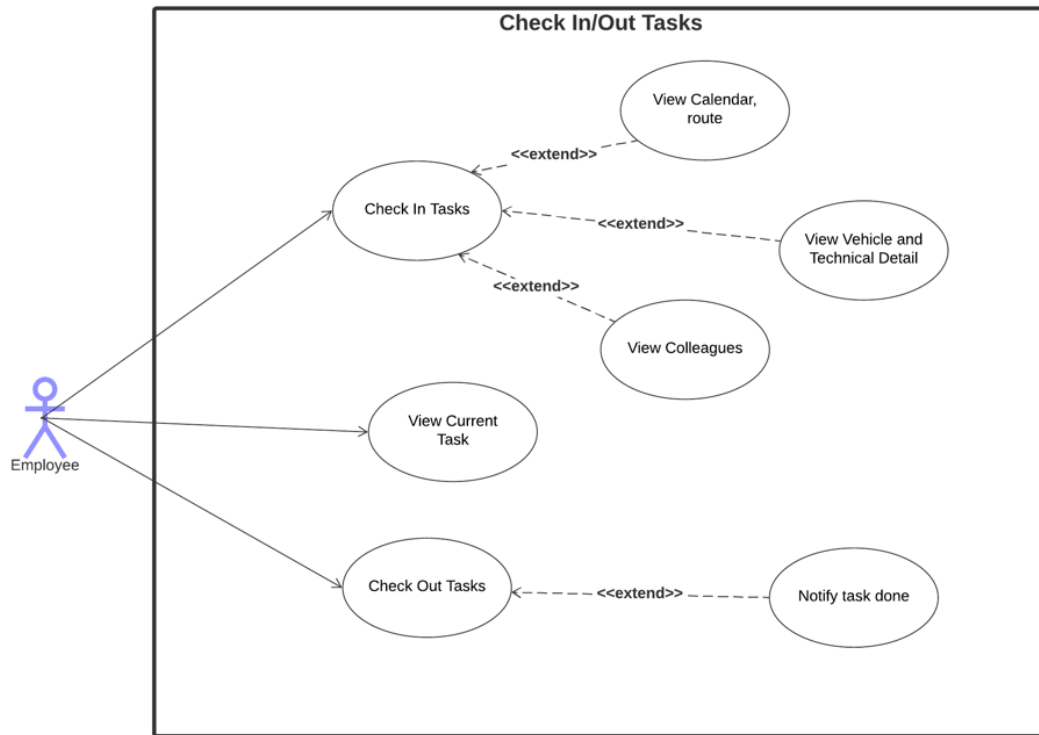
1.3.5.2. Assign Tasks to Collector



Use-case name	Assign tasks to Collector
Actor	Back Officer
Description	Back Officer wants to assign work to a Collector
Trigger	Click “Assign task to Collector” button
Pre-conditions	User is logged in as Back Officer
Normal Flow	<p>1. System displays Task Assignment to Collector screen and shows information to fill in, include:</p> <ul style="list-style-type: none"> - Set Calendar - Assign route through MCPs - Assign Vehicle

	<p>2. Back Officer fill in all information needed</p> <p>3. Back Officer clicks “Assign” button</p> <p>4. System displays a message “Are you sure to assign these works to the Collector?”</p> <p>5. Manager click “Yes” button to verify the action</p> <p>6. System update new task’s information to Database</p> <p>7. System displays message “Assign Tasks to Collector successful”</p> <p>8. Manager click “OK” button</p> <p>9. System returns to Tasks Assignment screen</p>
Exceptions	<p>Exception 1: at step 3</p> <p>3a. If Back Officer has not completed all informations, the system will display message “Please complete all information requested”, Back Officer input all information, <i>Continue to step 3 in Normal Flow</i></p>
Alternative Flows	<p>Alternative Flow 1: at step 3</p> <p>3a. If Back Officer don’t want to Assign Tasks to this Collector anymore, then click “Cancel” button, System returns to Tasks Assignment screen</p> <p>Alternative Flow 2: at step 5</p> <p>5a. If Manager don’t want to verify informations anymore, then click “No” button, System returns to Tasks Assignment to Collector screen, <i>Continue to step 3 in Normal Flow</i></p>

1.3.6. Check In/Out Tasks



Use-case name	Check In/Out Tasks
Actor	Employee
Description	Employees want to check in/out their tasks
Trigger	Click “Check in/out Tasks” button
Pre-conditions	User is logged in as Employee
Normal Flow	<ol style="list-style-type: none"> 1. System displays “Checking Task” screen and shows 3 options: <ul style="list-style-type: none"> - Check In Task - View Current Task - Check Out Task 2. Employee choose 1 of 3 options 3. System move to the screen of the options chosen 4. Manager clicks “OK” button to completed checking 5. System return to main interface
Exceptions	None
Alternative Flows	<p>Alternative Flows 1: at step 2</p> <ol style="list-style-type: none"> 2a. Employee choose “Check In Task”, System implements “Check In Task” use-case 2b. Employee Choose “View current Task”, System implements “View current Task” use-case 2c. Employee choose “Check Out Task”, System implements “Check OutTask” use-case

1.3.6a. Check In Task

Use-case name	Check In Task
Actor	Employee
Description	Employee want to check in task assigned
Trigger	click to “Check In Task” button
Pre-conditions	User is logged in as Employee
Normal Flow	<ol style="list-style-type: none">1. System displays “Task Checking In” screen and shows task assigned to employee2. System shows 3 options:<ul style="list-style-type: none">- View Calendar, route- View Vehicle and Technical Detail- View Colleagues3. Employee choose 1 of 3 options4. System shows information of the option chosen5. Employee click “OK” after completed viewing6. System returns to “Task Checking In” screen7. Employee click “Check In Task” button to check in task8. System returns to “Checking Task” screen
Exceptions	None
Alternative Flows	None

1.3.6b. View Current Task

Use-case name	View Current Task
Actor	Employee
Description	Employee wants to view the task checked in
Trigger	click “view current task” button
Pre-conditions	User is logged in as Employee
Normal Flow	<ol style="list-style-type: none">1. System displays “Current Task Viewing” screen and shows all information of current task2. Employee click “OK” button after completed viewing3. System returns to “Checking Task” screen
Exceptions	None
Alternative Flows	None

1.3.6c. Check Out Task

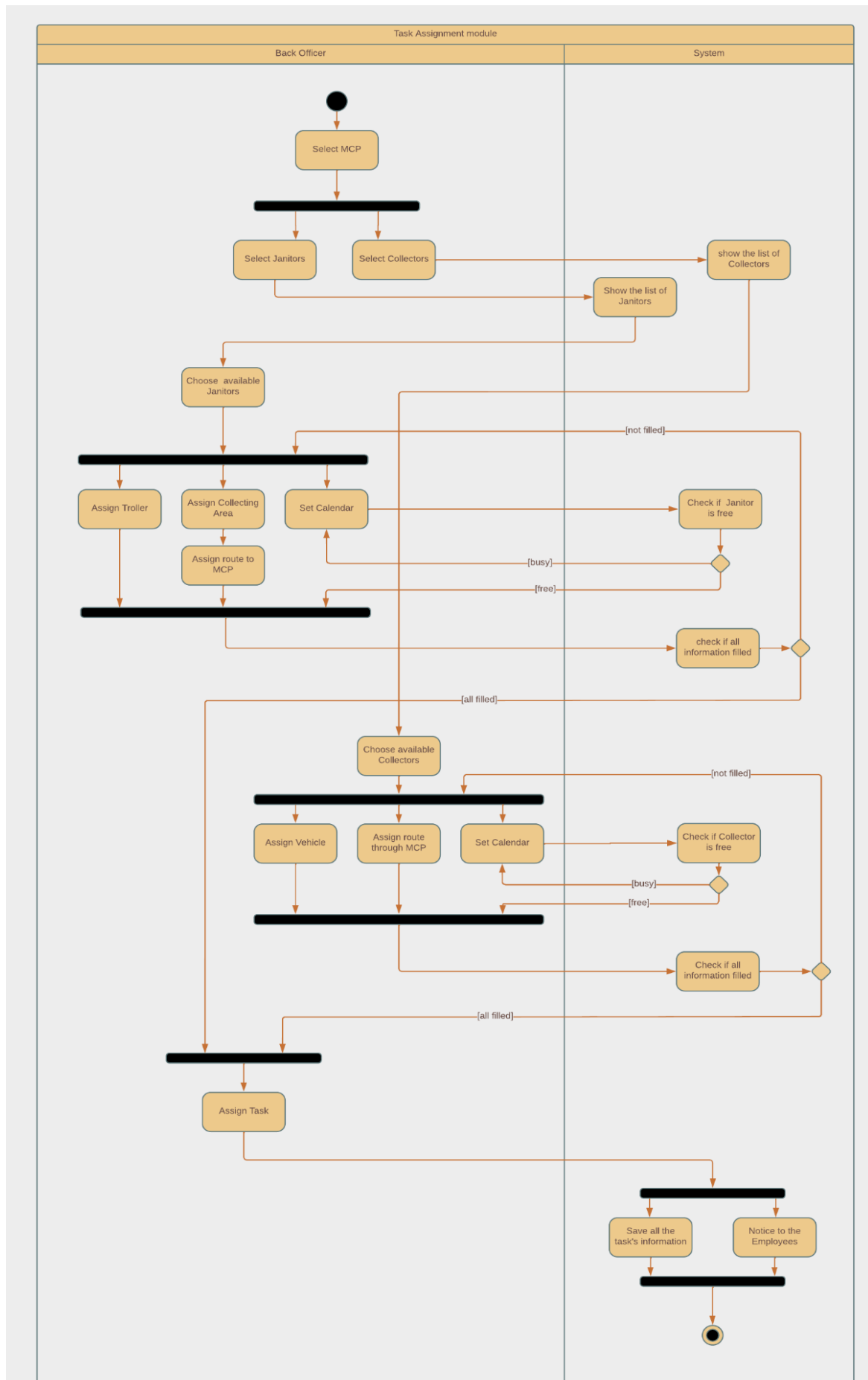
Use-case name	Check Out Task
Actor	Employee
Description	Employee wants to check out task
Trigger	click “Check out Task” button
Pre-conditions	User is logged in as Employee
Normal Flow	<ol style="list-style-type: none">1. System displays “Task Checking Out” screen with list of not done task2. Employee choose 1 task3. System shows all information of the task chosen with the message “Have you done the task?” and 2 option (Yes/No)4. Employee choose “Yes” to verify and check-out task5. System display message “Well done! Your task done” and show notification “Click ‘OK’ to check out another task”6. Employee clicks “OK”7. System returns to “Task Checking Out” screen8. Employee clicks “Return to homepage” button9. System returns to main Interface
Exceptions	<p>Exception1: at step 4</p> <p>4a. Employee clicks “Yes” but task is not done, System displays message “Task is not done, please check again!”, <i>Continue to step 3 in Normal Flow</i></p>
Alternative Flows	<p>Alternative Flows 1: at step 4</p> <p>3a. Employee clicks “No”, System displays the message “Keep trying hard!” and show notification “Click ‘OK’ to return to check out another task”, Employee clicks “OK”, System return to “Task Checking Out” screen</p>

MỘT SỐ CHỈNH SỬA :

- Sửa lại Use-case Diagram tại phần 1.2 (Thêm phần view Task cho Collector và Janitor)
- Sửa lại Alternative flow ở Use-case Table “Manage Employee”.

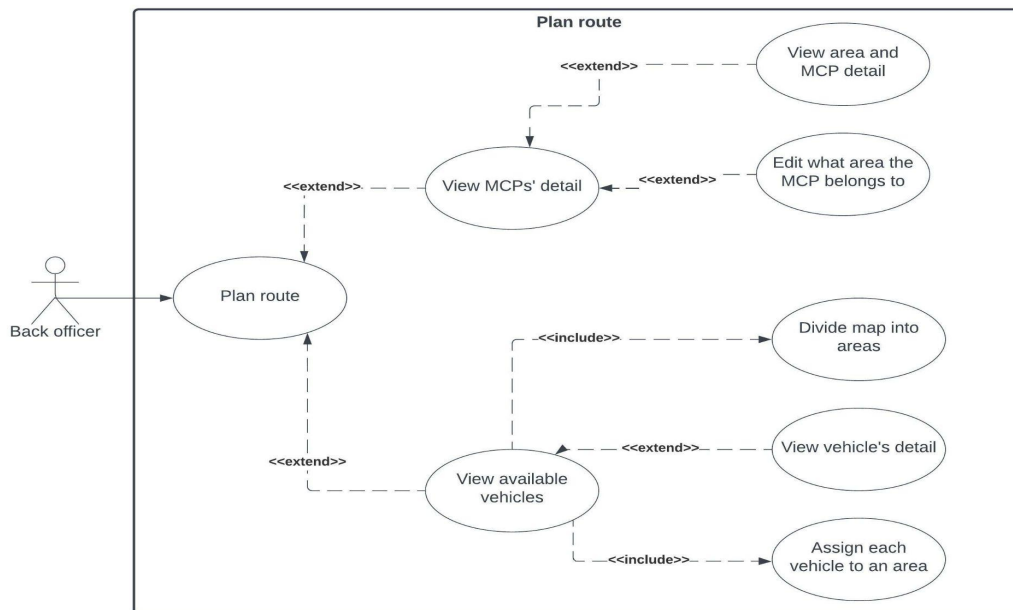
2.Task 2

2.1. Draw an activity diagram to capture the business process between systems and the stakeholders in Task Assignment module



2.2. Proposal a conceptual solution for the route planning task and draw a sequence diagram to illustrate it

2.2.1. Plan route



Use-case name	Plan route
Actor	Back officer
Description	Back officer wants to plan the route for vehicles
Trigger	Click “Plan Route” button
Pre-conditions	User is logged-in as Back Officer

Normal flow	<ol style="list-style-type: none"> 1. System displays a map showing all the MCPs around the waste processing plant, a calendar and show 2 options: <ul style="list-style-type: none"> - View available vehicles - View MCPs' detail 2. Back officer choose the date to plan route in the calendar 3. Back officer click 1 of 2 options 4. System displays a smaller screen of the chosen list next to the map 5. Back officer clicks "Main Menu" button to leave the screen 6. System returns to main interface
Exceptions	None
Alternate Flows	<p>Alternate Flow 1: at step 2</p> <p>2a. Back officer choose "View available vehicles", System implements use-case "View available vehicles", <i>continue to step 3 in Normal Flow</i></p> <p>2b. Back officer choose "View MCPs' detail", System implements use-case "View MCPs' detail", <i>continue to step 3 in Normal Flow</i></p>

2.2.1a. View available vehicles

Use-case name	View available vehicles
Actor	Back officer
Description	Back officer wants to view details of available vehicles and choose vehicle to put to work
Trigger	Click “View available vehicles” button
Pre-conditions	User is logged-in as Back Officer
Normal flow	<ol style="list-style-type: none">1. System displays a list of available vehicles and their details (maximum load, fuel)2. Back officer ticks the checkboxes next to the vehicles that need to put to work3. Back officer clicks “Next” to confirm the choosing action4. System divides the map into areas with different colors (The number of areas is equal to the number of vehicles) (The map is divided using Google Distance Matrix API and algorithms)5. Back officer drags the vehicle bar to each area to assign work for that vehicle6. Back officer clicks “Save” to verify the assigning action

	<p>7. System displays the message “Are you sure to save these changes?”</p> <p>8. Back officer clicks “Yes” button to verify modification</p> <p>9. System updates the status of vehicles as “Assigned” in the Database of the chosen date and displays the message “Changes saved”</p> <p>10. Back officer clicks “OK” button</p> <p>11. System returns to “Plan Route” screen</p>
Exceptions	<p>Exception Flow 1: at step 3</p> <p>3a. If no vehicle is chosen, System will display the message “Cannot divide areas. Please choose vehicles(s) and try again!”. Back officer ticks the checkboxes next to the vehicles, <i>continue to step 3 in Normal Flow</i></p>
Alternate Flows	<p>Alternate Flow 1: at step 3</p> <p>3a. If Back officer wants to unchoose specific vehicles, then untick each vehicle or click “Untick all” button, <i>continue to step 3 in Normal Flow</i></p> <p>Alternate Flow 2: at step 6</p>

	<p>6a. If Back officer wants to unassign specific vehicles, then hover on each vehicle bar and click the Trash icon, or click “Unassign all” button on top of the list, <i>continue to step 6 in Normal Flow</i></p> <p>Alternate Flow 3: at step 8</p> <p>8a. If Back officer does not want to verify modification anymore, then click “Cancel” button, system returns to “View available vehicles” screen. <i>Continue to step 3 in Normal Flow</i></p>
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2.2.1b. View MCPs’ detail

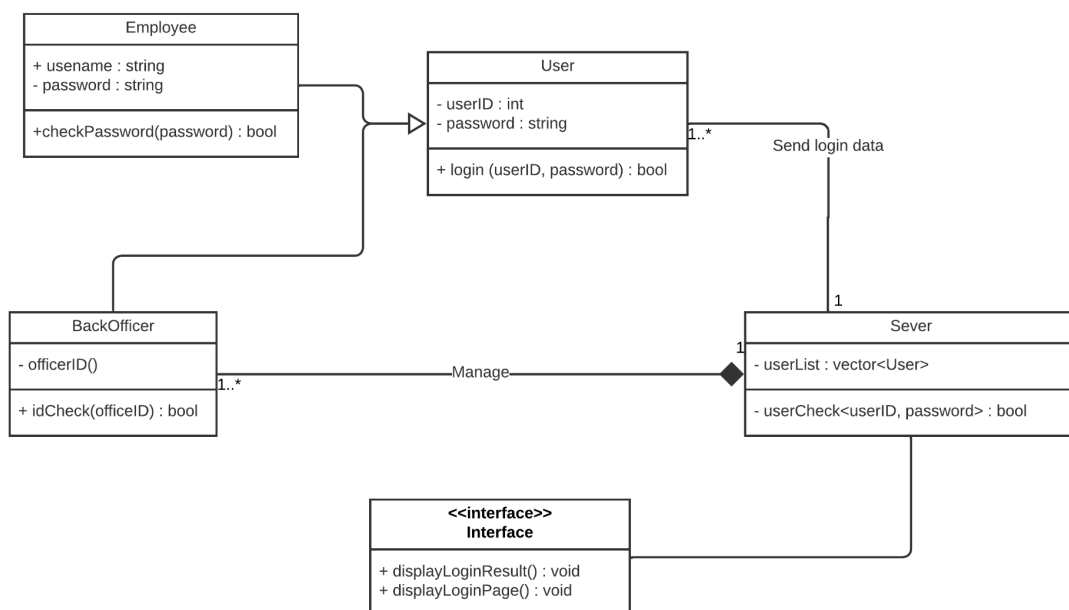
Use-case name	View MCPs’ detail
Actor	Back officer
Description	Back officer wants to view details of MCPs in each divided areas and may be able to change MCP to different area
Trigger	Click “View MCPs’ detail” button
Pre-conditions	User is logged-in as Back Officer

Normal flow	<ol style="list-style-type: none"> 1. System displays the list of all MCPs alphabetically or sorted by area (if Back officer had divided areas beforehand). A total distance indicator is located below each area 2. Back officer drags an MCP bar to change it to different area 3. Back officer clicks “OK” button 4. System displays the message “Are you sure to save these changes?” 5. Back officer clicks “Yes” button to verify modification 6. System displays the message “Changes saved” 7. Back officer clicks “OK” button 8. System returns to “Plan Route” screen
Exceptions	None
Alternate Flows	<p>Alternate Flow 1: at step 3</p> <p>2a. If Back officer does not want to change MCP to other area anymore, then drag the MCP bar back to the original area, or click “Undo” button. <i>Continue to step 3 in Normal Flow</i></p> <p>Alternate Flow 2: at step 5</p>

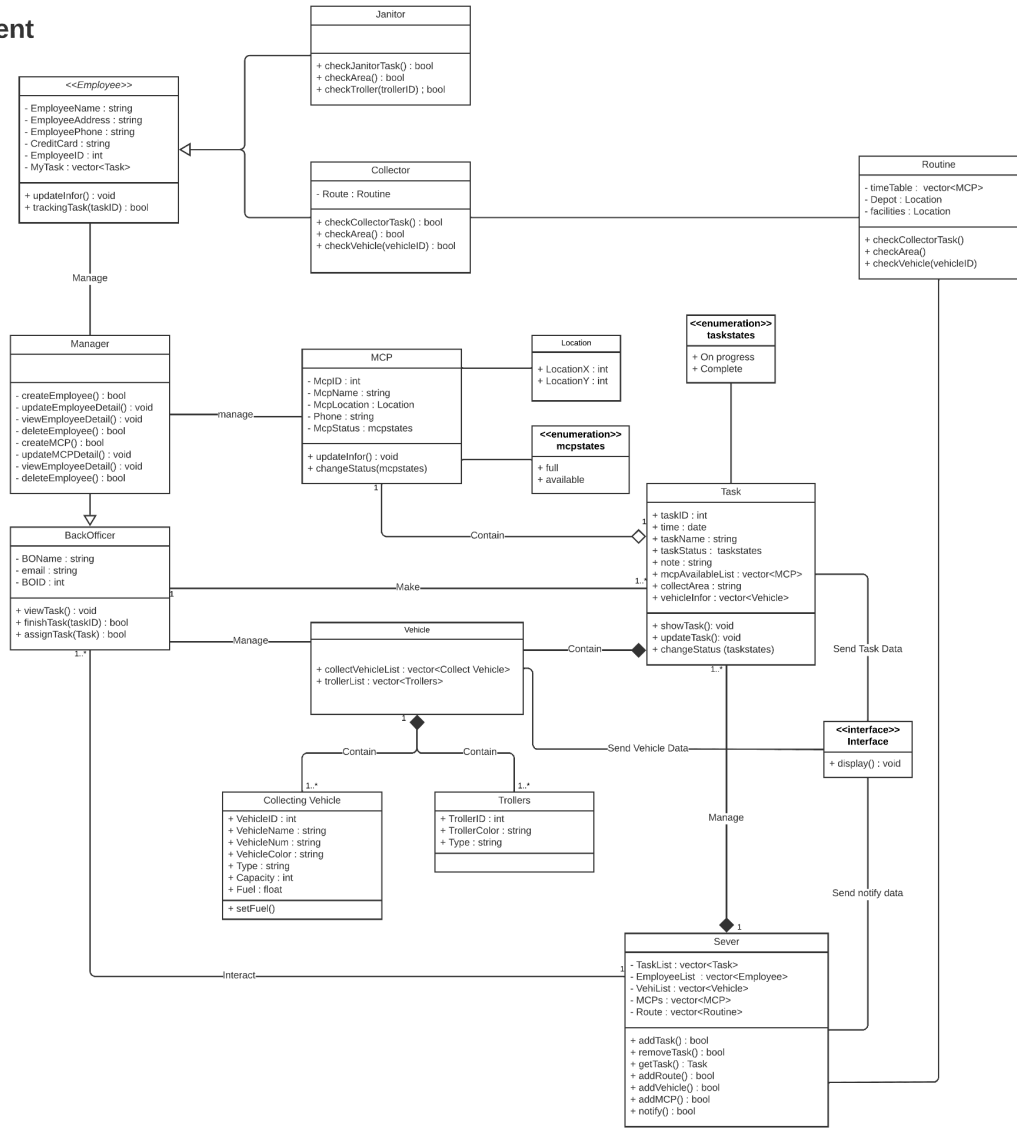
	<p>5a. If Back officer does not want to verify modification anymore, then click “Cancel” button, system returns to “View MCPs’ detail” screen. <i>Continue to step 3 in Normal Flow</i></p>
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2.3. Draw a class diagram of Task Assignment module as comprehensive as possible

Login



Management



Checkout

