Software Design & Construction 1

Group Project

Rawan Bashanam 444001343

Hamida Akhtar 443011951

Amirah mohsen alghamwy 444005124

Ghala Alhashmi Al-Ameer 44410405

Green Zone Monitoring System

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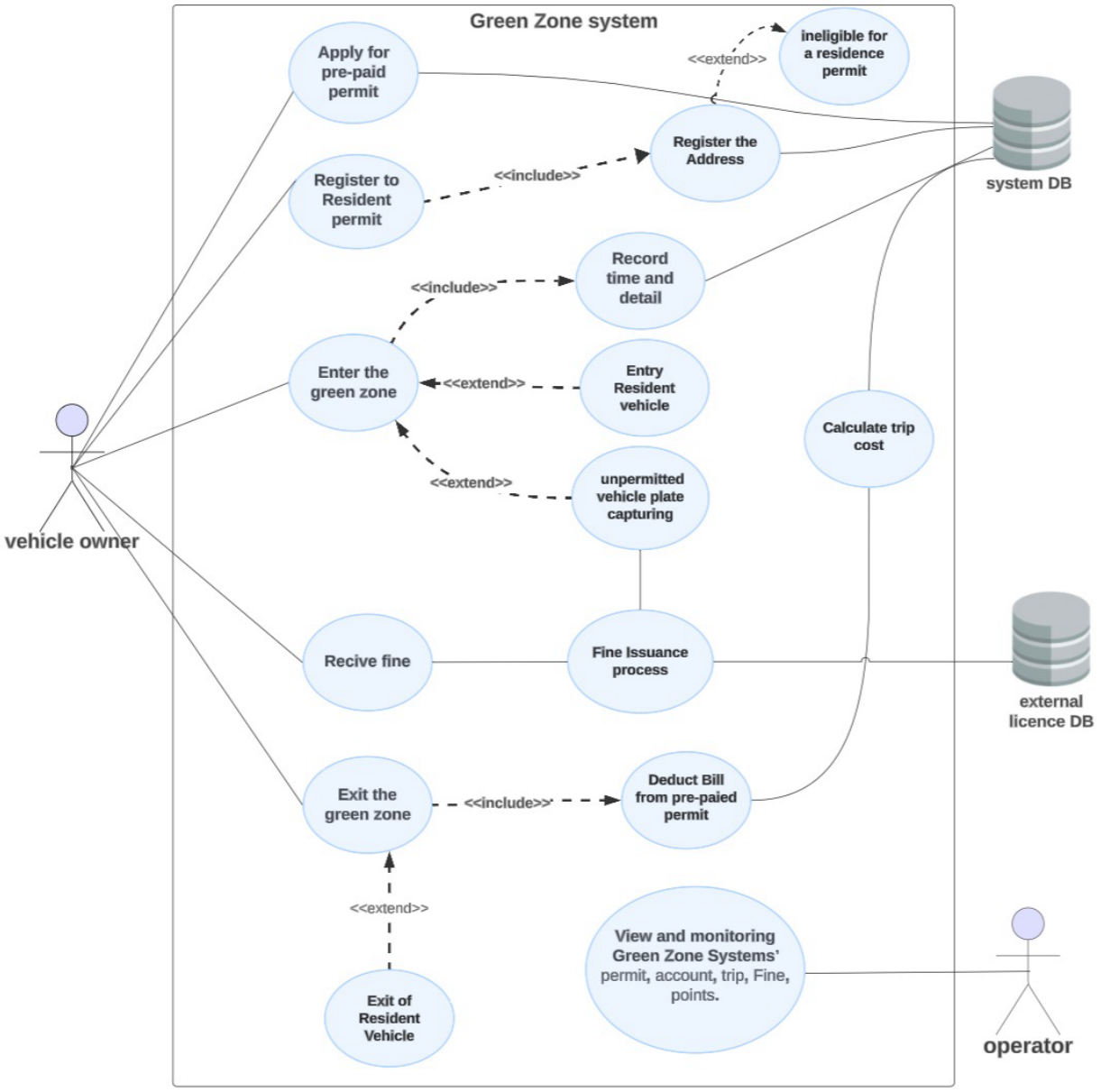


Use case Name : Green Zone Monitoring System

1. Apply for Pre-paid Permit

Actor: Vehicle Owner, system DB

Description: Vehicle owner applies for a pre-paid green zone permit and pay and all info saved in the system DB.

Interaction: Vehicle owner interaction with the system, the system validates and creates permit account save it in system DB.

2. Register to Resident Permit

Actor: Vehicle Owner

Description: Vehicle owner registers for a resident permit for green zone people, allowing unrestricted access for them.

Interaction: Vehicle owner submits application to the system, the system insure by the "Register the Address" use case and creates resident permit account and save the info in DB.

3. Register the Address

Actor: Vehicle Owner

Description: The vehicle owner records address to ensure that he/she is eligible for a residence permit.

Interaction: Vehicle owner submits address, system updates vehicle owner's information If they are within the area, if not the system will reject it .

4. Enter the Green Zone

Actor: Vehicle Owner

Brief Description: Vehicle enters the green zone, and he/she detected by the location sensor and the Lazer scanner scan the permit if scan can't find the permit barcode the video camera will picture the vehicle plate.

Interaction: Vehicle approaches entry point; system interact with the external devices to determine the next use case and coordinate the action.

5.Record Time and Detail

Actor: System DB

Description: the permit is valid so the System records trip details, including time, for billing and monitoring.

Interaction: System logs trip details, updates trip records on the DB.

6. Enter Resident Vehicle

Actor: Vehicle Owner

Description: Resident vehicle enters the green zone, no permit validation required.

Interaction: Vehicle approaches entry point; system recognizes resident vehicle by the Lazer scanner.

7. Unpermitted Vehicle Plate Capturing

Actor: vehicle Owner

Description: System captures license plate image for unpermitted vehicles after detecting them by no permit by Lazer scanner the system uses the video camera to capture the license plate.

Interaction: Camera captures image, system processes image, retrieves owner's address.

8. Calculate Trip Cost

Actor: System DB

Description: System calculates trip cost based on time, vehicle category, and peak/off-peak hours.

Interaction: System retrieves trip details, calculates cost, updates account balance with the system DB.

9. Receive Fine

Actor: Vehicle Owner

Description: Vehicle owner receives fine for unpermitted green zone access.

Interaction: System sends fine notification, vehicle owner receives fine.

10. Fine Issuance Process

Actor: External licenses DB

Description: getting the address from licenses DB which decodes vehicle license photographs taken by the video camera, System issues fine to vehicle owner, for unpermitted green zone access.

Interaction: System detect the owner's address, System processes fine, sends fine notification to vehicle owner.

11. Exit the Green Zone

Actor: Vehicle Owner

Description: Vehicle exits the green zone, detected by the sensor, the permit will be scanned.

Interaction: Vehicle approaches exit point, system logs trip end, to calculates cost.

12. Deduct Bill from Pre-paid Permit

Actor: System DB

Description: System deducts trip cost from pre-paid permit account balance.

Interaction: System updates account balance, deducts trip cost.

13. Exit of Resident Vehicle

Actor: Vehicle Owner

Brief Description: Resident vehicle exits the green zone, no cost calculation required.

Interaction: Vehicle approaches exit point, system logs trip end.

14. Calculate trip cost

Actor: System DB

Description: the functionality provided by the system to calculate the appropriate trip cost depending on various criteria.

Interaction: interact with the system DB to get the required info to calculate based on specific rules

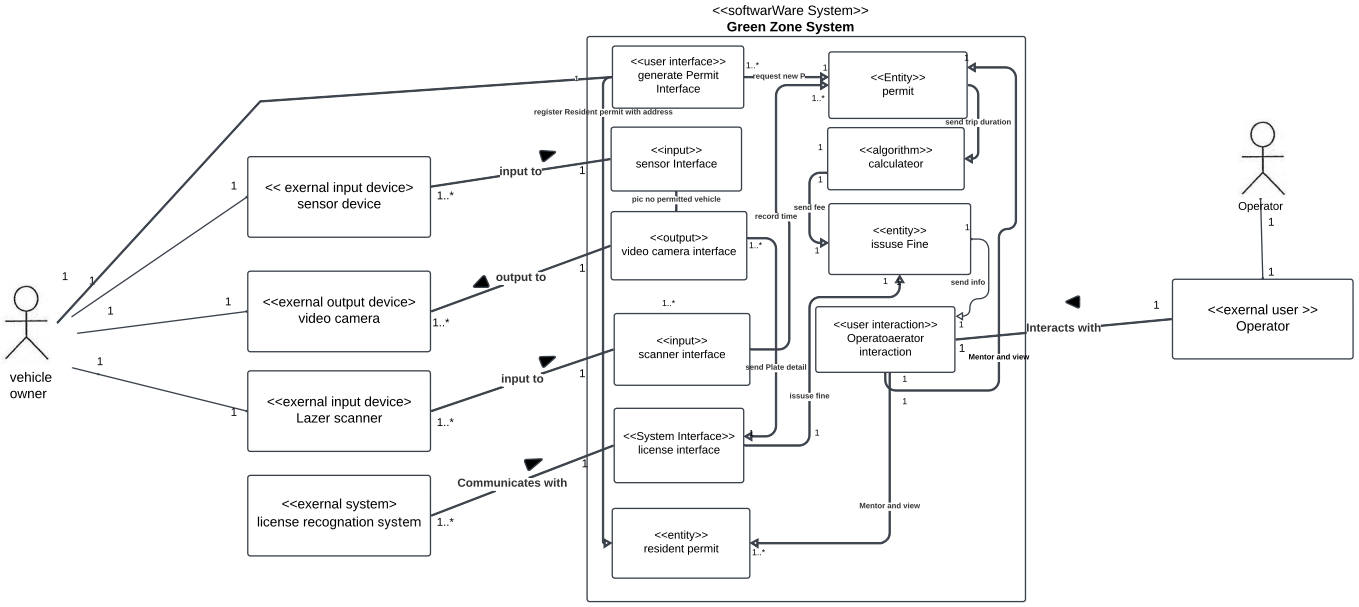
15. View and Monitoring Green Zone Systems' Permit, Account, Trip, Fine, Points

Actor: Operator

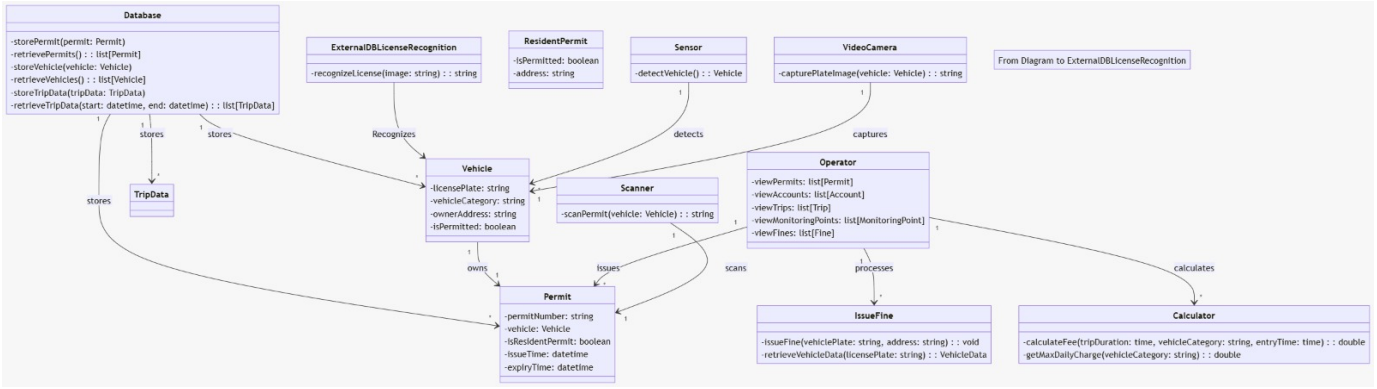
Brief Description: a comprehensive access for Operator to views and monitors system information, including permits, accounts, trips, fines, and points.

Interaction: Operator logs in, system displays system information, operator views and monitors.

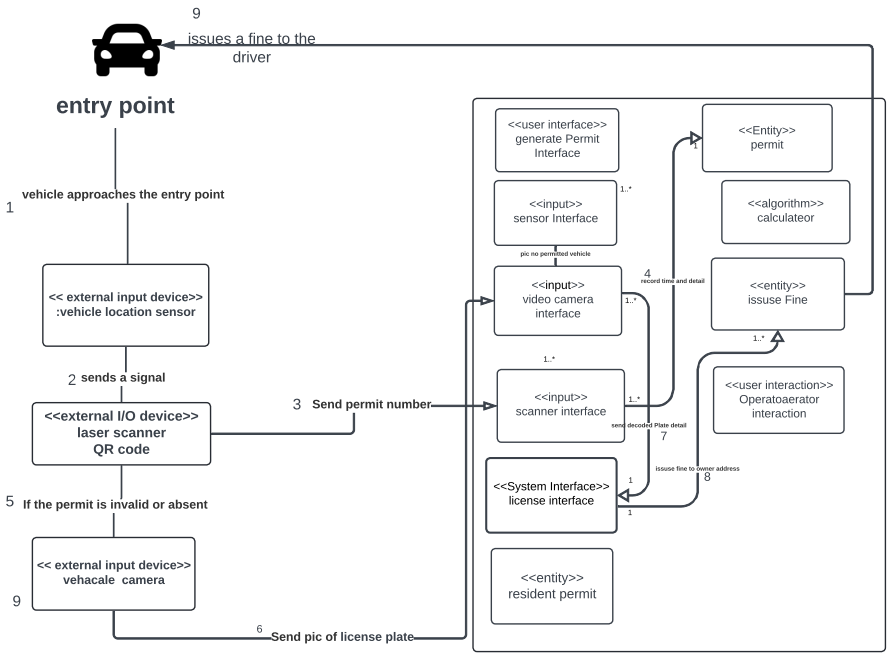
2- System Context Class Model

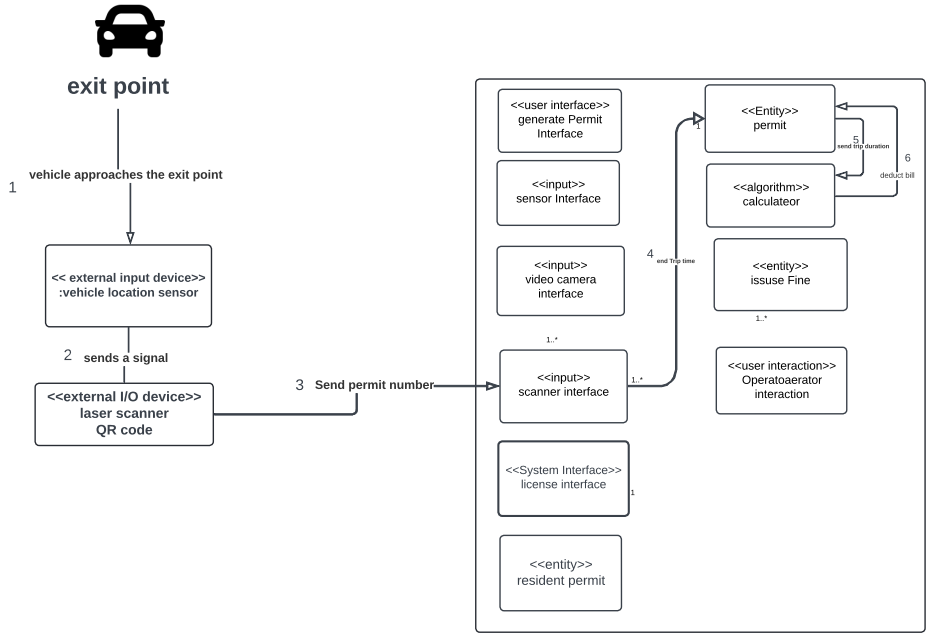


3-static model

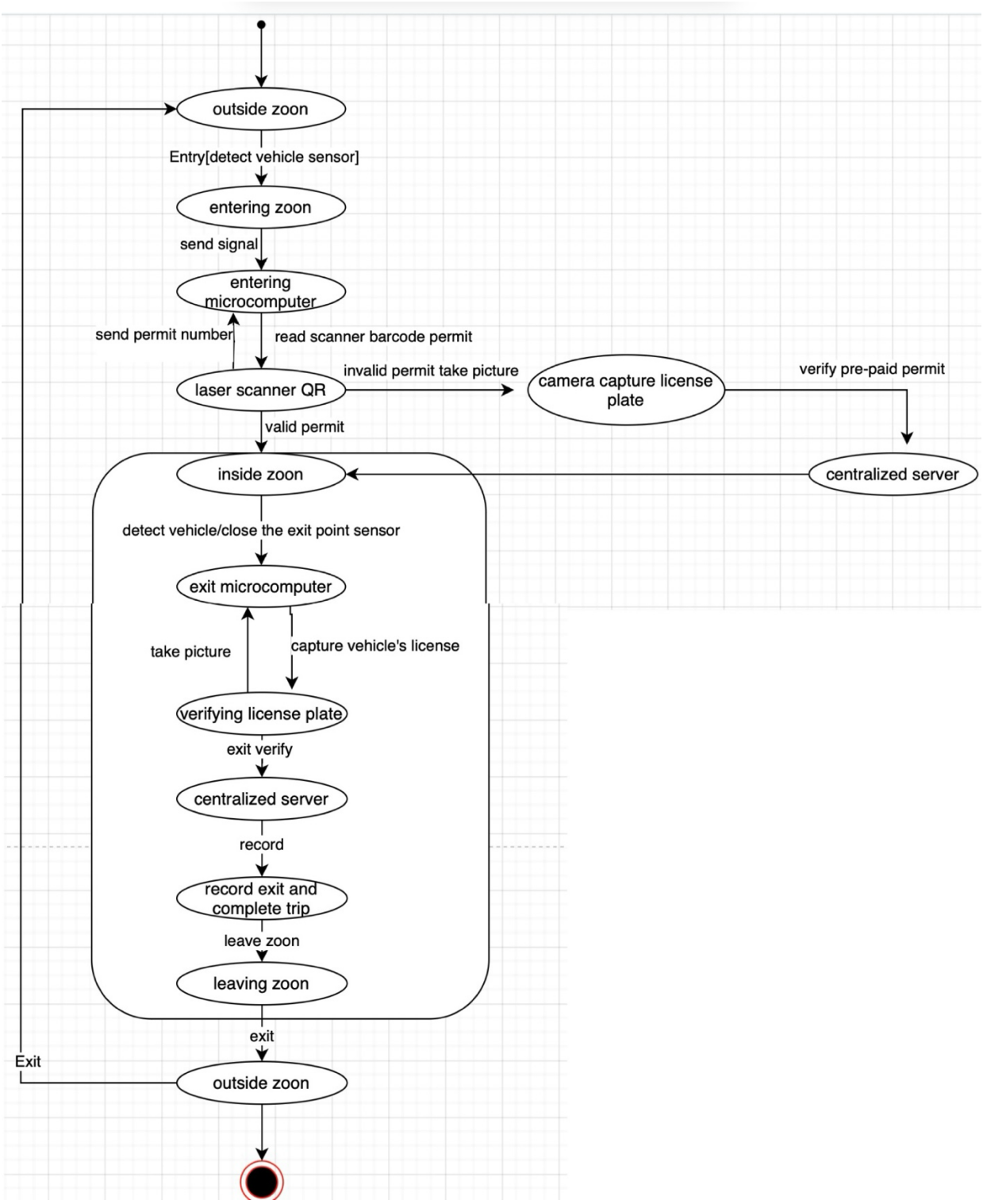


4- integrated Communication Diagram





5-statechart



6- task architecture