جامعة أم القرى
UMM AL-QURA UNIVERSITY

Green Zone Monitoring System

Group 4:

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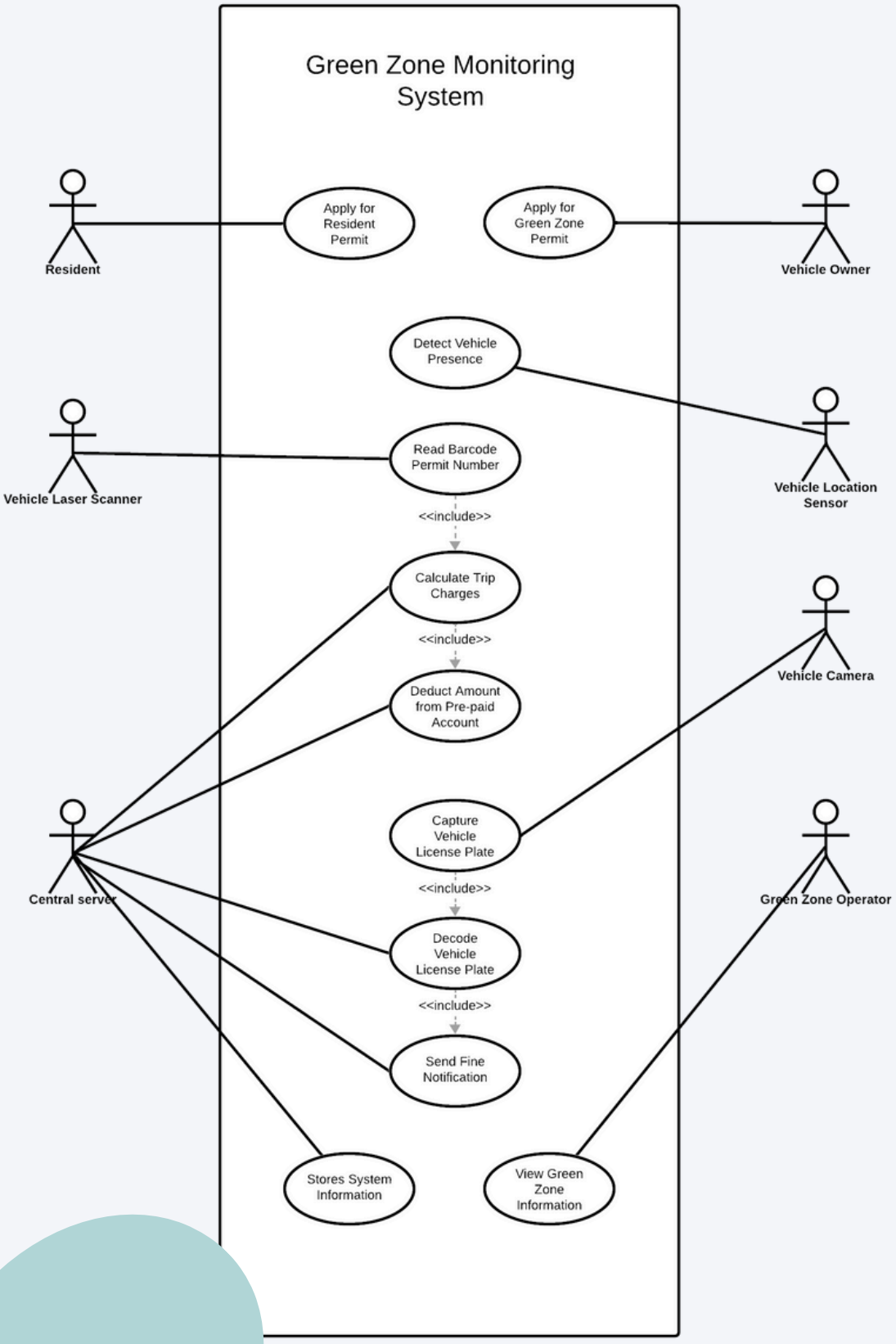
Use Case Model and Description



Use Case Model and Description

Use Case Name:	Apply for Green Zone Permit
Actor:	Vehicle Owner
Description:	The vehicle owner applies for a green zone permit to gain access to the green zone area.

Use Case Name:	Apply for Resident Permit
Actor:	Resident
Description:	The resident in the Green Zone with a vehicle registered at the same address applies for a resident permit for unrestricted access.

Use Case Name:	Detect Vehicle Presence
Actor:	Vehicle Location Sensor
Description:	The vehicle location sensor detects the presence of the vehicle at entry and exit points.

Use Case Name:	Read Barcode Permit Number
Actor:	Vehicle Laser Scanner
Description:	The vehicle laser scanner reads the barcode permit number displayed on the windshield of the vehicle as it enters and exits the green zone.

Use Case Name:	Calculate Trip Charges
Actor:	Central server
Description:	The central server calculates the charges for each trip based on time of day and vehicle category.

Use Case Name:	Deduct Amount from Pre-paid Account
Actor:	Central server
Description:	The central server deducts the appropriate amount from the pre-paid account of the vehicle owner at the end of each green zone trip.

Use Case Model and Description

Use Case Name:	Capture Vehicle License Plate
Actor:	Vehicle Camera
Description:	The camera takes a picture of the vehicle license plate if it does not have a green zone permit.

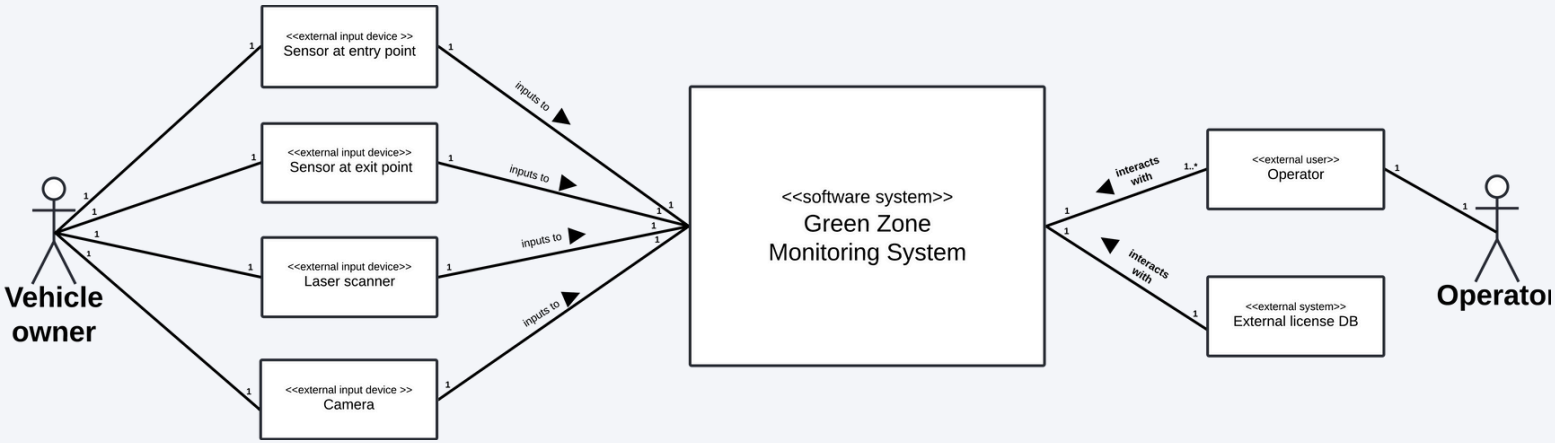
Use Case Name:	Decode Vehicle License Plate
Actor:	Central server
Description:	The system uses automated vehicle license recognition to decode license plate photographs taken by the vehicle camera.

Use Case Name:	Send Fine Notification
Actor:	Central server
Description:	If the vehicle does not have a green zone permit, a fine notification is sent to the driver based on the vehicle license plate information.

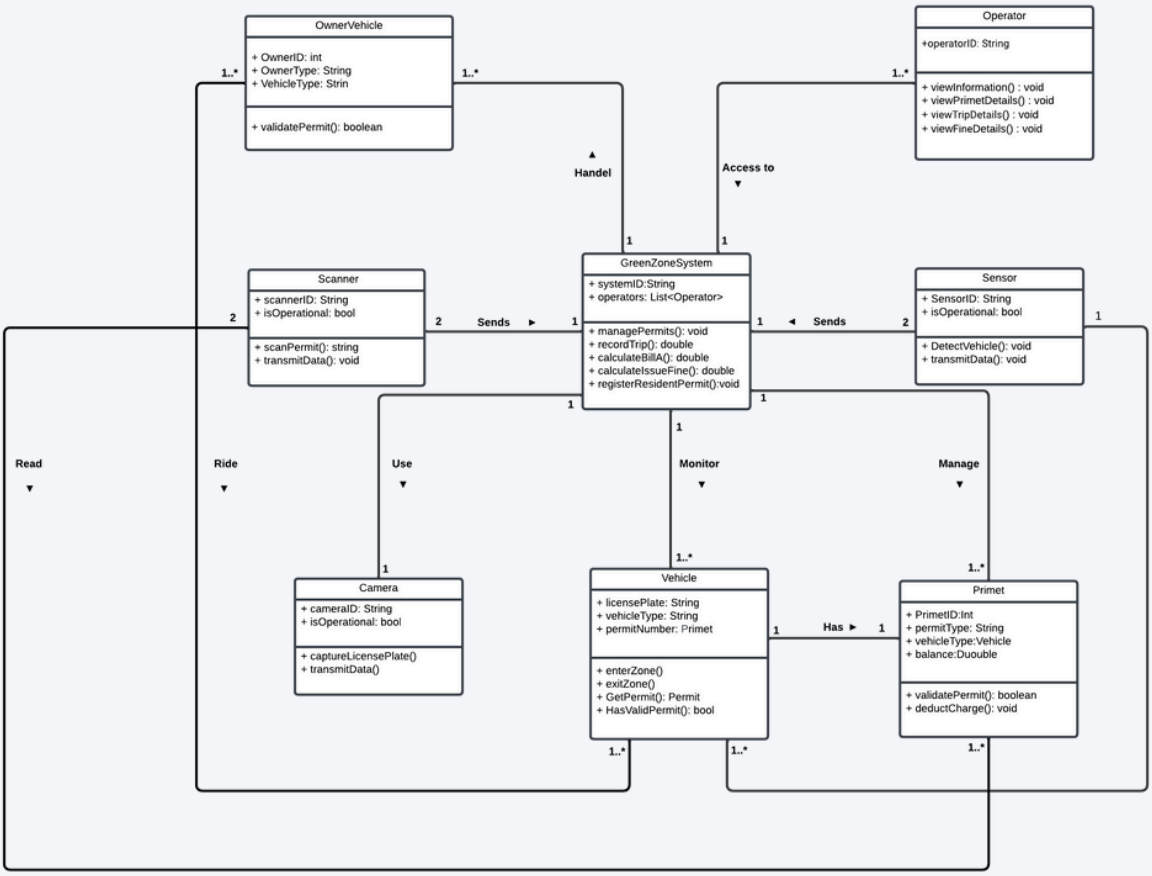
Use Case Name:	View Green Zone Information
Actor:	Green Zone Operator
Description:	The green zone operator accesses the system to view information about green zone permits, accounts, trips, monitoring points, and fines.

Use Case Name:	Stores System Information
Actor:	Central server
Description:	The central server stores all system information in a database.

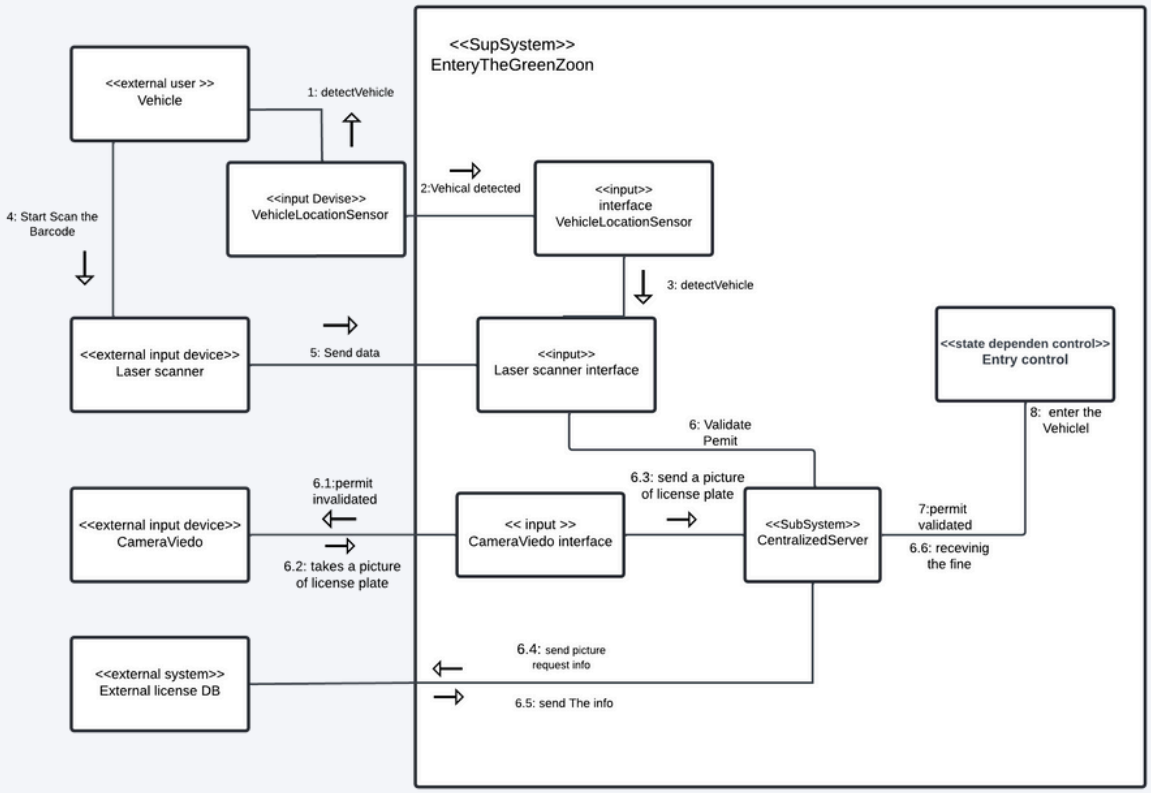
Context Class Model



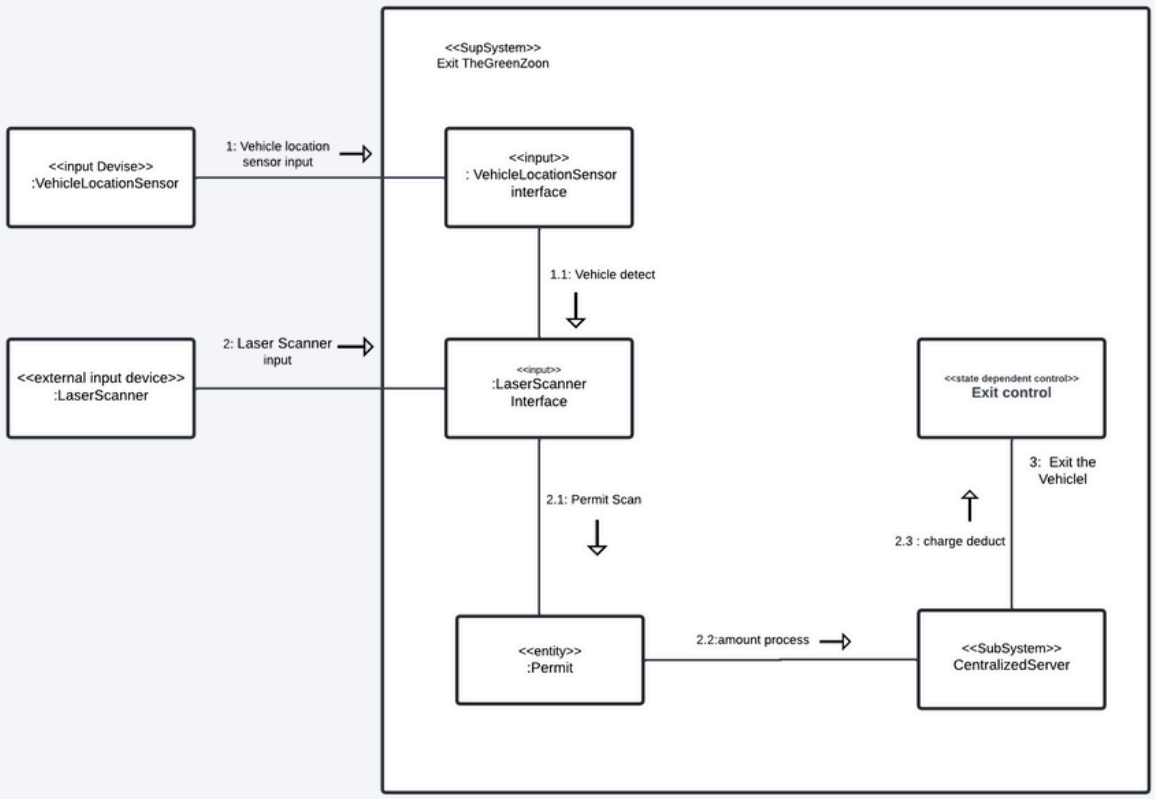
Static Model



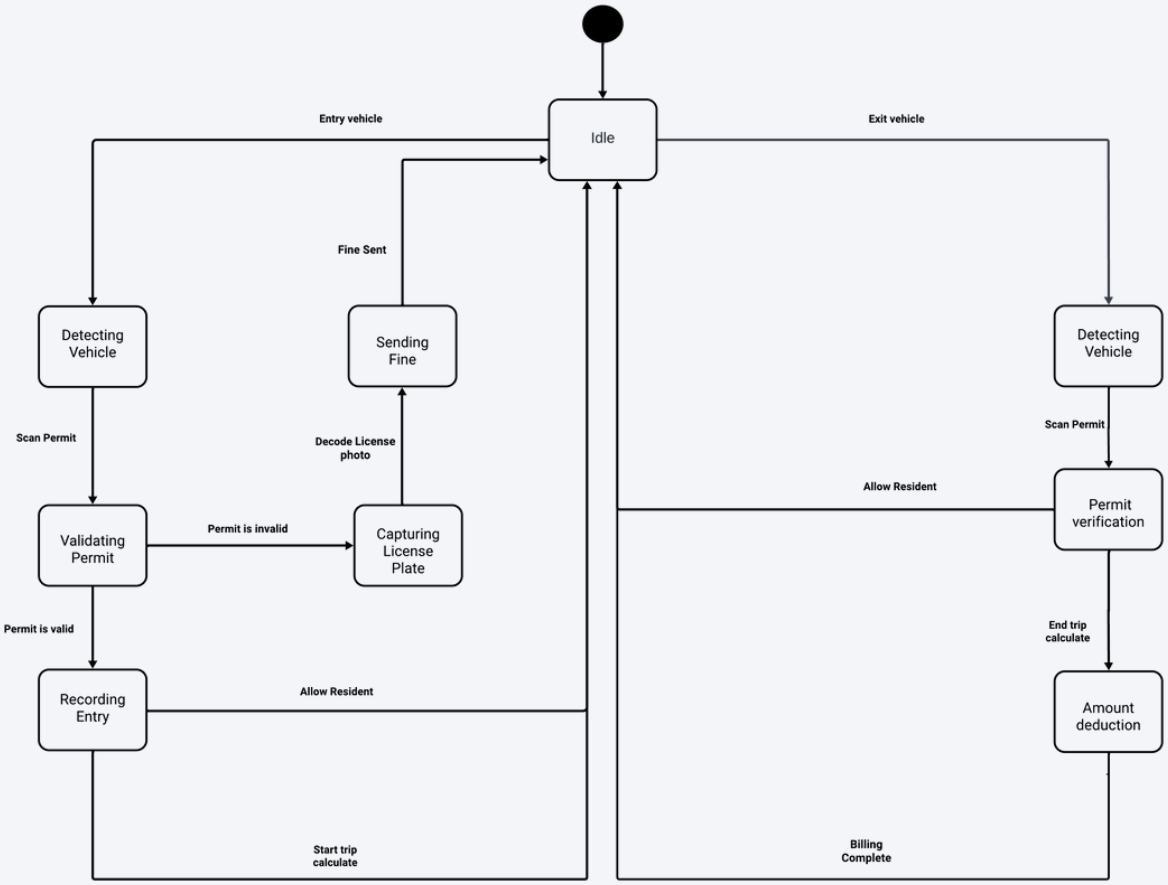
Communication Diagram



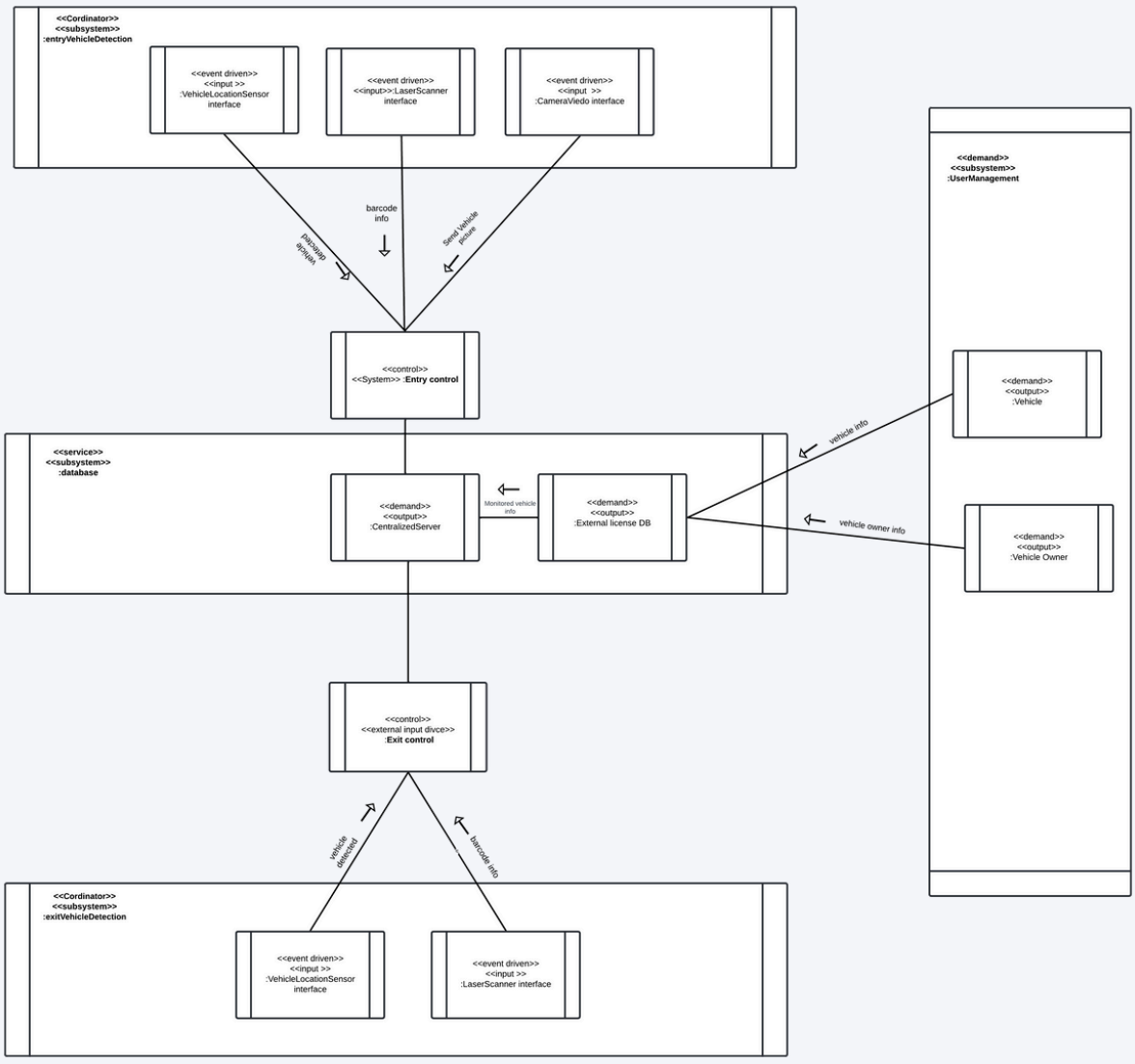
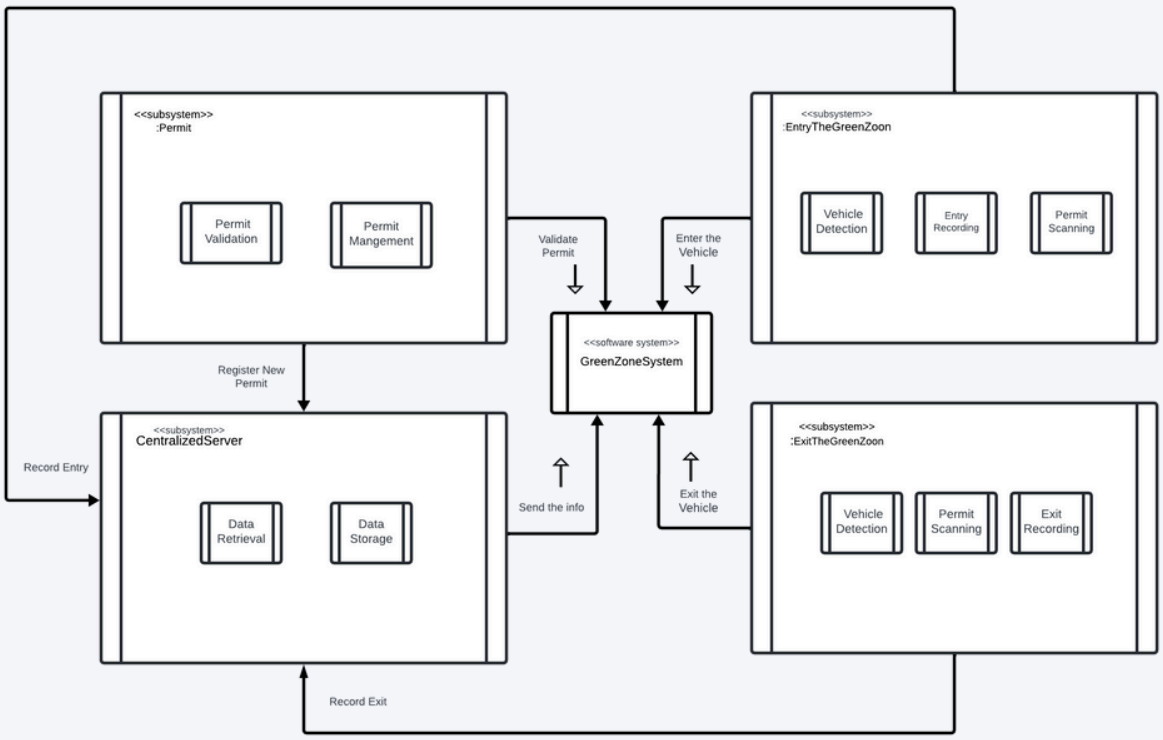
Communication Diagram



State Chart


Idle
Entry vehicle
Exit vehicle
Fine Sent
Detecting Vehicle
Sending Fine
Detecting Vehicle
Scan Permit
Decode License photo
Scan Permit
Allow Resident
Validating Permit
Permit is invalid
Capturing License Plate
Permit verification
Permit is valid
End trip calculate
Recording Entry
Allow Resident
Amount deduction
Start trip calculate
Billing Complete

Task Architecture



Task Architecture