Ho Chi Minh University of Technology

Faculty of Computer Science and Engineering

SOFTWARE ENGINEERING

Project report #1

Functional & Non-Functional requirement and Use-case diagram

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Project: Smart Parking

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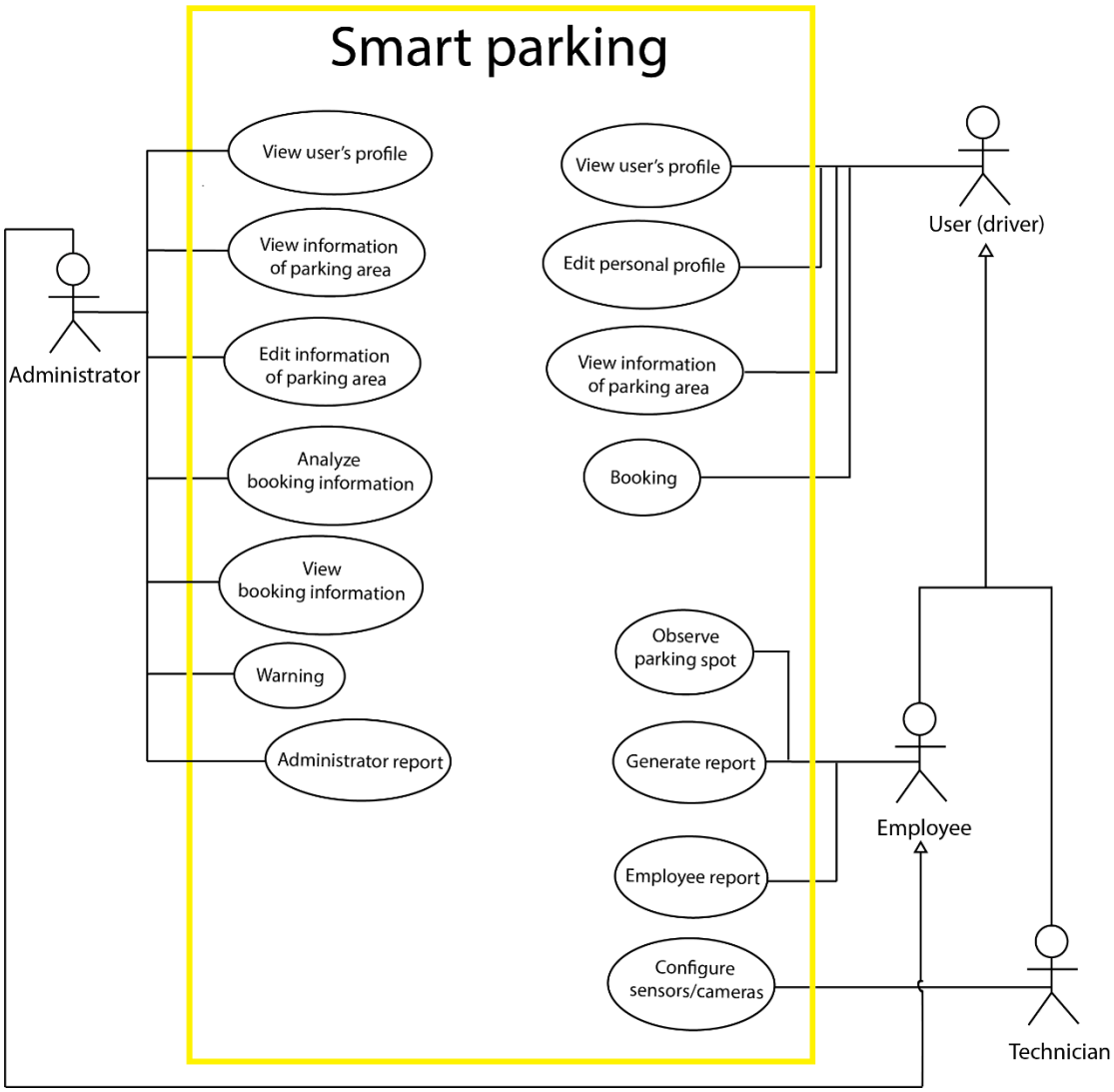
1. Use Case Diagram



2. Functional Requirements

i. Use-case detail

Use-case name	View user's profile
Actor	Administrator
Description	User is viewing information of each user registered in the system
Preconditions	User has logged in the Parking System Admin page
Normal Flow	1. The user selects the "View Parking System" option in the administration page 2. The system presents options: a. Live Dashboard b. View User Statistics c. Reports 3. The user selects the "View User Statistics" option 4. The system gives a list of all registered members ID 5. The user chooses a registered member ID 6. The system shows the information of that registered member containing: + Member ID + Member Full name + Plate Number + Phone number + Subscription Type 7. The user selects the "Edit" option 8. The system displays a page with a "Ban" checkbox 9. The system saves the last changes.
Exceptions	No exception
Alternative Flows	Alternative 1: At step 2 in the normal flow 1. The user selects "Live Dashboard" option 2. The system presents live-time cars parked in the parking lot 3. The user selects one random car 4. The system shows up presents all the information about all car's owners: + Member ID + Member Full name + Plate Number + Subscription Type + Phone Number Alternative 2: At step 2 in the normal flow 1. The user selects the "Reports" option 2. The system presents a box for admin to choose a specific day to show report 3. The user chooses a random day and clicks OK 4. The system creates a report consisting of all statistics of the following information about all car's owners: + Datetime + Member ID + Member Full name + Plate Number

	+ Subscription Type + Phone Number

Use-case name	View user's profile
Actor	User
Description	User is viewing his information in the system
Preconditions	User has logged in the Parking System User page
	1. The system presents an option: a. View profile 2. The user chooses "View profile" option: 3. The system displays a new page containing all details of the user including: + Member ID + Member Full name + Plate Number + Subscription Type + Phone Number
Exceptions	No exception
Alternative Flows	No alternative

Use-case name	Edit personal profile
Actor	User
Description	User is editing his information in the system
Preconditions	User has logged in the Parking System page
	1. The system presents an option: a. View profile 2. The user chooses "View profile" option: 3. The system shows a new page containing all details of the user, including: + Member ID + Member Full name + Plate Number + Subscription Type + Phone Number 4. The system also presents options: a. Edit information b. Edit Subscription type 5. The user chooses "Edit information" option 6. The system shows fields mentioned above ready to be edited 7. User fills in the information he/she needs to change 8. The system saves the last information.
Exceptions	Exception 1: At step 8 in the normal flow: A. If the user doesn't fill all fields, the system will present "Missing fields".

Alternative Flows	Alternative 1: At step 4 of the normal flow 1. The user chooses “Edit Subscription Type” option 2. The system presents two options: a. Free b. Premium 3. The user selects an option and clicks OK 4. The system saves the information

ii. Non-interactive functional requirements:

-The system can classify and grant permission for users based on their role.

-All information, data from sensors and records from cameras of each parking spot is uploaded by the system in the cloud via the internet to maintain

-The system can detect the wrong pattern.

-The list of parking areas can be sorted by parking area ID, coordinate, parking time.

-The system has the emergency response function, and each person can halt the system but under verification.

-The system shall automatically reject last 30 days records.

-Employees can observe parking areas through the cameras in the parking by portable devices like laptop, smartphone

3. Non-functional requirements:

General requirements for system:

- The system can run 24 hours a day.

- Time reaction does not exceed 0.5 seconds for each request.

- No more than 2 seconds are required for guidance on actuators.

- Time to maintain must be less than 2 hours.

- The system and personnel must be notified with a delay of not less than 1 minute in case of emergencies.

- The interface of graphic systems must guarantee that it is functional and intuitive.

Requirements for subsystem:

- The system needs approximately 0.5 seconds to list all the members in the system.

- It takes 1 to 2 minutes to upload the data to the cloud, which depends on the amount of data (download is the same)

- Only the server computer is allowed to edit, add any information about members.

- The User Interface is simple to use.

- The parking administrator always has greater rights than ordinary customers.

- Make sure the administrator option is not used by regular customers.