



REPORT

Oriented – Object Programming

TOPIC 7. PARKING MANAGEMENT SYSTEM

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Class ID : 135089
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01	Nguyen Quang Huy Hoang	hoang.nqh207605@sis.hust.edu.vn	<i>-Coding functions add, update information , calculate. - Designing GUI. -Report for system analysis and class design.</i>	<i>100%</i>
02	Hoang Ha My	my.hh207644@sis.hust.edu.vn	<i>-Coding functions delete, update fee, search. -Designing GUI. -Report for GUI design and self-assessment.</i>	<i>100%</i>

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1. PROBLEM INTRODUCTION

Topic 7. Parking Management

A parking lot holds 2 types of vehicles: cars and trucks. Parking fee depends on type of vehicles. For cars, the monthly maintenance fee is 1,000,000 VND. Parking fee for trucks depends on the load of the vehicle, and is calculated by load in Tons * 700,000 VND/month. If these cars sign a contract for more than 5 years, the fee will be discount by 20% for cars, 25% for vans. Building a parking management program including the following functions:

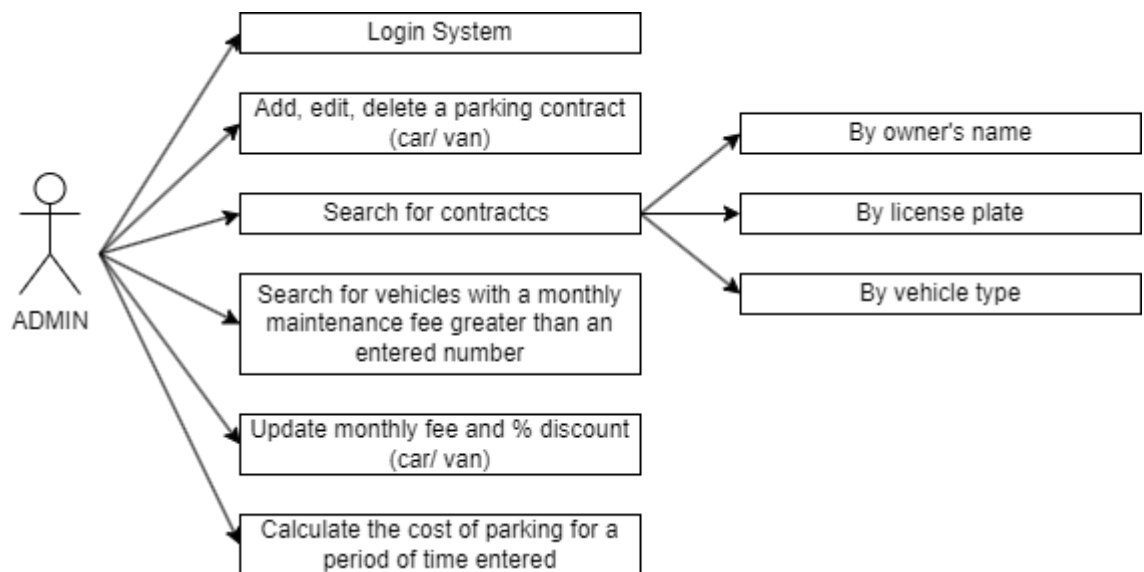
- Add, edit, delete a parking contract.
- Search for contracts by car owner's name, license plate, vehicle type.
- Search for vehicles with a monthly maintenance fee greater than an entered number.
- Update monthly fee and % discount for vehicles when required by the warehouse.
- Calculate the cost of parking for a period of time entered (from day/month/year... to day/month/year).

2. SYSTEM ANALYSIS

We built this parking management system by using Java and SQL.



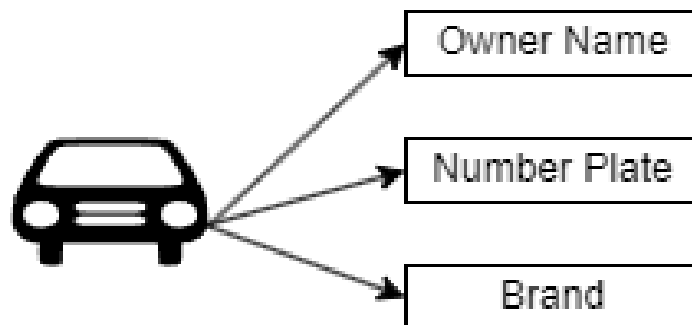
2.1. Activity description



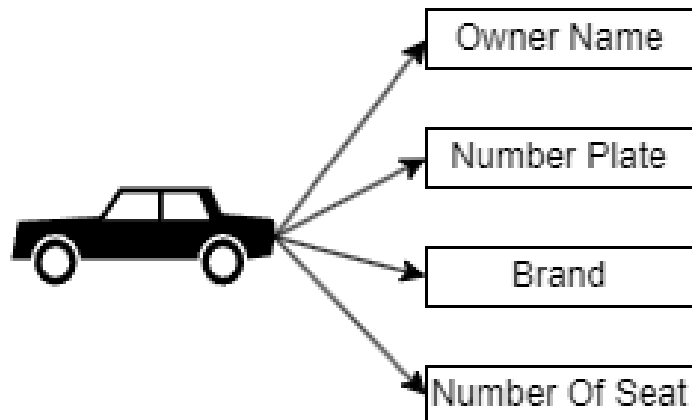
In order to easier to use, all functions of the system are completed with basic GUI.

2.2. Object description

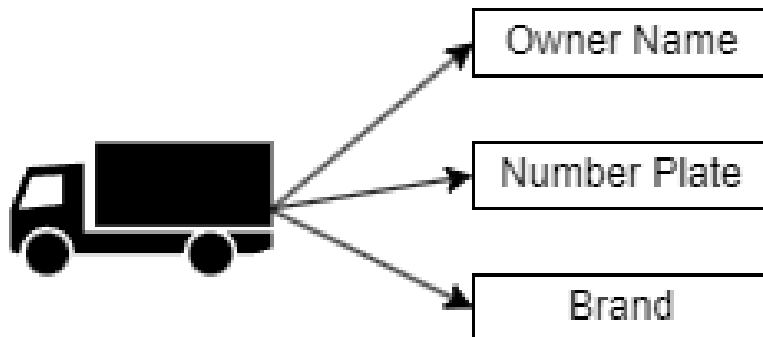
2.2.1. Object Vehicle



2.2.2. Object CAR



2.2.3. Object VAN



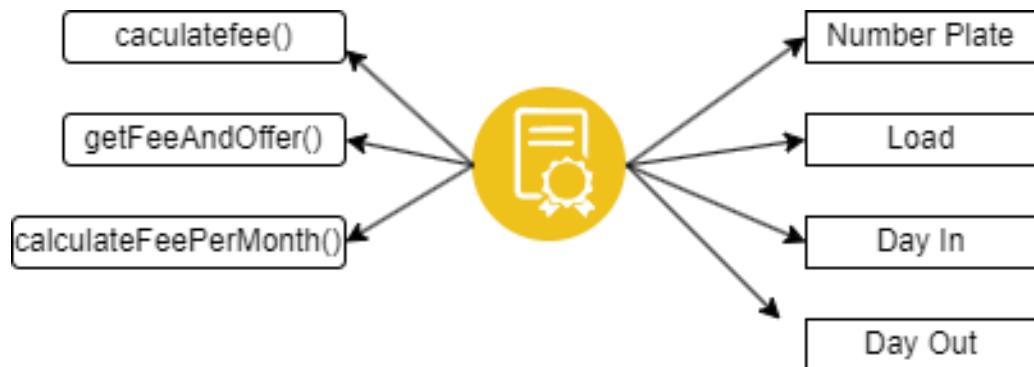
2.2.4. Object PARKINGCONTRACT



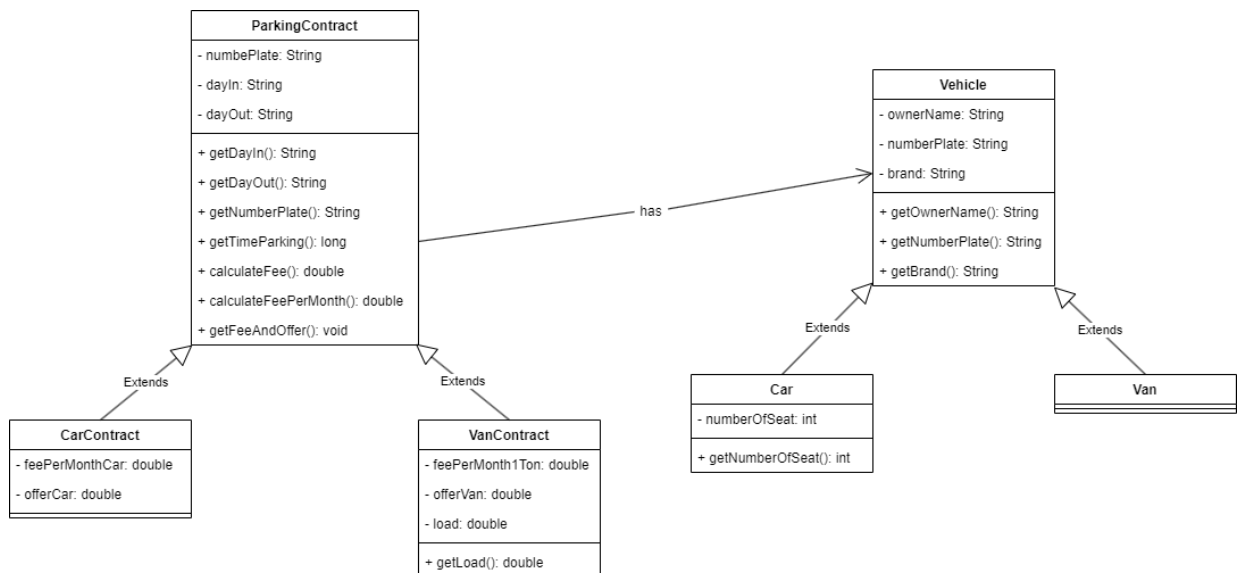
2.2.5. Object CARCONTRACT



2.2.6. Object VANCONTRACT



3. CLASS DESIGN



4. GUI DESIGN

In order to easier to use, all functions of the system are completed with basic GUI.

4.1. Login GUI

LOGIN PARKING MANAGEMENT SYSTEM

Username:

Password:

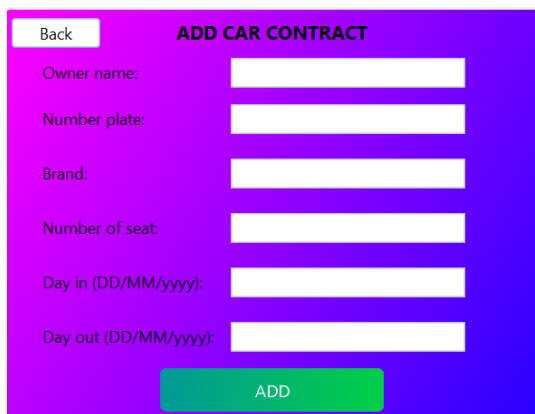
4.2. Menu GUI



The menu GUI for the PARKING MANAGEMENT SYSTEM is displayed on a blue background. It features a grid of buttons for various operations:

- Add Car Parking Contract**
- Add Van Parking Contract**
- Search For Contracts**
- Delete Car Parking Contract**
- Delete Van Parking Contract**
- Search For Vehicle By Fee**
- Update Car Parking Contract**
- Update Van Parking Contract**
- Update Fees And Offer**
- CALCULATE PROCEEDS**

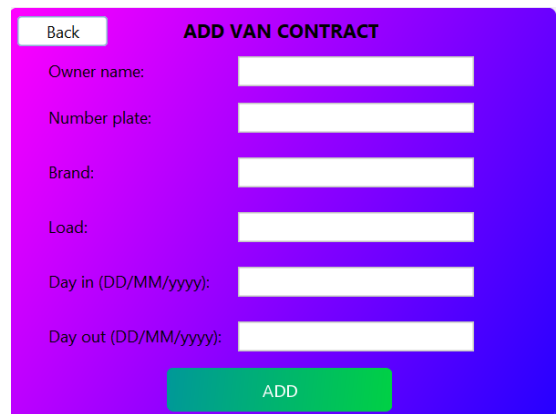
4.3. Add car/van parking contract GUI



The ADD CAR CONTRACT GUI is shown on a blue background. It includes a 'Back' button and the following input fields:

- Owner name:
- Number plate:
- Brand:
- Number of seat:
- Day in (DD/MM/yyyy):
- Day out (DD/MM/yyyy):

An **ADD** button is located at the bottom right.

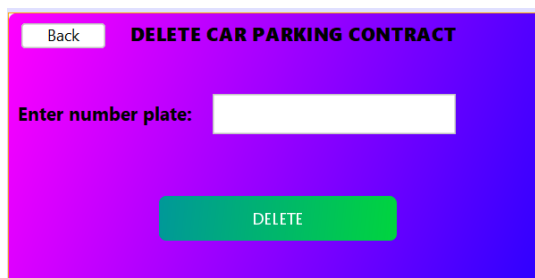


The ADD VAN CONTRACT GUI is shown on a blue background. It includes a 'Back' button and the following input fields:

- Owner name:
- Number plate:
- Brand:
- Load:
- Day in (DD/MM/yyyy):
- Day out (DD/MM/yyyy):

An **ADD** button is located at the bottom right.

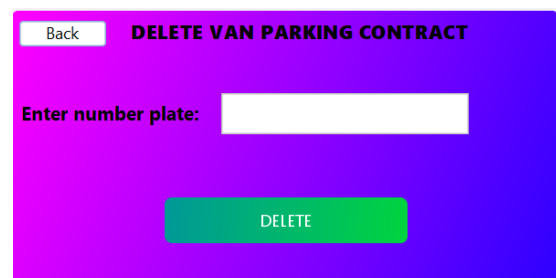
4.4. Delete car/van parking contract GUI



The DELETE CAR PARKING CONTRACT GUI is shown on a blue background. It includes a 'Back' button and an input field for the number plate:

- Enter number plate:

A **DELETE** button is located at the bottom right.

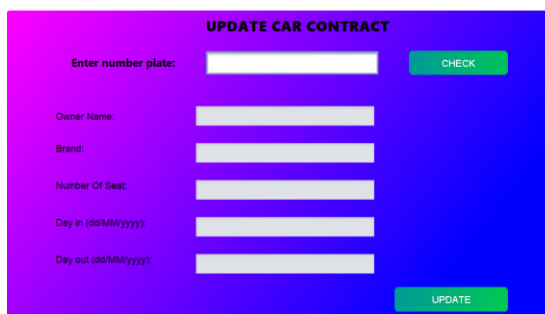


The DELETE VAN PARKING CONTRACT GUI is shown on a blue background. It includes a 'Back' button and an input field for the number plate:

- Enter number plate:

A **DELETE** button is located at the bottom right.

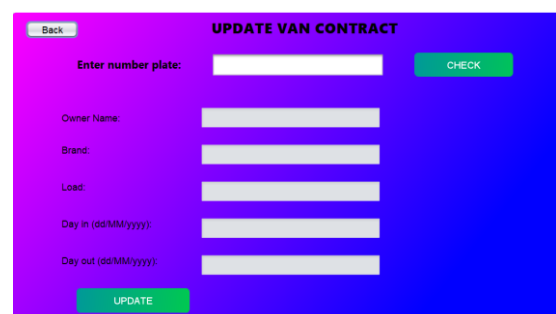
4.5. Update car/van parking contract GUI



The UPDATE CAR CONTRACT GUI is shown on a blue background. It includes a 'Back' button and the following input fields:

- Enter number plate: (with a **CHECK** button)
- Owner Name:
- Brand:
- Number Of Seat:
- Day in (ddMM/yyyy):
- Day out (ddMM/yyyy):

An **UPDATE** button is located at the bottom right.



The UPDATE VAN CONTRACT GUI is shown on a blue background. It includes a 'Back' button and the following input fields:

- Enter number plate: (with a **CHECK** button)
- Owner Name:
- Brand:
- Load:
- Day in (ddMM/yyyy):
- Day out (ddMM/yyyy):

An **UPDATE** button is located at the bottom right.

4.6. Search for contracts GUI

[Back](#)

SEARCH FOR CONTRACTS

☐ Number plate car☐ Number plate van

☐ Owner name car☐ Owner name van

☐ Vehicle type

Search

STT	OwnerName	NumberPlate	Brand	NumberOfSeat/ Load	DayIn	DayOut	FeePerMonth	FeeAllTime
-----	-----------	-------------	-------	--------------------	-------	--------	-------------	------------

4.7. Search for vehicles by fee GUI

[Back](#)

SEARCH FOR VEHICLES HAVE FEE PER MONTH MORE THAN:

SEARCH

STT	OwnerName	NumberPlate	Brand	NumberOfSeat/ ...	DayIn	DayOut	FeePerMonth	FeeAllTime
-----	-----------	-------------	-------	-------------------	-------	--------	-------------	------------

4.8. Update fees and offer GUI

[Back](#)

UPDATE FEE AND OFFER

Fee Per Month Car:

Offer For Car:

Fee Per Month Van:

Offer For Van:

UPDATE

4.9. Calculate proceed GUI

Back

CALCULATE PROCEED

Proceed from to

CALCULATE

PROCEED:

5. SELF-ASSESSMENT

5.1. Results

5.1.1. Login activity

LOGIN PARKING MANAGEMENT SYSTEM

Username:

Password:

LOGIN

ionEvent evt) {

OK

Yes No

"OK", "", JOptionPane.OK_OPTI

5.1.2. Add car contract

ADD CAR CONTRACT

Owner name:

Number plate:

Brand:

Number of seat:

Day in (DD/MM/yyyy):

Day out (DD/MM/yyyy):

ADD

	OwnerName	NumberPlate	Brand	NumberOfSeat
▶	Hoang My	19A48455	Honda	5
	Nguyen Van A	30K41975	Toyota	4
	Vũ Thị Thanh	34H19423	Nissan	5
	Vũ Thị Hoài Thu	51F19140	Mitsubishi	7
	Le Van Nam	99A13299	Lexus	7
	Hoang Van Nam	99H11292	Lexus	7
*	NULL	NULL	NULL	NULL

Table 'car' in SQL

	NumberPlate	DayIn	DayOut	FeePerMonth	FeeAllTime
▶	19A48455	2018-01-18	2018-03-18	900000	1800000
	30K41975	2023-02-18	2023-10-20	765000	6120000
	34H19423	2023-01-05	2024-01-19	765000	9945000
	51F19140	2022-11-01	2023-04-15	765000	4590000
	99A13299	2022-12-23	2023-05-25	765000	3825000
*	NULL	NULL	NULL	NULL	NULL

Table 'carcontract' in SQL

5.1.3. Add van contract

ADD VAN CONTRACT

Owner name:

Number plate:

Brand:

Load:

Day in (DD/MM/yyyy):

Day out (DD/MM/yyyy):

ADD

	OwnerName	NumberPlate	Brand
▶	Quang Huy Hoang	19C10122	Howo
	Nguyễn Nam Quang	37F18392	Thaco
	Le Van Tuy	89C89212	Suzuki
*	NULL	NULL	NULL

Table 'van' in SQL

	NumberPlate	Load/van	DayIn	DayOut	FeePerMonth	FeeAllTime
▶	19C10122	5.5	2023-09-30	2023-10-31	3575000	3575000
	37F18392	4.5	2023-01-19	2023-09-23	2340000	18720000
	89C89212	2.5	2022-09-30	2023-03-03	1300000	6500000
*	NULL	NULL	NULL	NULL	NULL	NULL

Table 'vanrcontract' in SQL

5.1.4. Delete car contract

	OwnerName	NumberPlate	Brand	NumberOfSeat
▶	Hoang My	19A48455	Honda	5
	Vũ Thị Thanh	34H19423	Nissan	5
	Vũ Thị Hoài Thu	51F19140	Mitsubishi	7
	Le Van Nam	99A13299	Lexus	7
	Hoang Van Nam	99H11292	Lexus	7
*	NULL	NULL	NULL	NULL

Table 'car' in SQL

	NumberPlate	DayIn	DayOut	FeePerMonth	FeeAllTime
▶	19A48455	2018-01-18	2018-03-18	900000	1800000
	34H19423	2023-01-05	2024-01-19	765000	9945000
	51F19140	2022-11-01	2023-04-15	765000	4590000
	99A13299	2022-12-23	2023-05-25	765000	3825000
*	NULL	NULL	NULL	NULL	NULL

Table 'carcontract' in SQL

5.1.5. Delete van contract

	OwnerName	NumberPlate	Brand
▶	Quang Huy Hoang	19C10122	Howo
	Nguyễn Nam Quang	37F18392	Thaco
*	NULL	NULL	NULL

Table 'van' in SQL

	NumberPlate	LoadVan	DayIn	DayOut	FeePerMonth	FeeAllTime
▶	19C10122	5.5	2023-09-30	2023-10-31	3575000	3575000
	37F18392	4.5	2023-01-19	2023-09-23	2340000	18720000
*	NULL	NULL	NULL	NULL	NULL	NULL

Table 'vancontract' in SQL

5.1.6. Update car contract

5.1.7. Update van contract

5.1.8. Search for contract

Back

Number plate car

Number plate van

Owner name car

Owner name van

Vehicle type

van

Search

STT	OwnerName	NumberPlate	Brand	NumberOfSeat/ Load	DayIn	DayOut	FeePerMonth	FeeAllTime
1	Nguyễn Nam Quang	37F18392	Thaco	4.5	2023-01-19	2023-09-23	2340000.0	1.872E7
2	Quang Huy Hoang	19C10122	Howo	5.5	2023-09-30	2023-10-31	3575000.0	3575000.0

5.1.9. Search by fee

Back

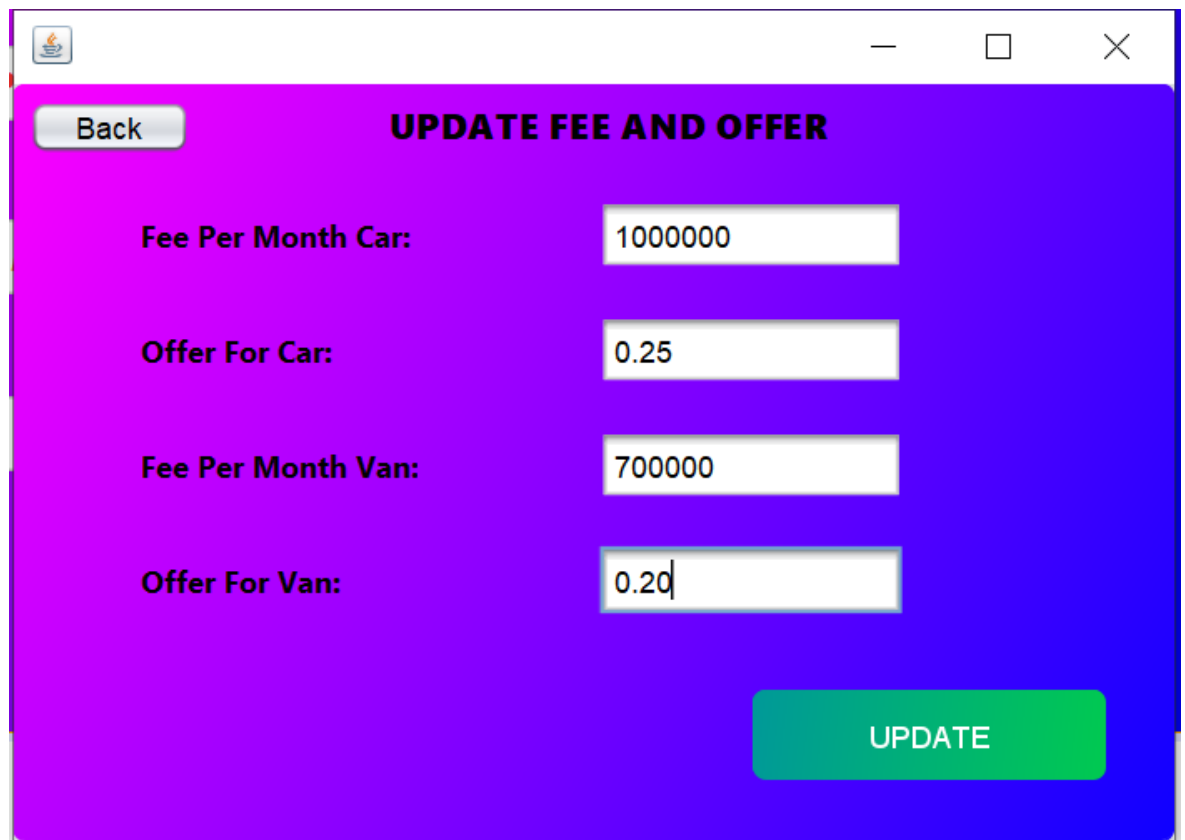
SEARCH FOR VEHICLES HAVE FEE PER MONTH MORE THAN:

766000

SEARCH

STT	OwnerName	NumberPlate	Brand	NumberOfSeat/ ...	DayIn	DayOut	FeePerMonth	FeeAllTime
1	Hoang Ha My	19A48455	Honda	7	2023-01-18	2023-03-18	900000.0	1800000.0
2	Quang Huy Hoa...	19C10122	Howo	5.5	2023-09-30	2023-10-31	3575000.0	3575000.0
3	Nguyễn Nam Q...	37F18392	Thaco	4.5	2023-01-19	2023-09-23	2340000.0	1.872E7

5.1.10.Update fee and offer



UPDATE FEE AND OFFER

Back

Fee Per Month Car: 1000000

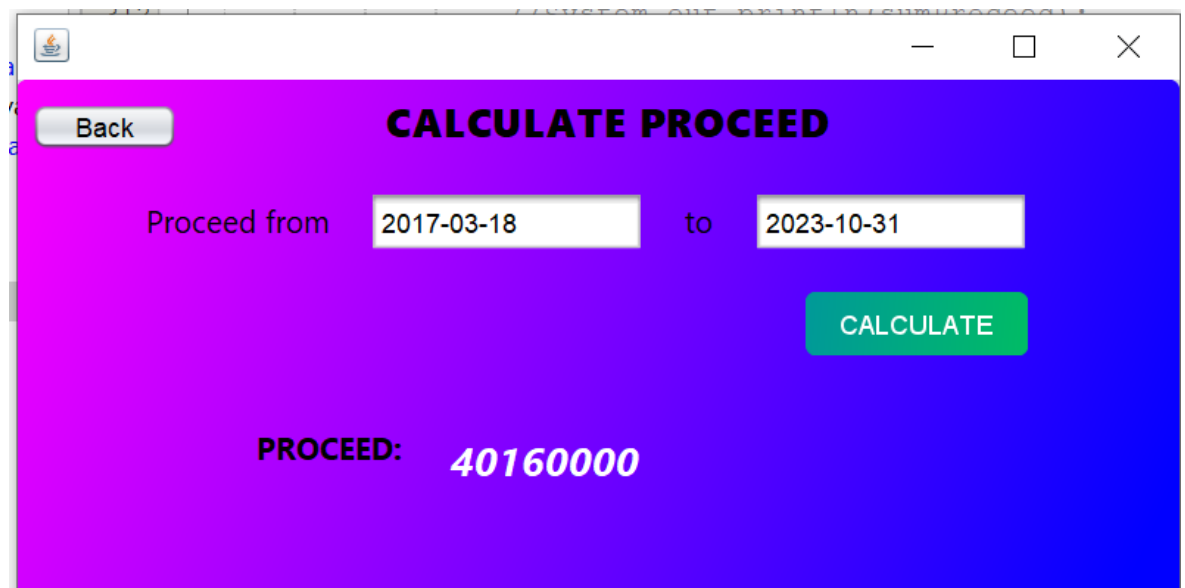
Offer For Car: 0.25

Fee Per Month Van: 700000

Offer For Van: 0.20

UPDATE

5.1.11.Calculate proceed



CALCULATE PROCEED

Back

Proceed from 2017-03-18 to 2023-10-31

CALCULATE

PROCEED: 40160000

⇒ All functions are completed

5.2. Limitation

- This system cannot manage the parking position of each vehicle.
- Some part of code are a bit cumbersome.

6. SOURCE CODE

Link Google Drive: <https://bit.ly/40jCbGL>