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PART OF THE UNIVERSITY OF WOLLONGONG AUSTRALIA GLOBAL NETWORK

SCHOOL OF COMPUTING & CREATIVE MEDIA

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☐FOUNDATION ☐DIPLOMA ☒ DEGREE ☐ MASTER

Assignment Coversheet

Please complete all details required clearly. For softcopy submissions, please ensure this cover sheet is included at the start of your document or in the file folder.

Assignment & Course Details:

Subject Code: XBCS2034N *(e.g. XCAT1234)*	**Subject Name** *(e.g. Fundamentals of Computing)*: **Software Design**
Course *(e.g. Bachelor in Computing)* : Bachelors in Computer Science (HONS), Bachelors In Software Engineering (HONS)	
Lecturer Name: Miss Siti Fazilah Shamsudin	

Assessment Due Date: *(dd/mm/yy)*	9/4/2024	**Assessment Title:**	Car Park Management System

I/We declare that:

- *This assignment is my/our own original work, except where I/we have appropriately cited the original source.*
- *This assignment or parts of it has not previously been submitted for assessment in this or any other subject.*
- *I/We allow the assessor of this assignment to test any work submitted by me/us, using text comparison software for plagiarism.*
  (For more information, Please read the Academic Integrity Guidelines)

Name : Enoch Leong Qi Cong **Student ID: 0135057** **Email : 0135057@student.uow.edu.my** **Mobile No: 010-5046752** **Signature:** Enoch **Date:** 5/4/2023	**Name :** **Student ID:** **Email :** **Mobile No:** **Signature:** **Date:**	**Name :** **Student ID:** **Email :** **Mobile No:** **Signature:** **Date:**
Name : **Student ID:** **Email :** **Mobile No:** **Signature:** **Date:**	**Name :** **Student ID:** **Email :** **Mobile No:** **Signature:** **Date:**	**Name :** **Student ID:** **Email :** **Mobile No:** **Signature:** **Date:**

For office use only – Lecturer comments (if applicable)

Signature:

Total

Marks Breakdown

Table of Cotent

1.0 User Characteristics

Role	Description	Required Knowledge
End User	Regular customers are individuals who frequently visit the parking facility, such as commuters, employees, or residents of nearby buildings. They rely on the parking system to conveniently park their vehicles during their regular visits to the area.	End user requires good command in the English language which helps when using the system.
Admin	The administrator plays a crucial role in overseeing and managing the operation of the car parking system. Admins are responsible for maintaining the system, ensuring its smooth operation, and handling administrative tasks such as managing parking slots, monitoring parking occupancy, and resolving issues or discrepancies.	Admin requires good understanding how to use the system, perform the task.

Table 1.1: User Characteristics

2.0 Product Features

Feature ID	Feature	Description	Accessible Role
F001	Search Vehicle	To allow the end user to search their vehicle	End User
F002	View total parked hour	To allow the end user to view the total hour of their vehicle parked	End User
F003	View parking fees	To allow the end user to view the total calculated parking fees for their vehicle	End User
F004	Make payment	To allow end user to make payment before they go out the parking	End User

F005	Login	To allow admin login to the system	Admin
F006	Logout	To allow admin logout from the system	Admin
F007	Add Car to Slot	To allow admin add car plate number to the available car park slot	Admin
F008	Edit Car Info	To allow admin to edit the car info for error handling	Admin
F009	Edit Parking Rate	To allow admin to edit the parking rate	Admin

Table 2.1: Functional Requirements

3.0 Specific Requirements

3.1 Non-Functional Requirements

Not applicable

3.2 Functional Requirements

Requirement ID	REQ_F001	Version	1.0
Description	System shall be able to allow end user key in their vehicle plate number, and search in system then display the result.		

Author	Enoch Leong Qi Cong

Table 3.1: REQ_F001

Requirement ID	REQ_F002	Version	1.0
Description	System shall be able to calculate and display the total parked hour that the searched vehicle park.		
Author	Enoch Leong Qi Cong		

Table 3.2: REQ_F002

Requirement ID	REQ_F003	Version	1.0
Description	System shall be able to calculate and display the total parking fees need to be pay for the searched vehicle.		
Author	Enoch Leong Qi Cong		

Table 3.3: REQ_003

Requirement ID	REQ_F004	Version	1.0
Description	System shall be able to allow end user choose their desire payment method such as e-wallet and debit/credit card to make payment.		
Author	Enoch Leong Qi Cong		

Table 3.4: REQ_004

Requirement ID	REQ_F005	Version	1.0
Description	System shall be able to allow admin login to the system to perform administration tasks.		
Author	Enoch Leong Qi Cong		

Table 3.5: REQ_005

Requirement ID	REQ_F006	Version	1.0
Description	System shall be able to allow admin logout from the system		
Author	Enoch Leong Qi Cong		

Table 3.6: REQ_006

Requirement ID	REQ_F007	Version	1.0
Description	System shall be able to allow admin assign the car plate number to the car park slot		
Author	Enoch Leong Qi Cong		

Table 3.7: REQ_007

Requirement ID	REQ_F008	Version	1.0
Description	System shall be able to allow admin edit info of the car if error occur.		

Author	Enoch Leong Qi Cong

Table 3.8: REQ_008

Requirement ID	REQ_F009	Version	1.0
Description	System shall be able to allow admin to edit the parking rate.		
Author	Enoch Leong Qi Cong		

Table 3.9: REQ_009

4.0 Use Case Table

Use Case ID	UC01	Version	1.0
Feature	F001 Search Vehicle		
Purpose	To allow the end user to search their vehicle		
Actor	End User		
Trigger	End User input the car plate number and click “Search” button		
Precondition	• Admin has entered the car plate inside the system • User at car parking system main page		
Scenario Name	Step	Action	
Main Flow	1	End user input the car plate number	
	2	End user clicks the “Search” button	

	3	System search for the car plate number
	4	The system redirects to the search result page and display the info
Alternate Flow: **Car Plate Number Not Found**	1.1	End user input invalid car plate number
	1.2	End user clicks the “Search” button
	1.3	System search for the car plate number
	1.4	System display error message car plate number not found
Rules	End user must enter a valid car plate number	
Author	Enoch Leong Qi Cong	

Table 4.1: UC001

Use Case ID	UC02	Version	1.0
Feature	F002 View total parked hour		
Purpose	To allow the end user to view the total hour of their vehicle parked		
Actor	End User		
Trigger	End user on the search result page		
Precondition	• End user enters a valid car plate number • End user is on search result page		
Scenario Name	Step	Action	

Main Flow	1	System calculate and display the total parked hour
Rules	End user must enter valid car plate number, and on search result page	
Author	Enoch Leong Qi Cong	

Table 4.2: UC002

Use Case ID	UC03	Version	1.0
Feature	F003 View parking fees		
Purpose	To allow the end user to view the total calculated parking fees for their vehicle		
Actor	End User		
Trigger	End user on the search result page		
Precondition	• End user enters a valid car plate number • End user is on search result page		
Scenario Name	Step	Action	
Main Flow	1	System calculate and display the total parking fees	
Rules	End user must enter valid car plate number, and on search result page		
Author	Enoch Leong Qi Cong		

Table 4.3: UC003

Use Case ID	UC04	Version	1.0

Feature	F004 Make payment	
Purpose	To allow end user to make payment before they go out the parking	
Actor	End User	
Trigger	End user click “Make Payment” button on the search result page	
Precondition	• End user enter a valid car plate number • End user is on search result page	
Scenario Name	Step	
Main Flow	1	End user clicks “Proceed to Payment” button
	2	System pop out payment window
	3	End user selects desire payment method
	4	System displays successful message and update database
Alternate Flow: **Payment not successful**	3.1	End user selects desire payment method
	3.2	System displays error message
Rules	End user must have enough balance in their payment method’s account	
Author	Enoch Leong Qi Cong	

Table4.4: UC004

Use Case ID	UC05	Version	1.0
Feature	F005 Login		
Purpose	To allow admin login to the system		

Actor	Admin	
Trigger	Admin clicks the ‘Login’ button on the login page	
Precondition	• The admin is not logged in • The admin is on the login page. • Admin clicks “Login as Admin” button in car parking system main page	
Scenario Name	Step	Action
Main Flow	1	Admin enters credentials such as username and password.
	2	Admin clicks the ‘Login’ button
	3	System verifies the credentials entered by the admin.
	4	The system redirect customer to the admin dashboard page
Alternate Flow: **Incorrect password or username**	1.1	Admin enters wrong username and password
	1.2	Admin clicks the ‘Login’ button
	1.3	System cannot match the username or password
	1.4	System display error message wrong username or password
Rules	Admin must enter the correct username and password.	
Author	Enoch Leong Qi Cong	

Table 4.5: UC005

Use Case ID	UC06	Version	1.0
Feature	F006 Logout		
Purpose	To allow admin to logout from the system.		
Actor	Admin		
Trigger	Admin clicks “Exit” button on the admin dashboard page		
Precondition	• The admin logged in. • The admin is on the admin dashboard page		
Scenario Name	Step	Action	
Main Flow	1	Admin clicks “Exit” button	
	2	System redirects the admin back to the car parking system main page	
Rules	Admin must be logged in.		
Author	Enoch Leong Qi Cong		

Table 4.6: UC006

Use Case ID	UC07	Version	1.0
Feature	F007 Add Car to Slot		
Purpose	To allow admin add car plate number to the available car park slot		
Actor	Admin		

Trigger	Admin clicks available car park s lot on the admin dashboard page	
Precondition	• The admin logged in to the system • The admin is on the admin dashboard page	
Scenario Name	Step	Action
Main Flow	1	Admin clicks “Add Car” button
	2	System pops out a window
	3	Admin select the available slot in dropdown box
	4	Admin enters car plate number
	5	Admin clicks “Add” button
	6	System validates the car plate, display add successful message and add to database
Alternate Flow: Invalid Car Plate (Input other than alphabet and number)	4.1	Admin enters invalid car plate number
	4.2	System validates the car plate and display error message
Rules	• Admin must select an available car park slot • Admin must enter a valid car plate number	
Author	Enoch Leong Qi Cong	

Table 4.7: UC007

Use Case ID	UC08	Version	1.0
Feature	F008 Edit Car Info		
Purpose	To allow admin to edit the car info for error handling		
Actor	Admin		
Trigger	Admin clicks on the used car park slot box		
Precondition	• The admin logged in to the system • The admin is on the admin dashboard page		
Scenario Name	Step	Action	
Main Flow	1	Admin clicks “Edit Car Info” button	
	2	System pops out a window	
	3	Admin select the slot in dropdown box	
	4	Admin edit car plate number	
	5	Admin clicks “Update Car Info” button	
	6	System validates the car plate, display successful message and update database	

Alternate Flow: **Remove Car**	4.1	Admin clicks “Remove Car” button
	4.2	System displays successful message and update database
Alternate Flow: **Invalid Car Plate (Input other than alphabet and number)**	4.1	Admin enters invalid car plate number
	4.2	System validates the car plate and display error message
Alternate Flow: **Duplicate Car Plate Input**	4.1	Admin enters duplicate car plate number
	4.2	System validates the car plate and display error message
Alternate Flow: **No Car Info**	1.1	Admin clicks “Edit Car Info” button
	1.2	System found no data, display error message
Rules	• Admin must select used car park slot • Admin must enter a valid car plate number • Admin must enter the car plate number does not exist in system • System must exists car data	
Author	Enoch Leong Qi Cong	

Table 4.8: UC08

Use Case ID	UC09	Version	1.0

Feature	F009 Edit Parking Rate	
Purpose	To allow admin to edit the parking rate	
Actor	Admin	
Trigger	Admin clicks on the “Edit Car Park Rate” button on the admin dashboard page	
Precondition	• The admin logged in to the system • The admin is on the admin dashboard page	
Scenario Name	Step	Action
Main Flow	1	Admin clicks “Edit Car Park Rate” button
	2	System pops out a window
	3	Admin edit car park rate
	4	Admin clicks “Update Parking Rate” button
	5	System displays successful message and update database
Alternate Flow: Invalid Car Park Rate (Cannot be 0 or less than 0)	3.1	Admin edit car park rate to 0 or less than 0
	3.2	Admin clicks “Update Parking Rate” button
	3.3	System display error message

Rules	Admin must enter a valid car park rate
Author	Enoch Leong Qi Cong

Table 4.9: UC09

5.0 Use Case Diagram

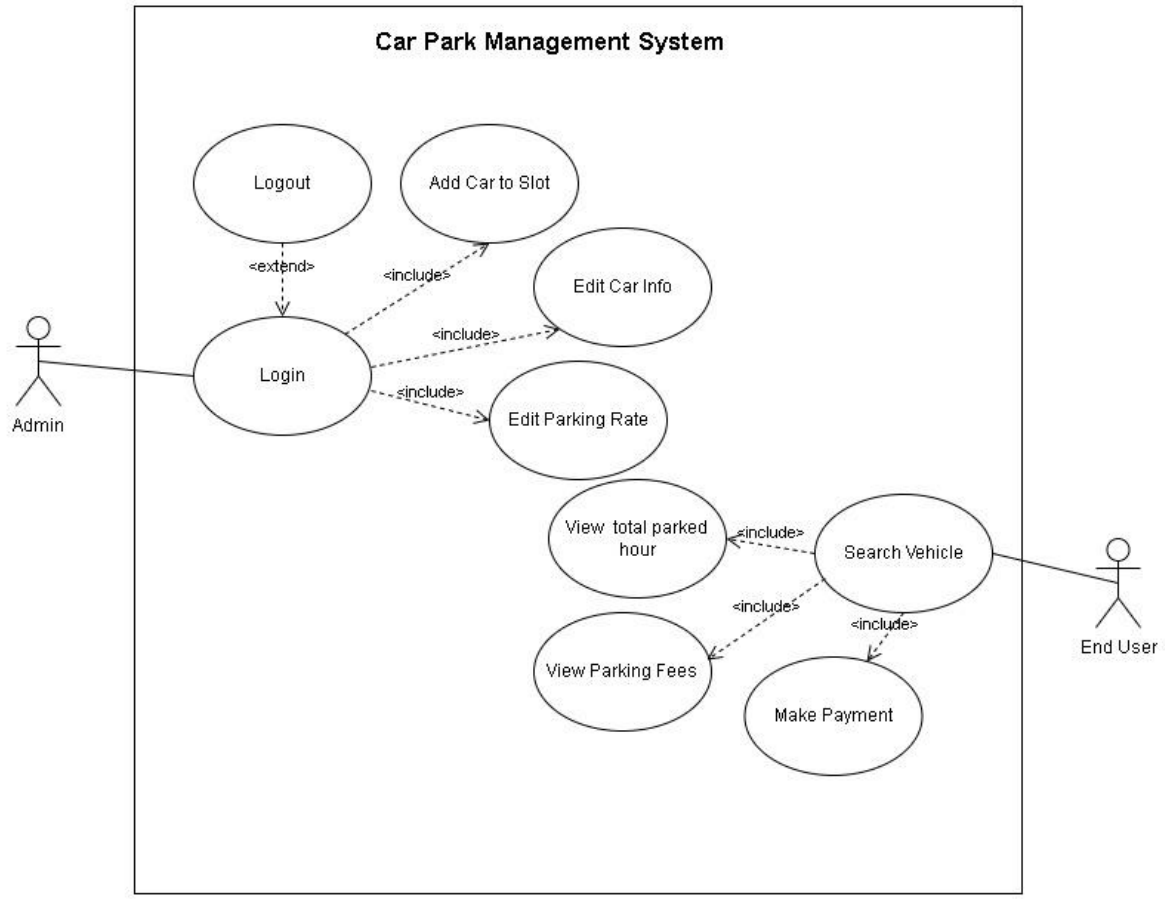

Figure 5.1: Use Case Diagram

(For better visual reference, please refer to:

https://drive.google.com/file/d/13sKdLiweXjXCH9E9zTssKQLCetqpBh2d/view?usp=sharing)

6.0 Medium Fidelity

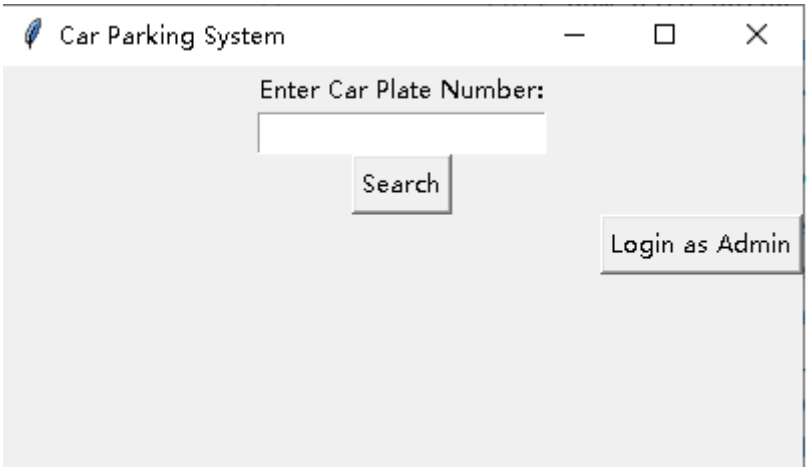

Figure 6.1: Car Parking System Main Page

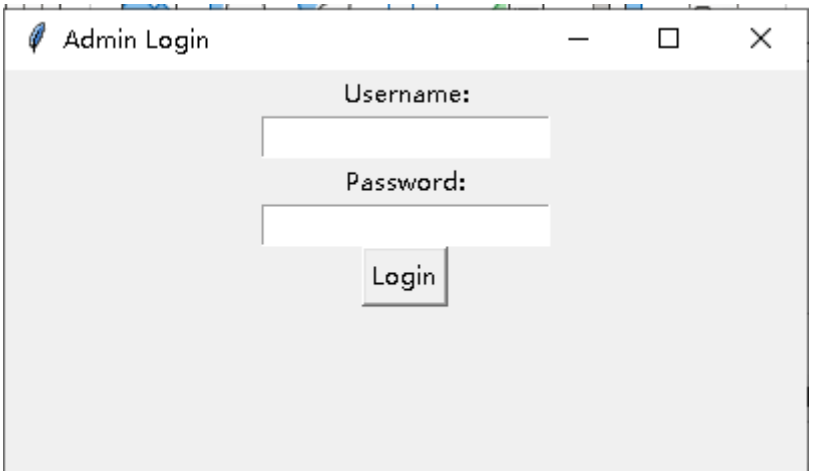

Figure 6.2: Login Page

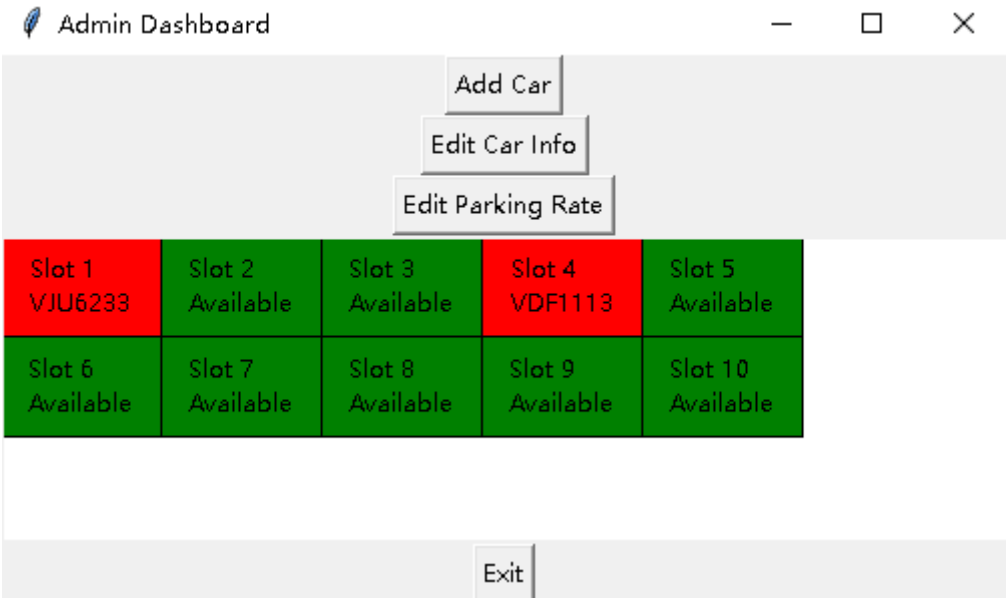

Figure 6.3: Admin Dashboard Page

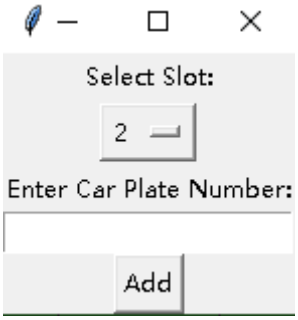

Figure 6.4: Add Car to Slot Page

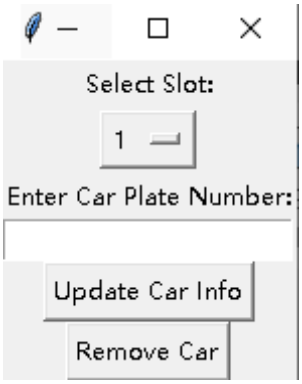

Figure 6.5: Edit Car Info Page

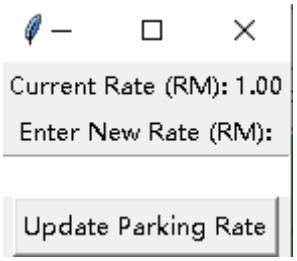

Figure 6.6: Edit Parking Fees Page

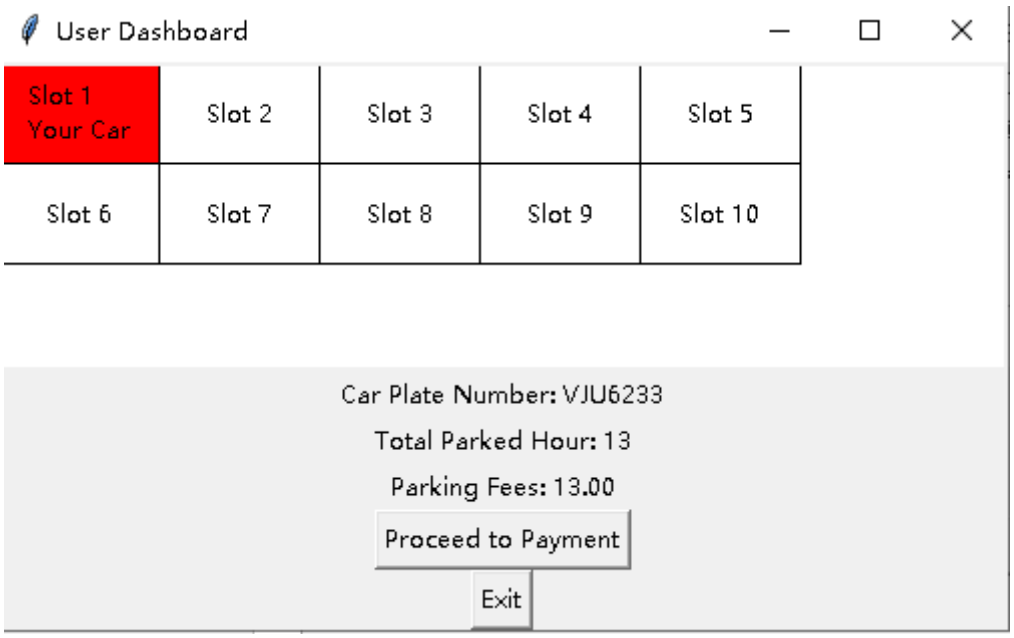

Figure 6.7: Search Result Page

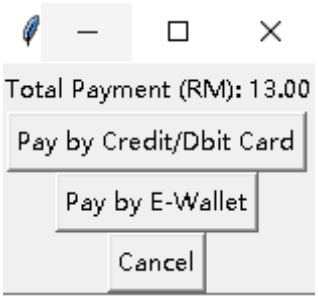

Figure 6.8: Make Payment Page

7.0 Appendices

7.1 UML Diagrams

7.1.1 Class Diagram

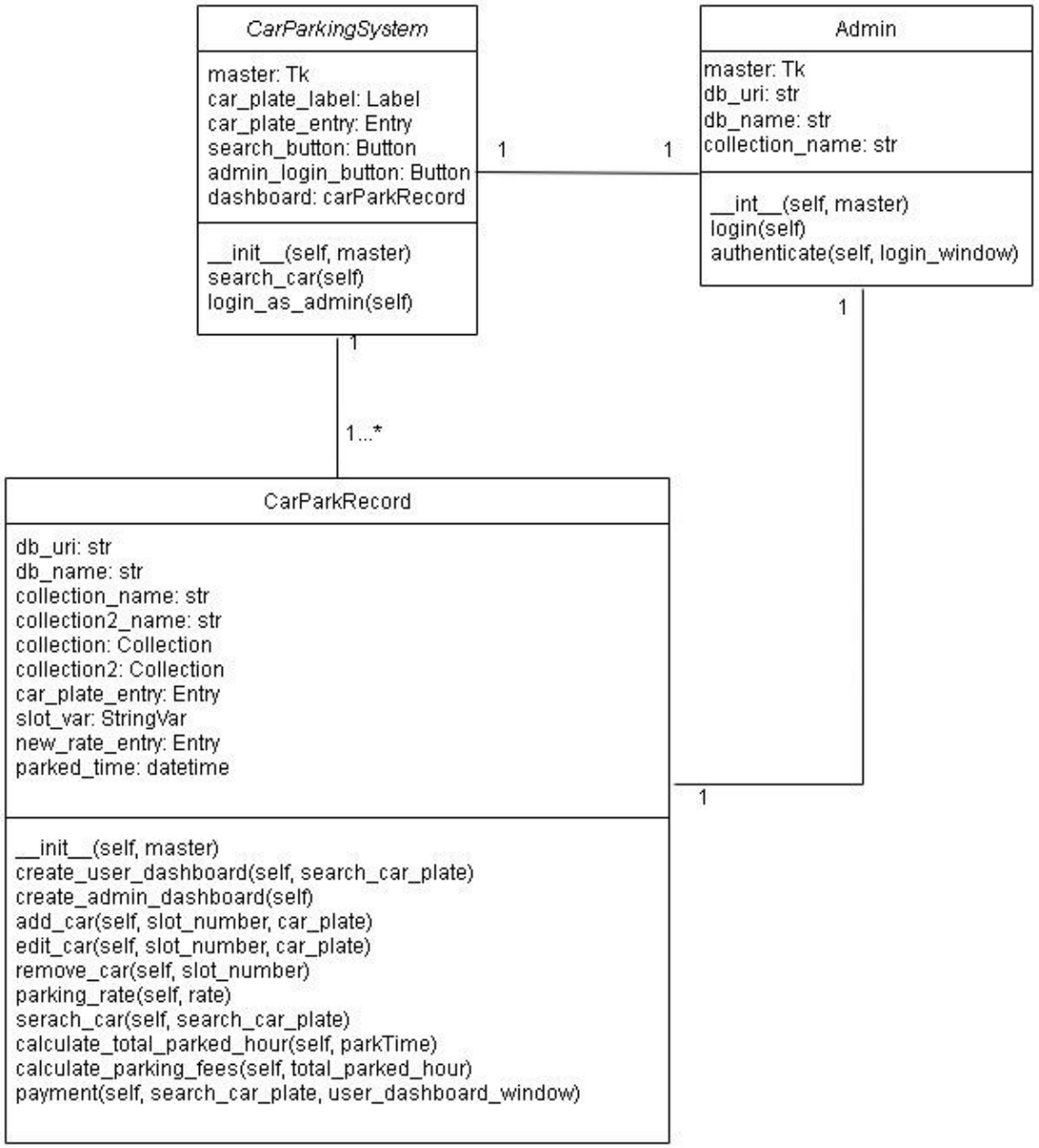

Figure 7.1.1.1: Class Diagram

(For better visual reference, please refer to : https://drive.google.com/file/d/1b-tesfE1YDRhKY2TiDUiGqb9FAYlEgi9/view?usp=sharing)

7.1.2 State Chart Diagram

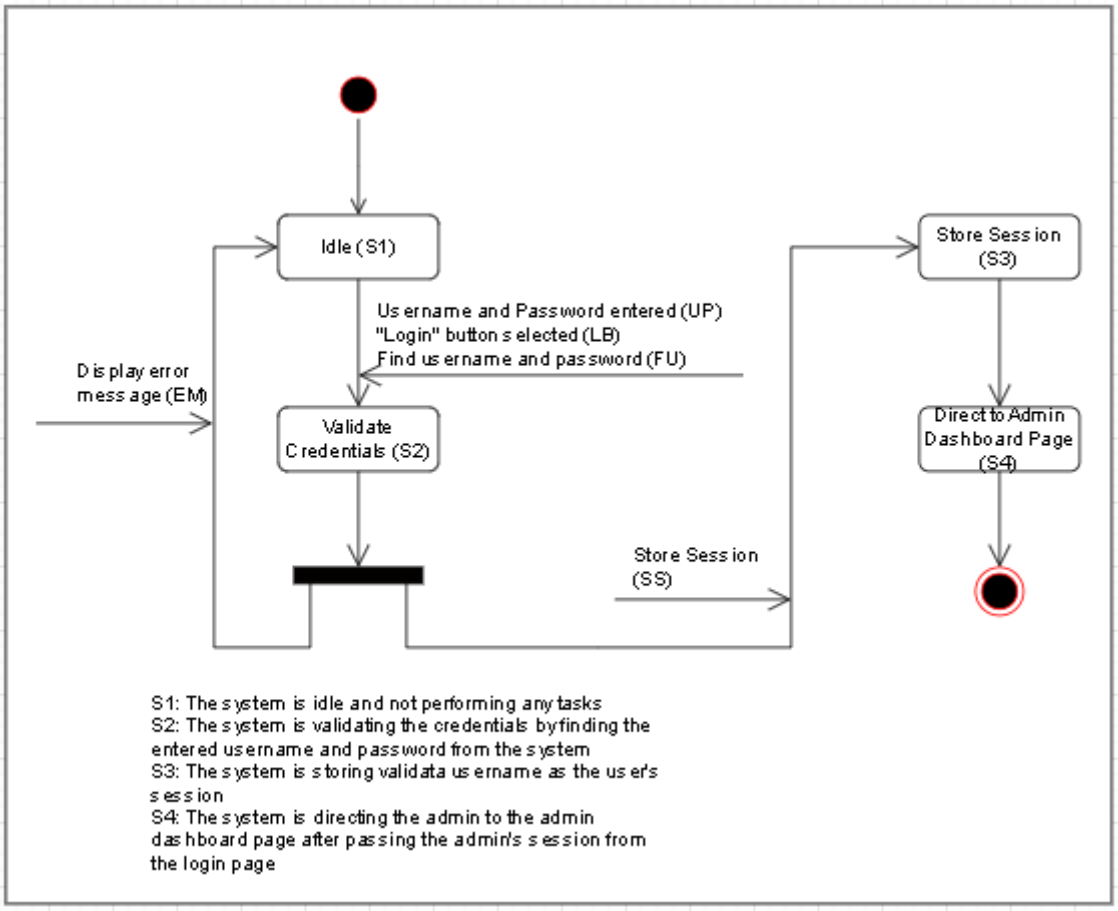

Figure 7.1.2.1: Login

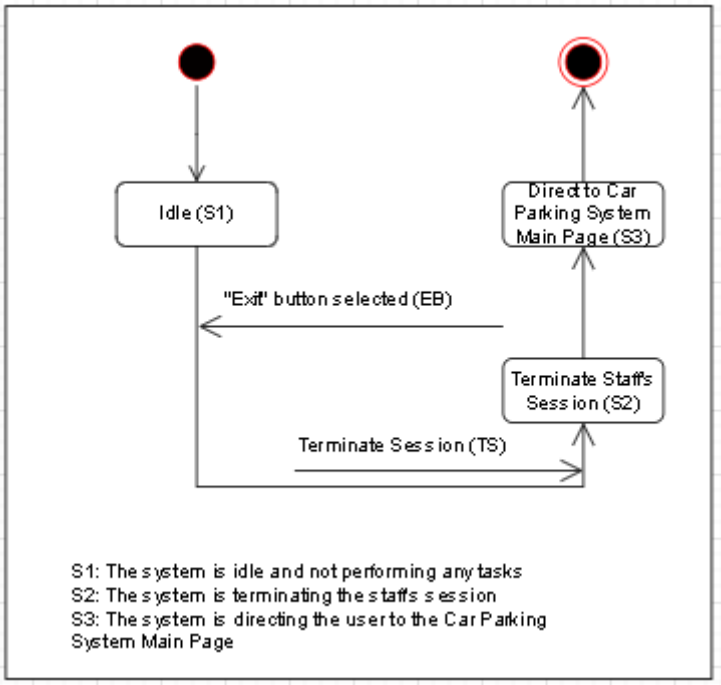

Figure 7.1.2.2: Logout

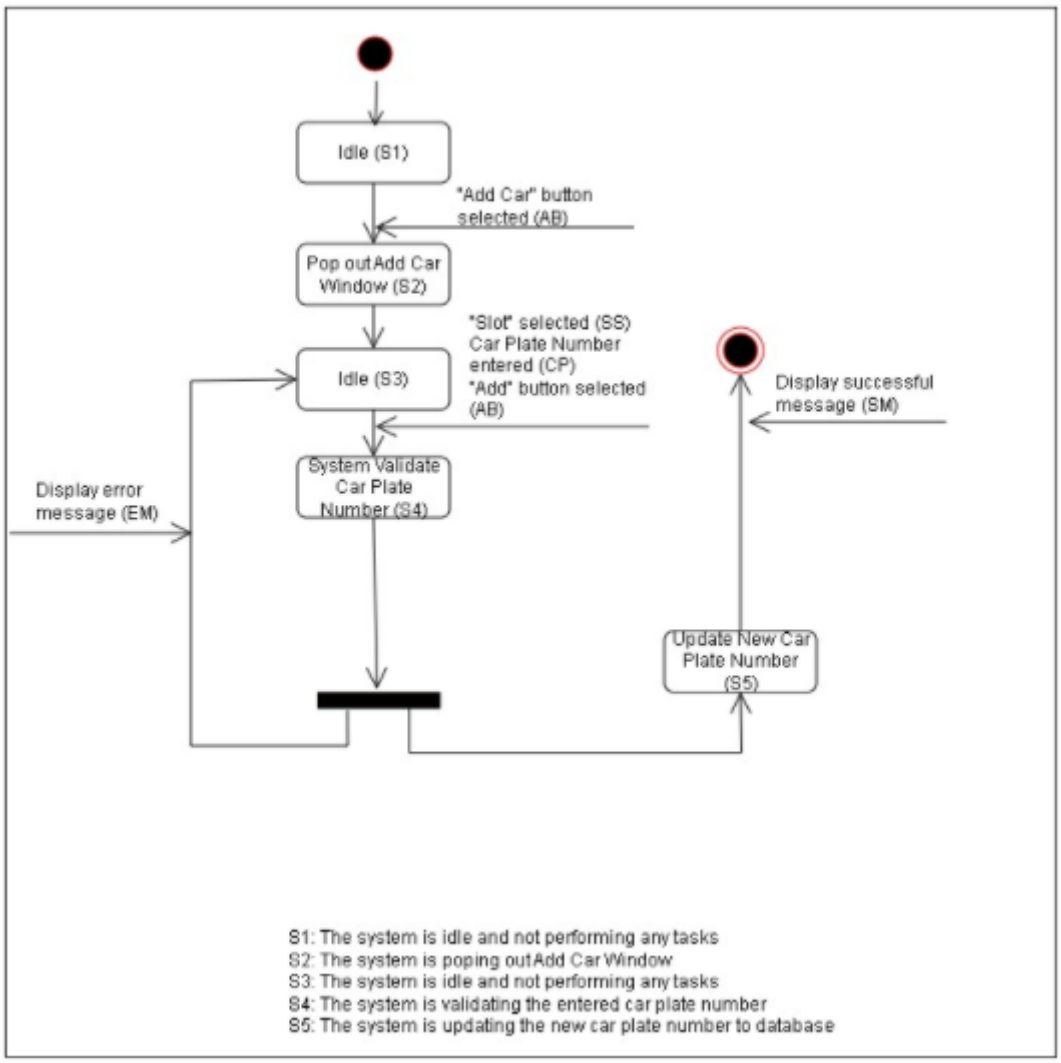

Figure 7.1.2.3: Add Car to Slot

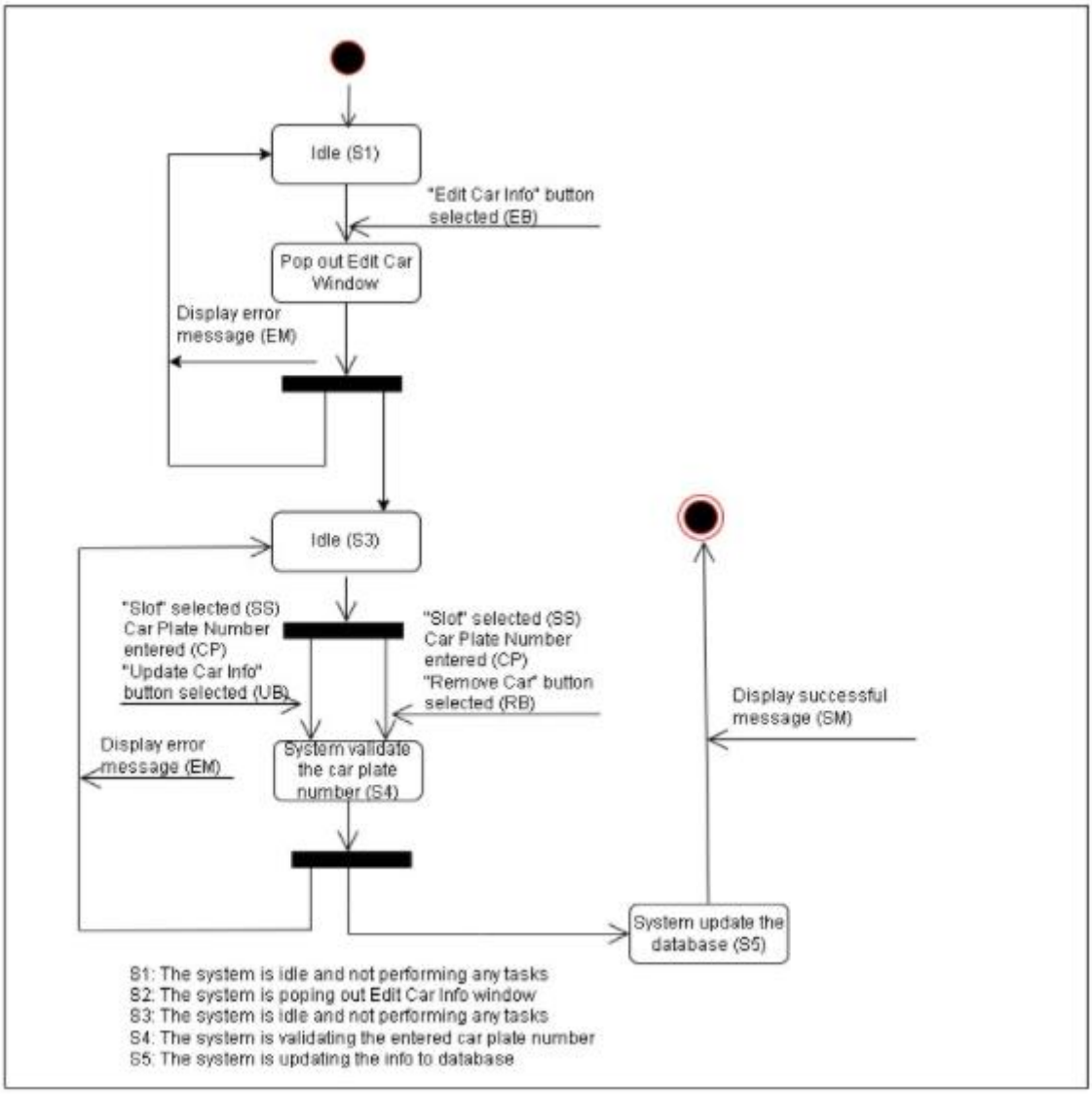

Figure 7.1.2.4: Edit Car Info

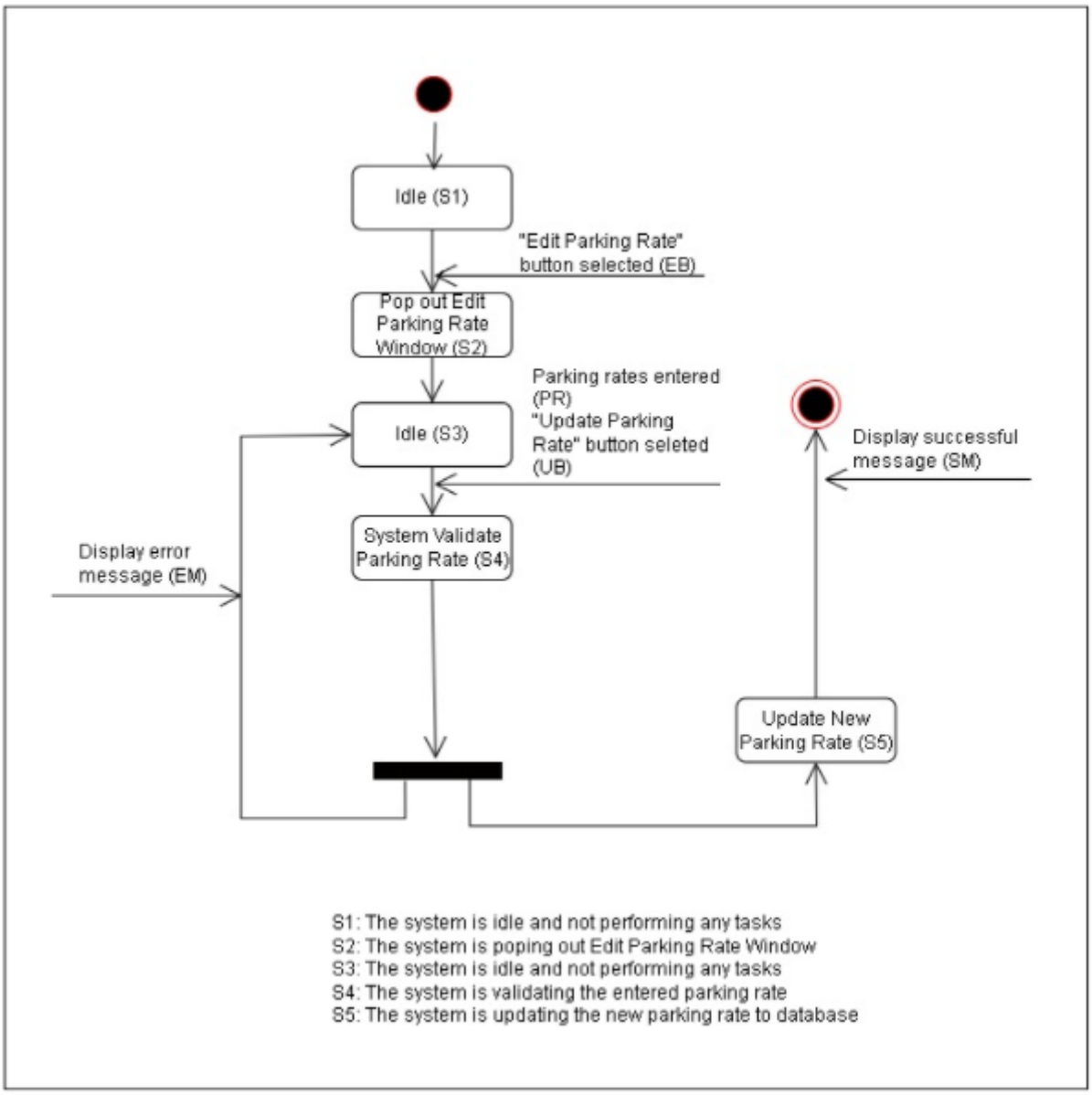

Figure 7.1.2.5: Edit Parking Rate

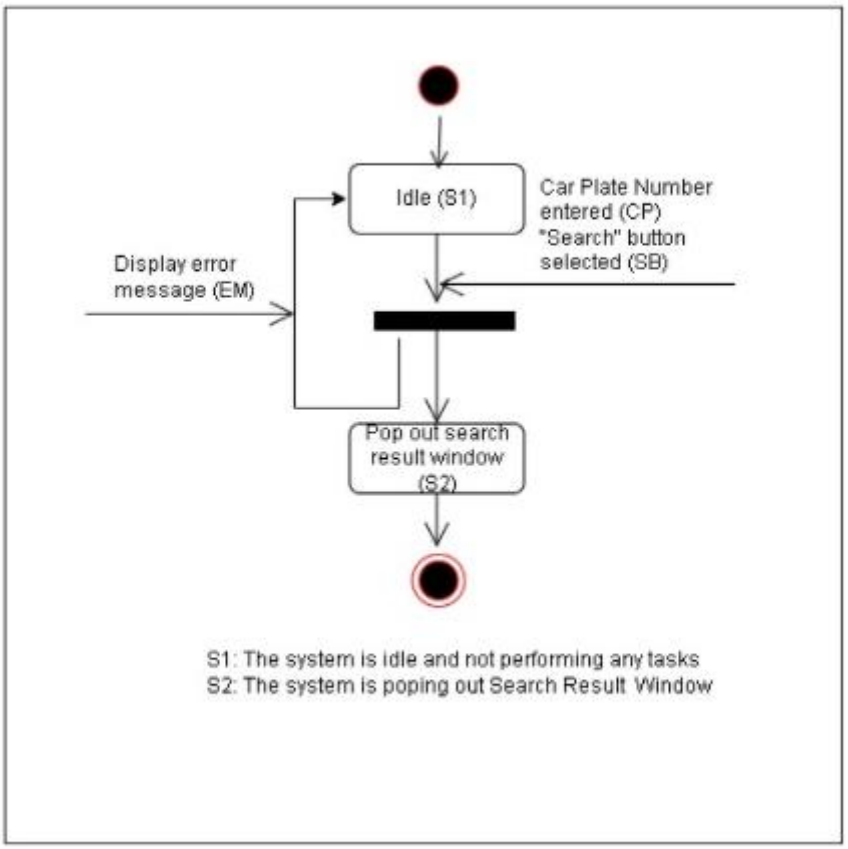

Figure 7.1.2.6: Search Vehicle

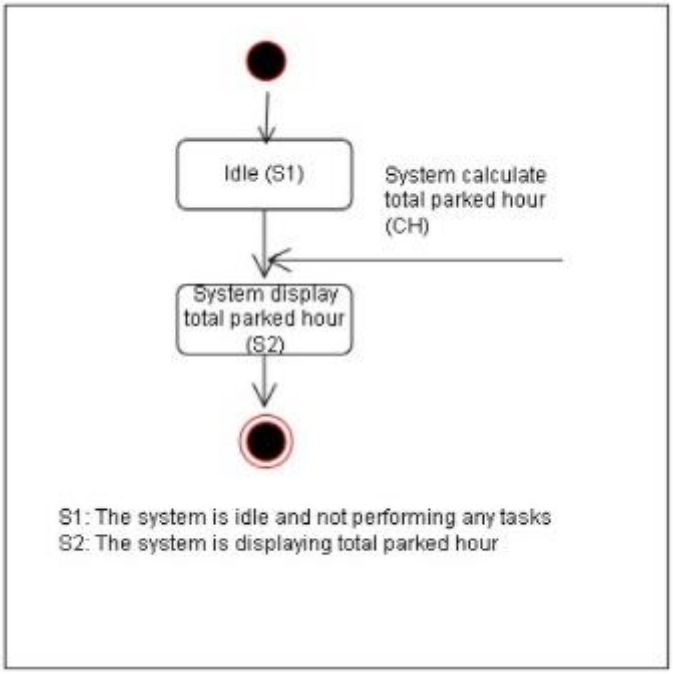

Figure 7.1.2.7: View Total Parked Hour

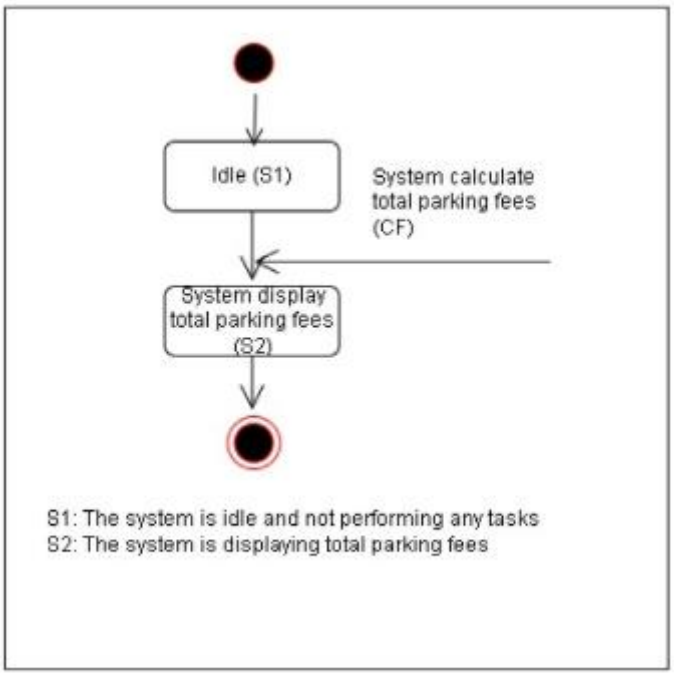

Figure 7.1.2.8: View Parking Fees

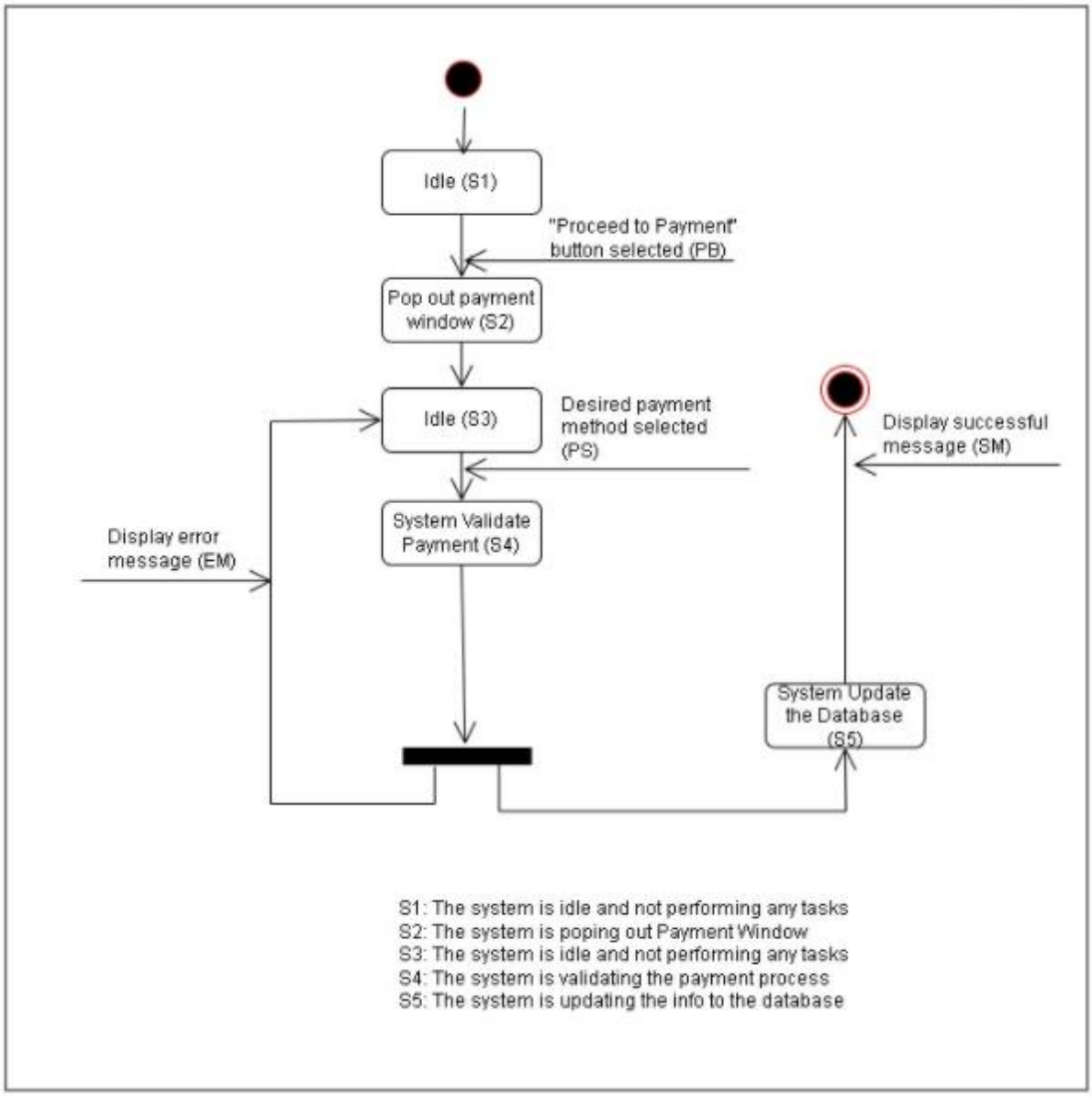

Figure 7.1.2.9: Make Payment

(For better visual reference, please refer to : https://drive.google.com/file/d/1jWfHX2xa7tB2pjnaJpFyLVLMU9YDnFie/view?usp=sharing)

7.2 Gantt Chart

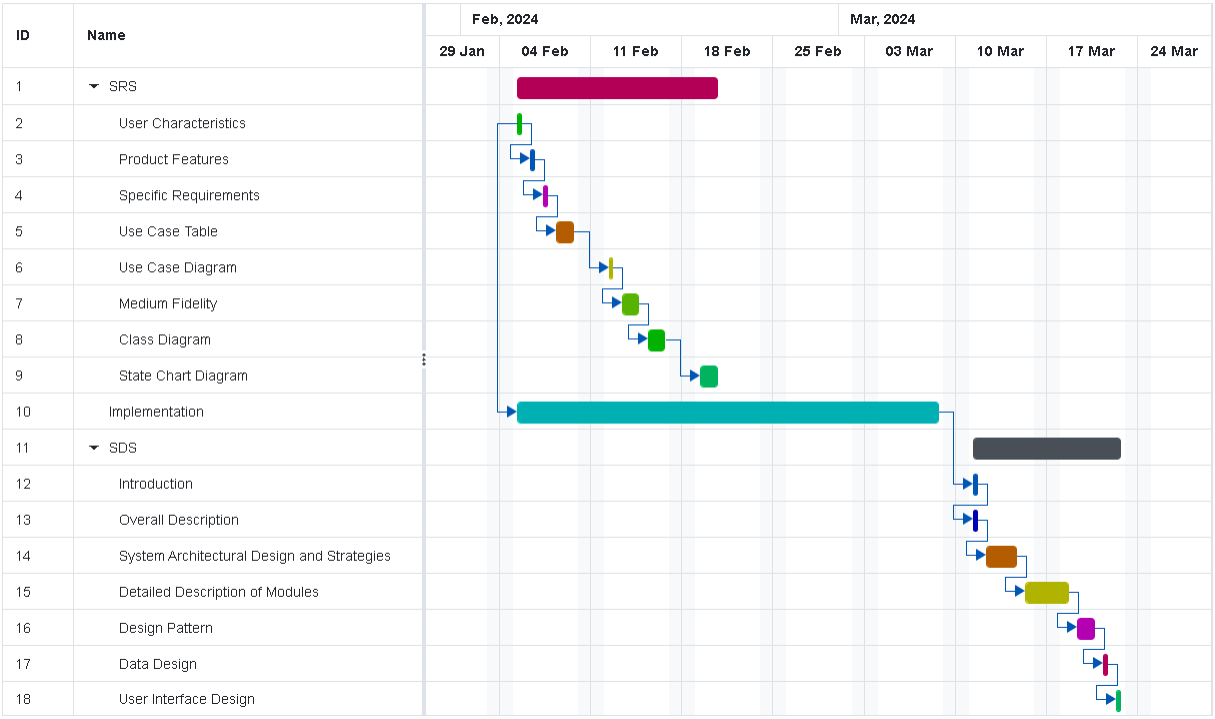

Figure 7.2.1: Gantt Chart

7.3 Log Sheet

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Coursework Progression for Individual Work

Please complete all details required clearly. The progression form is meant for coursework based subjects. The form is to be used weekly during class consultation hours by students and lecturers to track the progress of work done and expectations for the following meeting.

Course Details:

Subject Code: *XBSE2034N*	**Subject Name** *(e.g. Fundamentals of Computing)*: **Software Design**
Course Title *(e.g. Bachelor in Computing)* : Bachelor of Computer Science (Hons)	

Week: ***(Please*** *✓and write the actual date**)***

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk12
			✓ 5/2/2024								

Progress:

Individual Work Progress: *Select desired system, start working on SRS for basic info such as user characteristics, product features, specific requirements and use case table. Those elements are critical for development, so I am doing development/coding together with the SRS.*

Next Milestone/s*: Start Coding GUI*

Task:: SRS, and Coding	**Task:**	**Task:**	**Task:**	**Task:**
Student #1 Name: Enoch Leong Qi Cong **Student No: 0135057** **Signature:** *Enoch* **Date:5/2/2024**	**Student #2 Name:** **Student No:** **Signature:** **Date:**	**Student #3 Name:** **Student No:** **Signature:** **Date:**	**Student #4 Name:** **Student No:** **Signature:** **Date:**	**Student #5 Name:** **Student No:** **Signature:** **Date:**

Lecturer/s Acknowledgement and Date:

***** *The form is NOT valid without the lecturer signature. It must be dated and signed.*

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Coursework Progression for Individual Work

Please complete all details required clearly. The progression form is meant for coursework based subjects. The form is to be used weekly during class consultation hours by students and lecturers to track the progress of work done and expectations for the following meeting.

Course Details:

Subject Code: *XBSE2034N*	**Subject Name** *(e.g. Fundamentals of Computing)*: **Software Design**
Course Title *(e.g. Bachelor in Computing)* : Bachelor of Computer Science (Hons)	

Week: ***(Please*** *✓and write the actual date**)***

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk12
					✓ 19/2/2024						

Progress:

Individual Work Progress: *SRS almost done, leave state chart diagram need depending on the logic of coded GUI. Code/Implementation look good.*

Next Milestone/s*: Finish SRS and coding/implementation*

Task:: SRS, and Coding	**Task:**	**Task:**	**Task:**	**Task:**
Student #1 Name: **Enoch Leong Qi Cong** **Student No:** **0135057** **Signature:** *Enoch* **Date:19/2/2024**	**Student #2 Name:** **Student No:** **Signature:** **Date:**	**Student #3 Name:** **Student No:** **Signature:** **Date:**	**Student #4 Name:** **Student No:** **Signature:** **Date:**	**Student #5 Name:** **Student No:** **Signature:** **Date:**

Lecturer/s Acknowledgement and Date:

***** *The form is NOT valid without the lecturer signature. It must be dated and signed.*

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Coursework Progression for Individual Work

Please complete all details required clearly. The progression form is meant for coursework based subjects. The form is to be used weekly during class consultation hours by students and lecturers to track the progress of work done and expectations for the following meeting.

Course Details:

Subject Code: *XBSE2034N*	**Subject Name** *(e.g. Fundamentals of Computing)*: **Software Design**
Course Title *(e.g. Bachelor in Computing)* : Bachelor of Computer Science (Hons)	

Week: ***(Please*** *✓ and write the actual date**)***

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk12
							✓ 1/3/2024				

Progress:

Individual Work Progress: *SRS done, code/implementation leave logic error for error handling and validation such as car plate cannot enter special character.*

Next Milestone/s*: Code all done, start SDS*

Task:: SRS, and Coding	**Task:**	**Task:**	**Task:**	**Task:**
Student #1 Name: Enoch Leong Qi Cong **Student No: 0135057** **Signature:** *Enoch* **Date:5/2/2024**	**Student #2 Name:** **Student No:** **Signature:** **Date:**	**Student #3 Name:** **Student No:** **Signature:** **Date:**	**Student #4 Name:** **Student No:** **Signature:** **Date:**	**Student #5 Name:** **Student No:** **Signature:** **Date:**

Lecturer/s Acknowledgement and Date:

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Week: ***(Please*** *✓and write the actual date**)***

Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk12
									✓ 18/3/2024		

Progress:

Individual Work Progress: *SDS leave module and matrix, need consult lecturer what can do in these parts since the code is in Python no module.*

Next Milestone/s*: Done SDS*

Task: SDS	**Task:**	**Task:**	**Task:**	**Task:**
Student #1 Name: **Enoch Leong Qi Cong** **Student No:** **0135057** **Signature:** *Enoch* **Date:5/2/2024**	**Student #2 Name:** **Student No:** **Signature:** **Date:**	**Student #3 Name:** **Student No:** **Signature:** **Date:**	**Student #4 Name:** **Student No:** **Signature:** **Date:**	**Student #5 Name:** **Student No:** **Signature:** **Date:**

Lecturer/s Acknowledgement and Date:

***** *The form is NOT valid without the lecturer signature. It must be dated and signed.*