



SESSION 2022/2023, SEMESTER 1
SECP3723-01 (SYSTEM DEVELOPMENT
TECHNOLOGY)

INDIVIDUAL PROJECT

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A) SYSTEM INTRODUCTION

The system is about the car rental service. This Car Rental System is designed to aid the car rental company to enable renting cars through an online system. It helps the users to search for available vehicles and book the cars for the time being. It has a user-friendly interface which allows the user to choose cars and rent them for the period specified. The use of internet technology has made it easy for customers to rent a car at any time. This Car Rental System makes bookings easy. It saves time and labour. The primary purpose of this system is to provide a valuable and beneficial system to the client. All requirements are required for client applications. As such, the system collects information from the user, and the client can monitor the vehicle they want to book and book transaction information.

For customers to book the car, they must have an account to book for it. They must register and fill in the form for the system to get their valid information, such as email, identification number, password, full name, address, contact number and license number. After the customer registers with the system, they can log in to their account by entering their identification number and password that has been made previously. After login in, they can view lists of cars and fill in the booking form according to their desired car and the pickup and return date of the vehicle. After booking the car, they can view the status of the booking car to see whether their application is approved or rejected. They must wait 1-3 working days for an admin to verify their bookings. The customer can also modify the rental date and cancel the booking. If the customer has many booking lists, they can search for their booking by entering their booking ID to check the car status, so they don't have to scroll. Lastly, customer can update their profile according to their needs.

Using this system, the admin can verify the rental status, add the vehicle, modify/update the current information about the vehicle, search for customer's booking, and view lists of bookings that have not been approved and one that has been approved. The car information can be added to the system by the admin, and it can be viewed by the customer to rent out. The updated information about the vehicle that has been modified will also be displayed on the customer's screen.

B) SYSTEM DESIGN (ERD, USE CASE)

SYSTEM DESIGN ERD

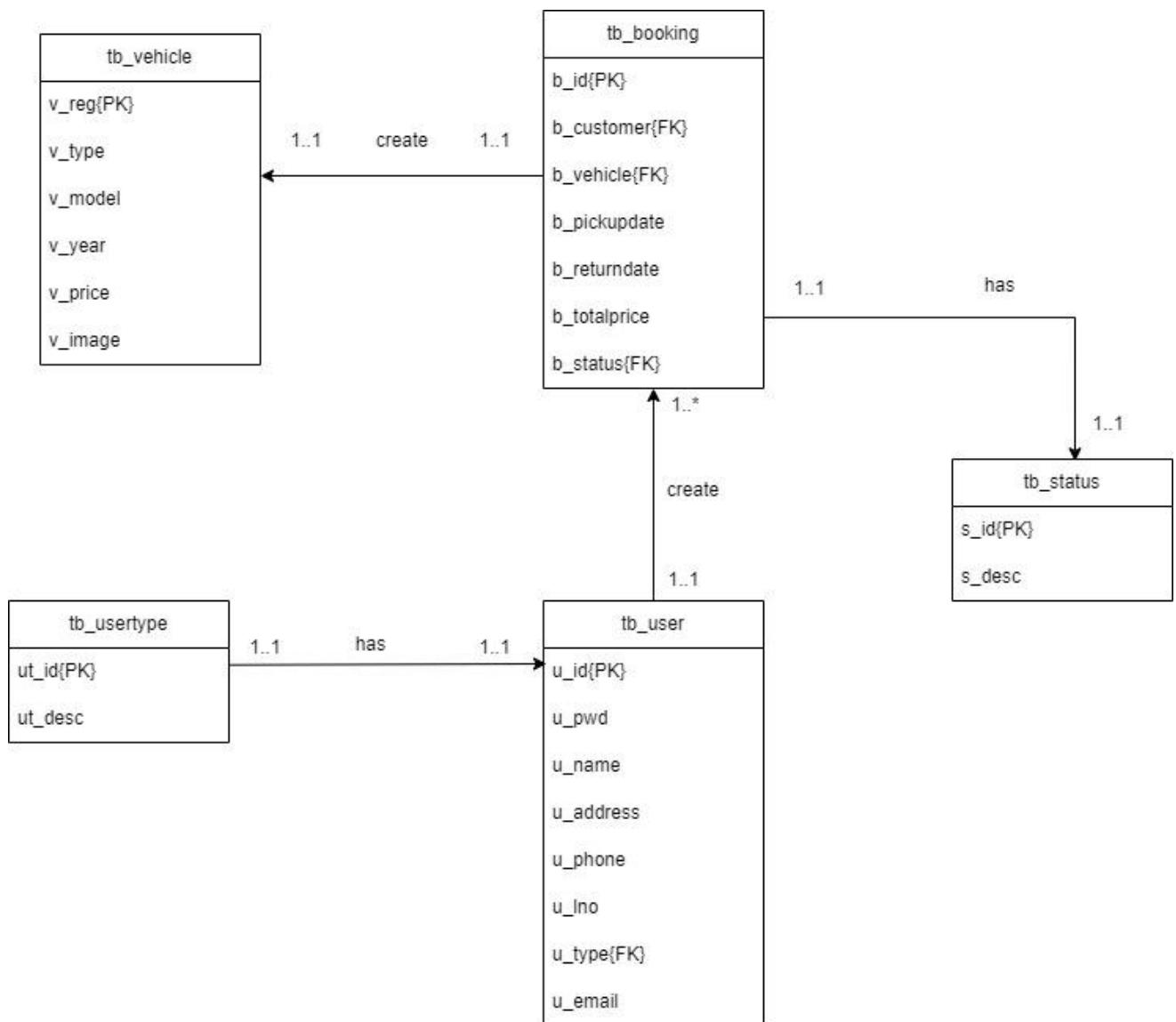


Figure 1 : ERD

SYSTEM DESIGN USE CASE

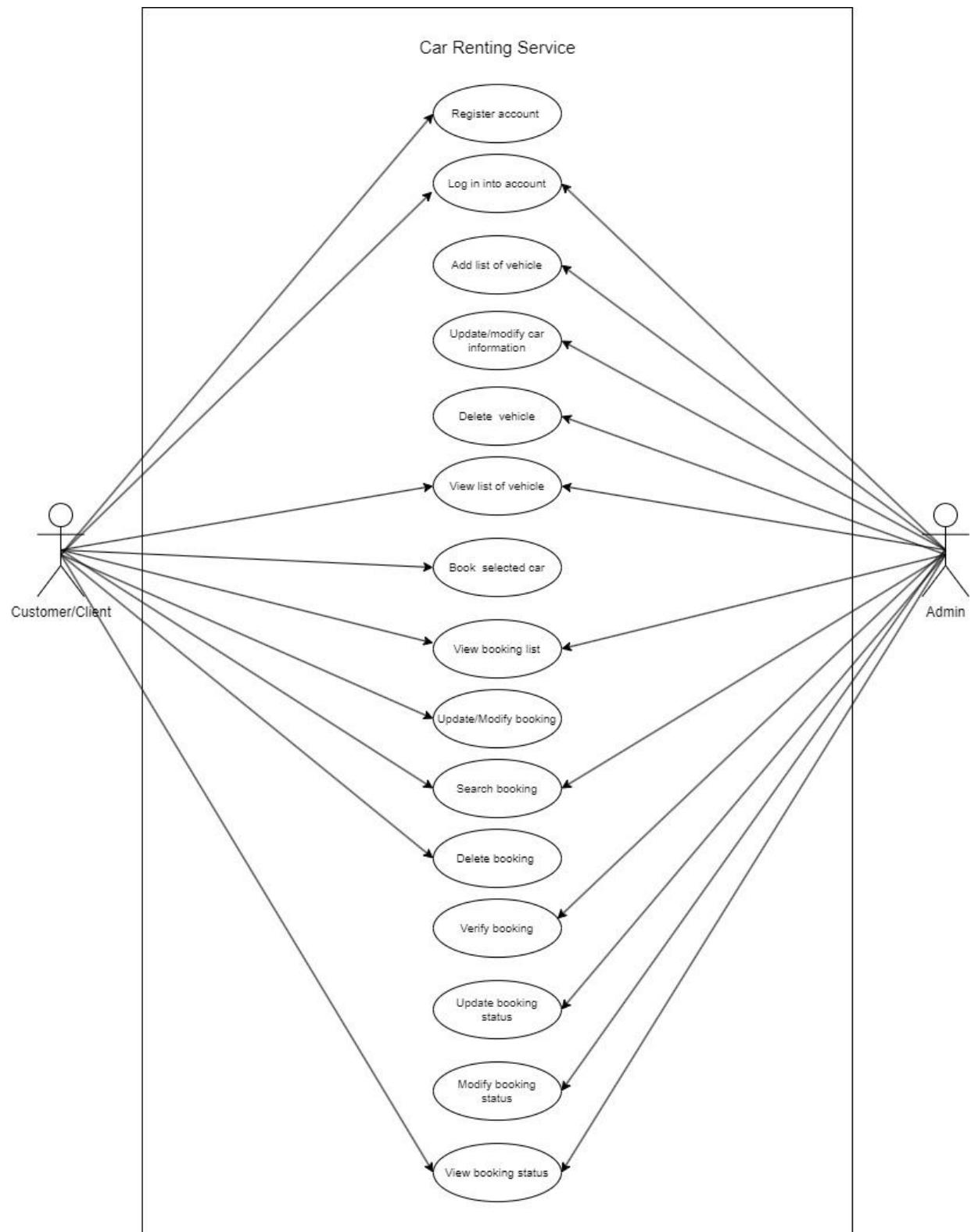


Figure 2 : Use Case

**C) DEVELOPMENT SOFTWARE, LANGUAGE, TECHNOLOGY AND TOOLS
(PROVIDE URL)**

DEVELOPMENT SOFTWARE

i)XAMPP

XAMPP is an open-source software stack consisting of the Apache web server, MariaDB database, and PHP and Perl scripting languages to create and test web applications locally on a computer. Cross-Platform (X), Apache (A), MariaDB (M), PHP (P), and Perl make up the acronym XAMPP (P). It enables developers to run a complete web server on their personal computers, doing away with the necessity for a distant hosting environment for development and testing. Here is the link: <https://www.apachefriends.org/download.html>

ii)Sublime Text

Sublime Text is a cross-platform text and source code editor that supports a wide range of coding languages and markup languages. It is known for its swiftness, customizable possibilities, and feature-rich user interface. With features like multiple selections, distraction-free mode, split editing, and a minimap that offers a bird's-eye view of the entire file, Sublime Text has a stylish and simple user interface. Here is the link : <https://www.sublimetext.com/3>

iii)PhpMyAdmin

A web-based administration tool for administering the MySQL and MariaDB databases is called phpMyAdmin. It is free and open-source. Users may run SQL queries, import and export data, and create, modify, and delete databases, tables, and fields, among other routine database management operations. They can also manage user accounts and import and export data. Here is the link : http://localhost/phpmyadmin/index.php?route=/database/structure&db=db_cbs1

iv)FileZilla

For uploading and downloading files between a local computer and a distant server, use FileZilla, a free and open-source FTP client and server programme. It is compatible with several protocols, including SFTP, FTPS (FTP over SSL/TLS), and FTP (SSH File Transfer Protocol).

Users may easily transfer, manage remote files and folders, and set up FTP connections with FileZilla's simple-to-use graphical user interface. Additionally, it allows for the resume and transfer of big files and the recording and recording of transfer activities. Here is the link:
<https://filezilla-project.org/download.php?type=client>

LANGUAGE

i) HTML

Hypertext Markup Language, or HTML, is typically used to create web pages and other online-based content. Since HTML is a markup language, it uses many tags and attributes to specify web page organisation, content, and visual appeal. A web page's content and instructions for how to be displayed in a web browser are both contained in text-based HTML files. HTML elements, which indicate the type of content, such as headings, paragraphs, lists, images, links, and more, are used to convey these instructions.

ii) PHP

The server-side scripting language known as PHP, or Hypertext Preprocessor is used to build dynamic web pages and web-based applications. PHP is used to manage sessions, communicate with databases, process data from forms, and create dynamic content that can be seen in a web browser.

PHP code must be performed on the server for HTML, CSS, and JavaScript to be rendered on a client's web browser. This enables dynamic, real-time updates and interactions without the need to refresh the page.

Being extensively used and maintained by a sizable developer community, PHP is a well-liked option for creating web-based applications of all sorts, from straightforward personal websites to intricate e-commerce platforms. PHP is an accessible and affordable option for web development because it is open-source and compatible with most web servers.

TOOLS

i)CSS

CSS is a stylesheet language used to describe the appearance and formatting of an HTML web page. Colours, fonts, spacing, layout, and other visual elements of a web page can all be adjusted using CSS.

- A) Bootstrap : <https://getbootstrap.com/docs/5.0/getting-started/download/>
- `
B) Bootswatch : <https://bootswatch.com/>

D) DATABASE DESIGN (PHPMYADMIN SCREENSHOT)

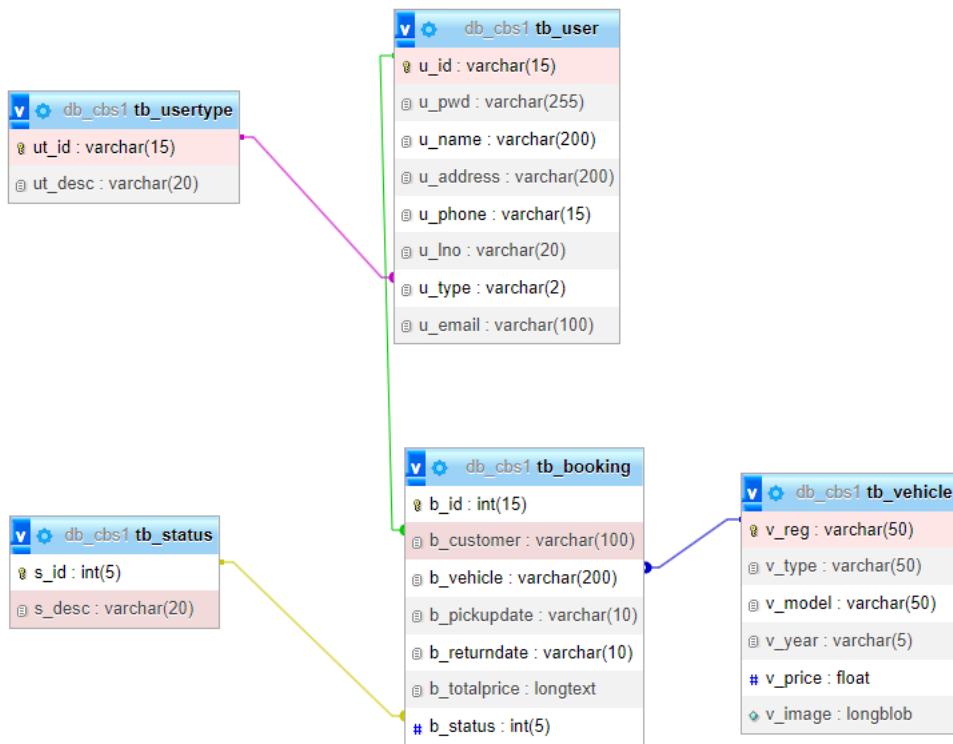


Figure 3

TABLE BOOKING/TB_BOOKING :

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	b_id 	int(15)			No	None		AUTO_INCREMENT	 Change  Drop More
<input type="checkbox"/>	2	b_customer 	varchar(100)	utf8mb4_general_ci		No	None			 Change  Drop More
<input type="checkbox"/>	3	b_vehicle 	varchar(200)	utf8mb4_general_ci		No	None			 Change  Drop More
<input type="checkbox"/>	4	b_pickupdate	varchar(10)	utf8mb4_general_ci		No	None			 Change  Drop More
<input type="checkbox"/>	5	b_returndate	varchar(10)	utf8mb4_general_ci		No	None			 Change  Drop More
<input type="checkbox"/>	6	b_totalprice	longtext	utf8mb4_general_ci		No	None			 Change  Drop More
<input type="checkbox"/>	7	b_status 	int(5)			No	None			 Change  Drop More

Figure 4

TABLE STATUS/TB_STATUS :

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	s_id 	int(5)			No	None			 Change  Drop More
<input type="checkbox"/>	2	s_desc	varchar(20)	utf8mb4_general_ci		No	None			 Change  Drop More

Figure 5

TABLE USER/TB_USER :

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	u_id 	varchar(15)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	2	u_pwd	varchar(255)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	3	u_name	varchar(200)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	4	u_address	varchar(200)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	5	u_phone	varchar(15)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	6	u_lno	varchar(20)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	7	u_type 	varchar(2)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	8	u_email	varchar(100)	utf8mb4_general_ci		No	None		 Change	 Drop More

Figure 6

TABLE USERTYPE/TB_USERTYPE :

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	ut_id 	varchar(15)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	2	ut_desc	varchar(20)	utf8mb4_general_ci		No	None		 Change	 Drop More

Figure 7

TABLE VEHICLE/TB_VEHICLE:

	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	v_reg 	varchar(50)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	2	v_type	varchar(50)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	3	v_model	varchar(50)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	4	v_year	varchar(5)	utf8mb4_general_ci		No	None		 Change	 Drop More
<input type="checkbox"/>	5	v_price	float			No	None		 Change	 Drop More
<input type="checkbox"/>	6	v_image	longblob			No	None		 Change	 Drop More

Figure 8

E) DEVELOPMENT STEPS

1) IDENTIFYING PROBLEMS, OPPORTUNITIES AND OBJECTIVES

- i) Learn and study the case study about the car booking system that has been given.
- ii) Identifying the problem, opportunities and objectives of the system.
 - a) Problem: To let the customer/client deal with the admin for booking purposes easily.
 - b) Opportunities:
 - Helps the users to search for available vehicles and book the cars for the time being. It has a user-friendly interface which allows the user to choose cars and rent them for the period specified.
 - This system is way more systematic than manual booking.
 - c) Objectives:
 - This system provides the client with a valuable and beneficial system. This saves time for the customer because they can just view the car and book it through the system.

2) DETERMINING HUMAN INFORMATION REQUIREMENT:

- i) Determining human information requirements, which begins with knowing how to make the system useful and usable.
 - Determine the needs of customers.
 - Determine what makes the booking system efficient.

3) ANALYZING SYSTEM NEEDS:

- i) Gather information and conduct research: Research existing solutions and gather information about the technologies and techniques that will be used to build the system.
- ii) Create a detailed list of the functional and non-functional requirements for the system, including any constraints or limitations.

4)DESIGNING THE SYSTEM:

i)Create the data flows.

- Choose a theme for the website.
- Design the main page of websites.
- Design the interface for admin and customer.
- Put pictures inside the system to make the system easier to understand.
- Put buttons so that users understand the flow of the system.
- Add some pop-up notifications, verification and confirmation on the screen to keep the customer alert when making a decision.
- Finalize the design.

5)DEVELOPING & MAINTAINING THE SYSTEM

i)Model the actual system and add some functions such as:

- Encrypt/Hash password
- Notification, confirmation, and verification popups
- SQL injection prevention
- Password check

6)TESTING AND MAINTAINING THE SYSTEM:

- i)Test the system on multiple devices for multiple times.
- ii)Test the application to ensure it works as expected and meets all requirements.
- iii)Ask another person(other than the developer) to use the system.
- iv)Verify that the system meets all requirements and ensure that it is functioning correctly.
- v)Fix any bugs or errors that are found during testing.
- vi)Maintain the system's security, performance, and stability, and resolve any issues that arise.

7)IMPLEMENTING AND EVALUATING THE SYSTEM:

- i)Identify any areas for improvement and make updates as necessary to enhance the application's functionality and user experience.
- ii)Ensure that the application is configured correctly and that all necessary security measures are in place.

F) SYSTEM INTERFACE FOR ALL USERS

1) Homepage/ Index Page

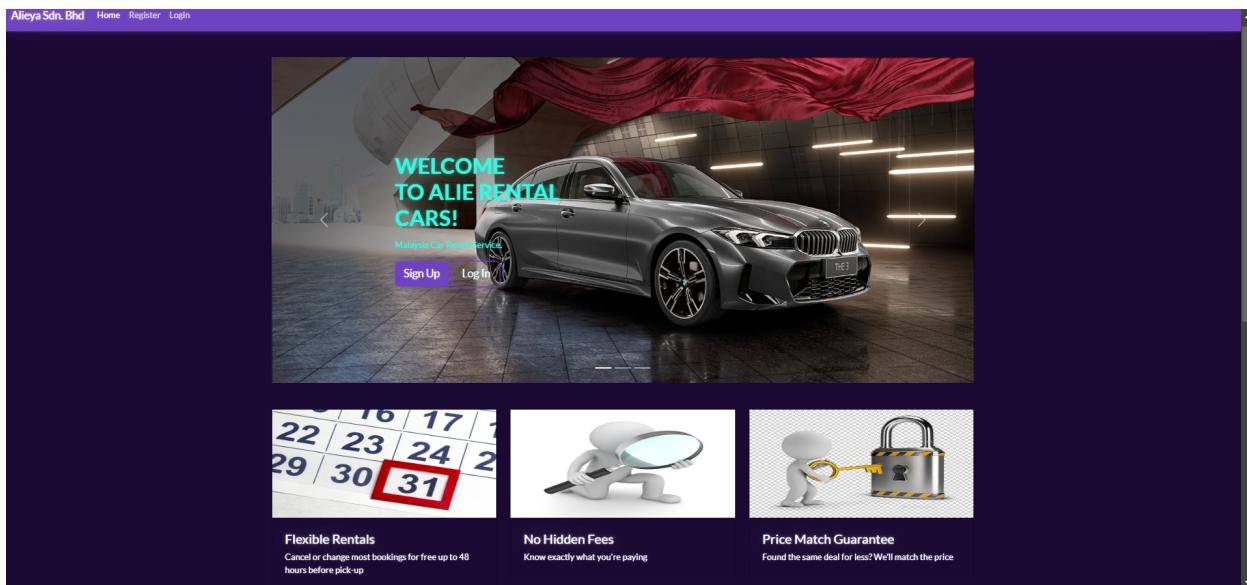


Figure 9

2) Registration for new user

A screenshot of the registration form page. The title "Registration Form" is at the top, followed by the subtitle "Welcome to our Car Renting Service !". The form fields include: "Your Email" (input: alyznic26@gmail.com), "IC Number" (input: 12332131), "Password" (input: Please create a strong password, with a "Click to Show" link next to it), "Confirm Password" (input: Please confirm your password), "Full Name" (input: ZAINI), and "Address" (input: Lot 843, Persiaran Salak 2/1, RPTS Salak Baru, 31050 Sg. Siput (U)).

Figure 10

3) Login for Customer/Client and Admin

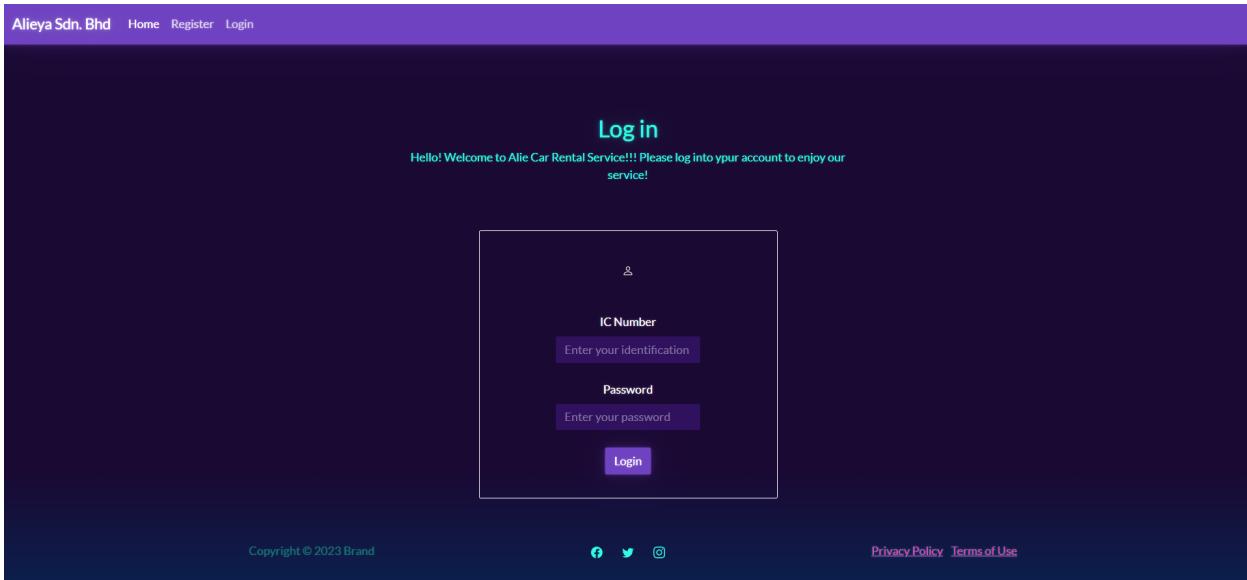


Figure 11

4) Booking Form for Customer/Client

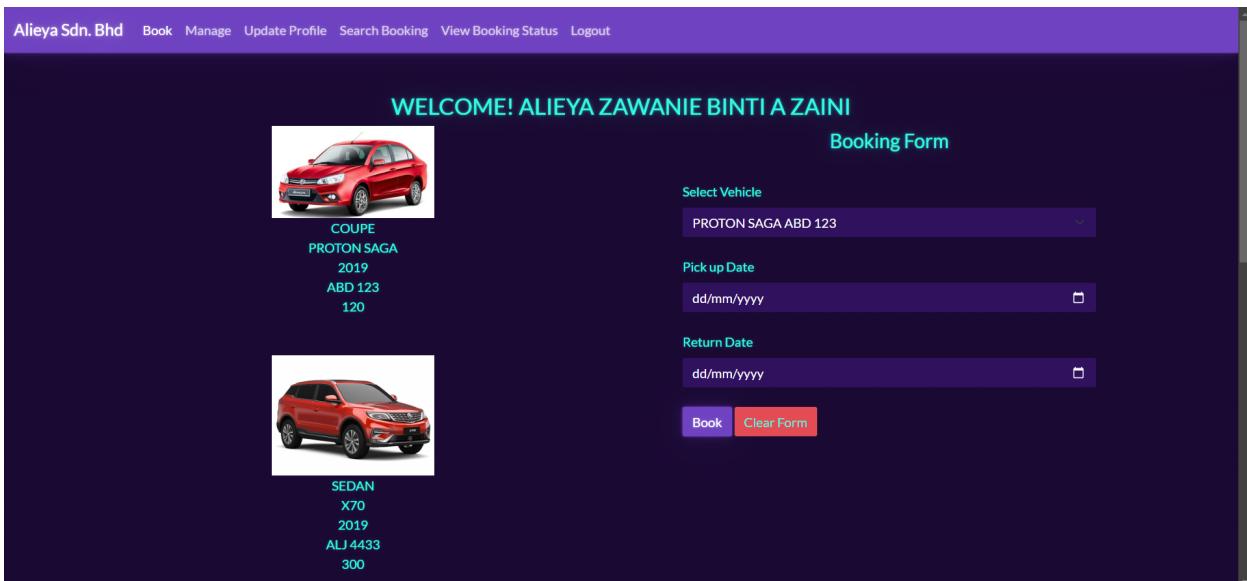


Figure 12

5) Customer/Client List of Booking

Your Booking List						
Booking ID	Vehicle	Pick-up Date	Return Date	Total Price	Status	Operation
67	PROTON SAGA	2023-01-06	2023-01-14	960	Received	<button>Modify</button> <button>Cancel</button>
68	PERODUA ALZA	2023-01-13	2023-01-14	200	Approved	<button>Modify</button> <button>Cancel</button>
75	PERODUA ALZA	2023-02-04	2023-02-09	1000	Received	<button>Modify</button> <button>Cancel</button>
76	X70	2023-02-02	2023-02-02	0	Received	<button>Modify</button> <button>Cancel</button>
77	AMG GT4	2023-02-04	2023-03-11	14000	Received	<button>Modify</button> <button>Cancel</button>
78	AMG GT4	2023-02-17	2023-06-23	50383.333333333	Received	<button>Modify</button> <button>Cancel</button>
79	PROTON SAGA	2023-02-04	2023-07-08	18475	Received	<button>Modify</button> <button>Cancel</button>
80	PROTON SAGA	2023-02-11	2023-08-04	20875	Received	<button>Modify</button> <button>Cancel</button>
81	PERODUA ALZA	2023-02-11	2023-08-04	34791.666666667	Received	<button>Modify</button> <button>Cancel</button>

Figure 13

6) Customer/Client Page for Profile Update

Aliyea Sdn. Bhd Book Manage Update Profile Search Booking View Booking Status Logout

Update New Profile Information



Password
\$2y\$10\$MRjloYsq7ExvP4lUgnHP6eYss1Zjuen7oEG
Zy9vh5RUMHrp1aqRW

Confirm Password
\$2y\$10\$MRjloYsq7ExvP4lUgnHP6eYss1Zjuen7oEG
Zy9vh5RUMHrp1aqRW

Name
ALIEYA ZAWANIE BINTI A ZAINI

Address
Lot 843, Persiaran Salak 2/1,
RPTS Salak Baru,

Phone Number
0195530957

Figure 14

7) Customer/Client Page for Searching Their Booking

The screenshot shows a search interface for booking ID 67. The search bar contains the number 67. Below it, there are several input fields with placeholder values: Booking ID (67), IC Number (020226780790), Vehicle Number (ABD 123), Pickup Date (2023-01-06), Return Date (2023-01-14), Total Price (960), and Status (Received). A 'Search' button is located to the right of the search bar. At the bottom of the page, there is a copyright notice (Copyright © 2023 Alie...), social media links (Facebook, Twitter, Instagram), and links for Privacy Policy and Terms of Use.

Figure 15

8) Customer/Client Page Booking Status and History of Current and Previous Booking

The screenshot displays a table titled 'Booking Status' with one row of data. The columns are: Booking ID (68), Vehicle (PERODUA ALZA), Pick-up Date (2023-01-13), Return Date (2023-01-14), Total Price (200), Status (Approved), and Operation (a yellow 'Cancel' button). At the bottom of the page, there is a copyright notice (Copyright © 2023 Alie...), social media links (Facebook, Twitter, Instagram), and links for Privacy Policy and Terms of Use.

Booking ID	Vehicle	Pick-up Date	Return Date	Total Price	Status	Operation
68	PERODUA ALZA	2023-01-13	2023-01-14	200	Approved	<button>Cancel</button>

Figure 16

ADMIN:

9)Admin Page for Viewing New Booking List

Booking ID	Customer	Vehicle	Pick-up Date	Return Date	Total Price	Status	Operation
67	ALIEYA ZAWANIE BINTI A ZAINI	PROTON SAGA	2023-01-06	2023-01-14	960	Received	Approval
71	zawanie	X70	2023-03-18	2023-05-18	18287.5	Received	Approval
73	ana razali	X70	2023-02-02	2023-02-03	300	Received	Approval
75	ALIEYA ZAWANIE BINTI A ZAINI	PERODUA ALZA	2023-02-04	2023-02-09	1000	Received	Approval
76	ALIEYA ZAWANIE BINTI A ZAINI	X70	2023-02-02	2023-02-02	0	Received	Approval
77	ALIEYA ZAWANIE BINTI A ZAINI	AMG GT4	2023-02-04	2023-03-11	14000	Received	Approval
78	ALIEYA ZAWANIE BINTI A ZAINI	AMG GT4	2023-02-17	2023-06-23	50383.3333333333	Received	Approval
79	ALIEYA ZAWANIE BINTI A ZAINI	PROTON SAGA	2023-02-04	2023-07-08	18475	Received	Approval
80	ALIEYA ZAWANIE BINTI A ZAINI	PROTON SAGA	2023-02-11	2023-08-04	20875	Received	Approval
81	ALIEYA ZAWANIE BINTI A ZAINI	PERODUA ALZA	2023-02-11	2023-08-04	34791.6666666667	Received	Approval

Figure 17

10)Admin Page for Viewing The Updated Booking List After Approval

Booking ID	Customer	Vehicle	Pick-up Date	Return Date	Total Price	Status	Operation
64	ana razali	X70	2023-01-07	2023-01-13	1800	Approved	Change
65	ana razali	PERODUA ALZA	2023-01-07	2023-01-28	4200	Rejected	Change
68	ALIEYA ZAWANIE BINTI A ZAINI	PERODUA ALZA	2023-01-13	2023-01-14	200	Approved	Change
74	alieyazawanieeeeeeyeeee	PROTON SAGA	2023-03-10	2023-03-25	1800	Rejected	Change

Figure 18

11)Admin Page Verify Booking Status

The screenshot shows a web page titled "Booking Details". The page displays the following booking information:

Booking ID	67
Customer Name	ALIEYA ZAWANIE BINTI A ZAINI
Customer Contact	0195530957
Customer Address	Lot 843, Persiaran Salak 2/1, RPTS Salak Baru, 31050 Sg. Siput (U)
Vehicle	PROTON SAGA
Pickup Date	2023-01-06
Return Date	2023-01-14
Total Price	960
Approval	Received

At the bottom left is a purple "Process" button, and at the bottom right are links for "Privacy Policy" and "Terms of Use".

Figure 19

12)Admin Page Adding New Vehicle

The screenshot shows a web page titled "VEHICLE INVENTORY". The page contains fields for entering vehicle details:

- Register Number: Enter The Vehicle Register Number
- Type: Select Type
- Model: Please Enter The Vehicle Model
- Year: Please Enter The Vehicle Year
- Price: Please Enter The Car Rent Price
- Insert Image: Choose File No file chosen

At the bottom are two buttons: "Add Vehicle" and "Clear".

At the bottom left is a copyright notice: "Copyright © 2023 Alieya Sdn. Bhd.", and at the bottom right are links for "Privacy Policy" and "Terms of Use".

Figure 20

13)Admin Page Modify Vehicle Update

The screenshot shows a web page titled "Modify Form". At the top, there is a navigation bar with links: "Alieya Sdn. Bhd", "Booking List", "Add New Vehicle", "View List of Vehicle", "Search Booking", and "Logout". Below the title, it says "Vehicle Registration Number: ABD 123". There is a single input field labeled "Price" containing the value "120". At the bottom of the form are two buttons: "Modify" (purple) and "Clear Form" (red).

Figure 21

13)Admin Page Searching For Vehicle Current Update

The screenshot shows a web page with a search interface. At the top, there is a navigation bar with links: "Alieya Sdn. Bhd", "Booking List", "Add New Vehicle", "View List of Vehicle", "Search Booking", and "Logout". Below the navigation bar, there is a search bar with the placeholder text "Search by entering booking ID". At the bottom of the search interface are three social media icons: Facebook, Twitter, and Instagram. At the very bottom of the page, there is a footer with links: "Copyright © 2023 Alie", "Privacy Policy", and "Terms of Use".

Figure 22

G) LOCALHOST SETUP

i)XAMPP

- 1)Visit the official XAMPP website: <https://www.apachefriends.org/download.html>
- 2)Select the version of XAMPP you want to download based on your operating system.
- 3)Download.
- 4)Once the download is complete, run the installer and follow the on-screen instructions to complete the installation and be sure to select the components you want to install during the setup process. By default, XAMPP installs Apache, MySQL, and PHP.

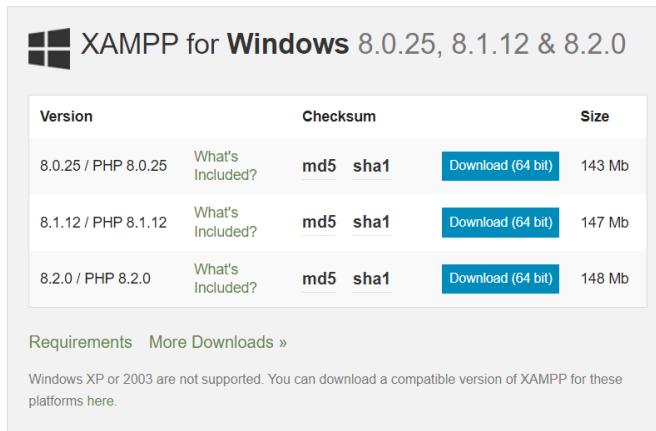


Figure 23

ii)Sublime Text

- 1) Visit the official Sublime Text website: <https://www.sublimetext.com/>
- 2) Click the "Download" button in the top right corner of the page.
- 3) Select the version of Sublime Text you want to download based on your operating system.
- 4)Once the download is complete, run the installer and follow the on-screen instructions to complete the installation.

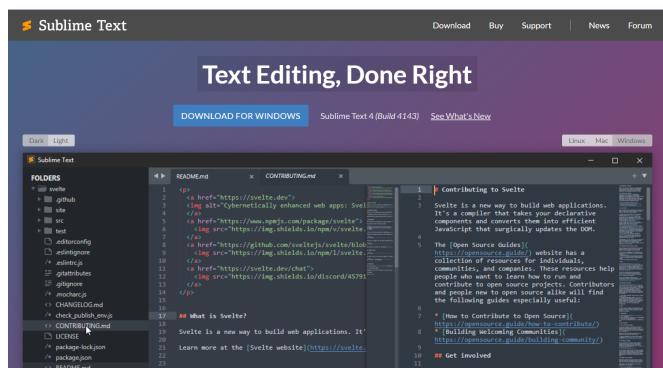


Figure 24

iii) PhpMyAdmin

- 1) Start the Apache and MySQL modules in XAMPP. You can do this by clicking the "Start" buttons next to each module in the XAMPP control panel.
- 2) Click 'Admin' on MySQL.

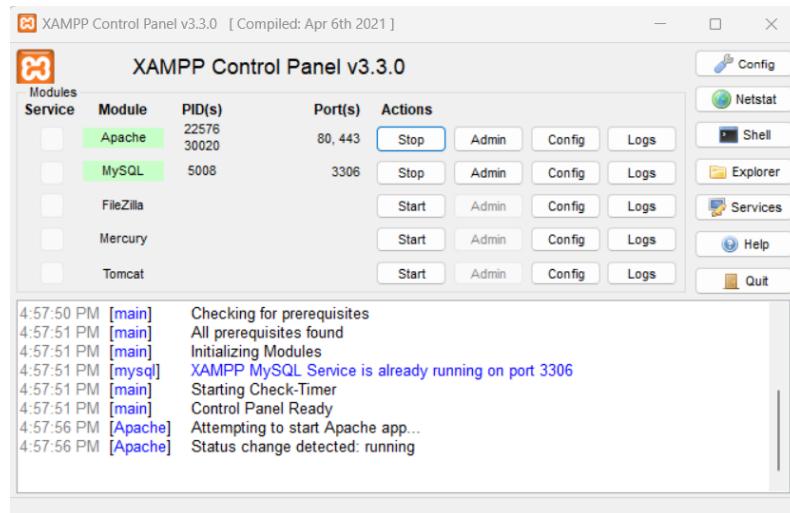


Figure 25

- 3) After clicking on MySQL in will be redirected to this page

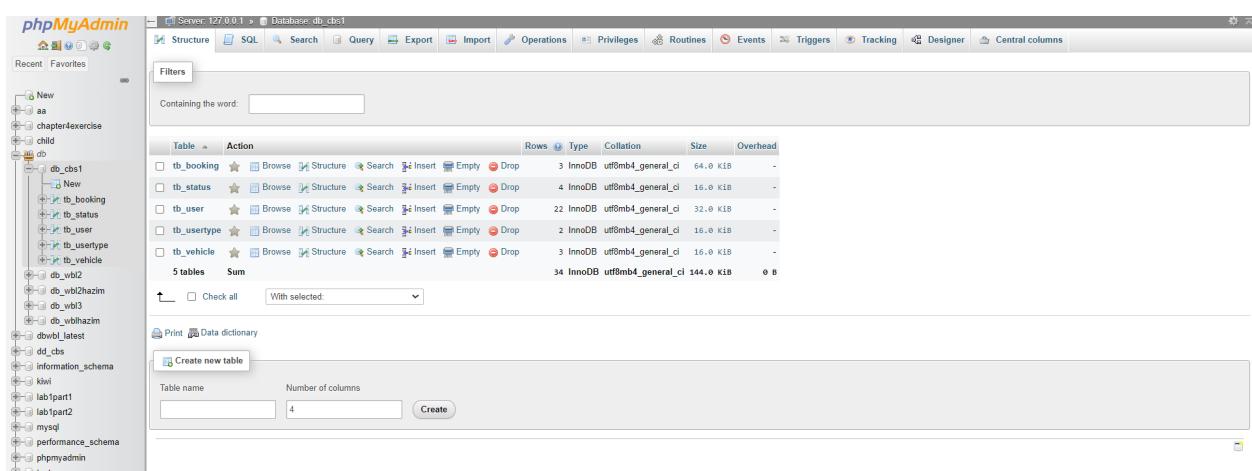


Figure 26

- 4) View phpMyAdmin by clicking the ‘Admin’ button on the ‘Actions’ section of the MySQL module.
- 5) After that, click on new to create a new database and name it ‘db_cbs1’.
- 6) Create the table and fill the table in ‘db_cbs1’.
- 7) View web pages in the local host: <http://127.0.0.1/cbs/>

H) URL

View web pages in local host: <http://127.0.0.1/cbs/>

The website : <https://alieyazawaniecar.000webhostapp.com/>

I) USER CREDENTIALS

Admin:

IC Number	Password
970889091242	Password123_
012343129012	Password123_

Customer/Client:

IC Number	Password
02022678012	Password123@
890178092312	Password123@