# UOW
# MALAYSIA
## KDU PENANG
## UNIVERSITY COLLEGE

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**PART OF THE UNIVERSITY
OF WOLLONGONG AUSTRALIA
GLOBAL NETWORK**

School of Engineering, Computing & Built Environment

Department of Computing

Diploma in Information Technology

**USER INTERFACE DESIGN (DUD1204)**

January 2021 Semester

[LECTURER'S NAME: Dr. Lim Chia Yean]

[Assignment 2]

[STUDENT NUMBER & STUDENT NAME]

| | |
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DUE DATE        :  [Week 12]

TOTAL MARKS   :  [        / 15%]

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**Assignment 2: Group work (3-4 students in a group)**

| Due date for submission | Week 12 |
|---|---|
| **Marks** | 100% (Weighted marks: 15%) |

**Course Learning Outcomes:**

| CLO3 | **Creatively design an interface by applying the HCI factors.** |
|---|---|

**Background:**

There are plenty of vehicles owned by the working adults who are busy and do not have time to wash and maintain their own cars' cleanliness. As such, many car wash centers have been established to serve the needs of car wash and maintenance services for the people. One problem with the car wash center is there is always long waiting queue for car wash due to no booking system is available. You and your team have been appointed by a local car wash center to design a new car wash and maintenance booking system (website/apps). The local car wash center that you choose MUST NOT have any online booking platform before. You and your team are required to produce a report together with paper prototype to the car wash center owner before they decided to pay you on the project.

Please prepare the report and prototype as follow:

**Part 1: Introduction to the car wash center booking system (5%)**
You must introduce the business of the car wash center of your choice. You can also give brief history of the car wash center together with the unique products/services which could help you to understand more about the car wash center for your system design later.

**Part 2: Paper Prototyping – User Interface Design (25%)**
You are required to include at least 3-4 features (according to your group size) in the booking system. The features could be customer registration, car wash and maintenance booking page (catalogue), booking review/edit, customer support…etc. [Hint: You may introduce any new unique and useful feature to the system too].

Design all the user interface of your proposed features to form a complete paper prototyping system. For example, 1 homepage; 1 user interface page for customer registration; 3 user interface pages' for booking a service (3 steps or less), 1 user interface page for view car wash packages …etc. You are free to use any user interface design tool to produce the user interface design such as Wix, Adobe XD, Adobe Photoshop…etc. Avoid using existing template and show your original design concept.

**Part 3: Justification of Design (20%)**
Based on your design in part 2, write your justification with references to Principles of Good Screen Design and other relevant design theories/principles which you learnt in this subject. Include relevant references to support your justifications.

**Part 4: Prototype User Evaluation (20%)**
You are required to conduct end user evaluation for your prototype system by using any 4 areas of Nielsen's Usability Components. Approach potential 5 users to participate in your evaluation. Make an evaluation summary for your prototype system based on the users' feedback.

**Part 5: References (10%)**
You are required to include full list of your references at the end of report as reference list. Write your reference in Harvard referencing format. In-text citation is required as well.

**Part 6: Presentation/Demonstration (20%)**
Your team is required to make presentation to the lecturer on your web/app design output and all areas of report (Part 1-5) in 15-20 minutes.

**Submission Instructions:**

Use font type of Times New Roman, font size of 12 to present your report. Kindly submit your assignment according to the sequence of items listed in the table:

| Content | Format | Submit to |
|---|---|---|
| Cover Page | Softcopy (PDF file) | Upload to Canvas |
| Portfolio Report | | |
| Marking rubric | | |

You are required to present your answers neatly where the indentations and alignment of text must be properly set. Kindly fill up the details of your assignment cover page with the module code, module title, student ID, and submission date. Attach the Marking Rubric in the last page of your report. If you have any questions regarding this assignment, kindly discuss with the module tutor for further details.

**Rules**
For unauthorized late submission, the standard penalty is 10 marks deduction for a full day lateness or part of it.

# PART 1: INTRODUCTION

**Intro and Background**

City Car Wash & Auto Detailing Center is a car wash center located at Jalan Transfer, Georgetown, 10050 George Town, Penang. This car wash center was opened on 5th April 2019, and it is owned by a company named Krisslech Five Sdn. Bhd. Aside from standard car wash services, they also provide many special detailing services unlike most ordinary car wash centers. They also tailor their services to different types of vehicles other than normal cars, such as SUV (Sport utility vehicle), MPV (Multiple-Purpose Vehicles), 4WD (Four-wheel drive) and motorcycles. Since their grand opening, they have quickly gained much popularity as their wide range of high-quality services makes them easily stand out from their competitors. They have even provided services to sports cars and luxury cars on many occasions.



***Figure 1.1 (left)*:** Main entrance of City Car Wash & Auto Detailing Center
***Figure 1.2 (right)*:** Service crew cleaning and servicing a Porsche GTS

**Business and Services**

City Car Wash & Auto Detailing Center offers 5 major types of services, namely car washes, interior cleaning, waxing, polishing, and coating services. For each type of service, they offer a variety of specific services for customers to choose from. For example, they offer different types of car washes such as auto wash, hand wash, tar cleaning, and chemical wash; for interior cleaning, they offer vacuum, cushion wash, engine wash, and nano mist services. Other than that, they also offer standard packages as well as promotional packages for festive seasons or special occasions, such as Deepavali packages or special packages for COVID-19 frontliners. Their service packages aim to provide customers with full sets of services that range from car washes to various detailing services that bring their customers' cars to their best conditions, at special and reasonable prices. For business hours, they are open from 8 a.m. to 8 p.m. on Monday to Thursday, and 8 a.m. to 10 p.m. on Friday to Sunday.

***Figure 1.3 (left):*** Special Deepavali package
***Figure 1.4 (right):*** Special "Thank you Frontliners" package

## Current business methods

Currently, City Car Wash & Auto Detailing Center manages their customers' reservations using social medias like Facebook and WhatsApp. They periodically add photos of new promotions and limited time offers into their Facebook page to attract existing and new customers. For customers who want to make a reservation, they can use the built-in Facebook booking feature on their page. However, the booking feature on their Facebook page is inconvenient and difficult to use because their services list is incomplete and outdated. It is not only unorganized, messy, and unspecific, but they also do not provide updated and definite prices for most of the services. Additionally, most of the services do not even have descriptions, so customers would not understand some of the services that are named with uncommon words.

Alternatively, customers can choose to make reservations by directly contacting the WhatsApp contact number that the owners have included on their Facebook page. In fact, customers are encouraged to contact their WhatsApp number for prices and more details as the car wash center has not provided complete prices on their Facebook page. However, this method is inefficient as conversations between customers and staff can take a long time, because it may be difficult for the staff of the car wash center to identify and confirm the correct needs of their customers. The lack of staff for handling reservations may also be a major problem in this situation.
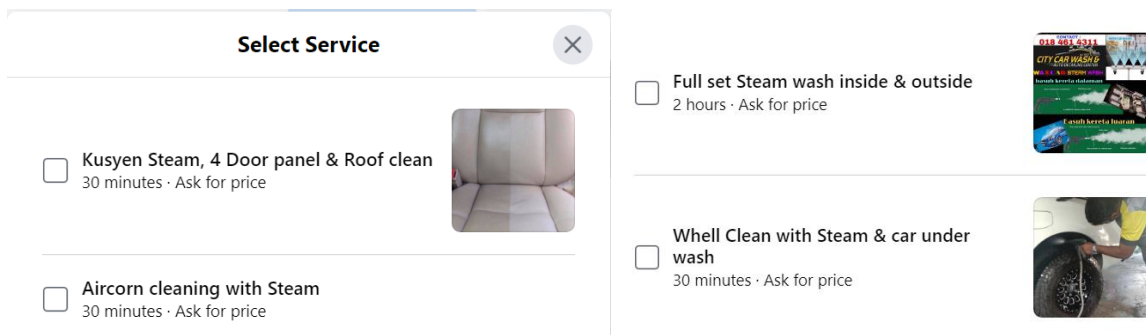


***Figure 1.5:*** Services list in their Facebook booking feature is unorganized, confusing, and incomplete
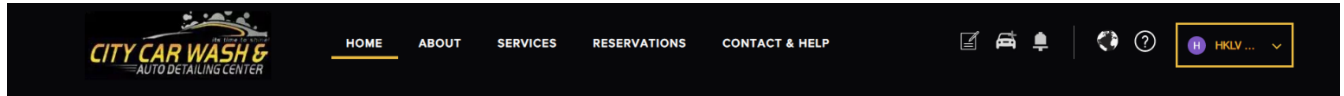
# PART 2: PAPER PROTOTYPING

- **Menu bar and Submenu**



***Figure 2.1.1***: The menu bar of the City Car Wash & Detailing Center booking website

***Figure 2.1.1*** shows the menu bar of the website. From left to right, the menu bar contains the City Car Wash logo, the navigational links, functional icons, and the login or logout button.
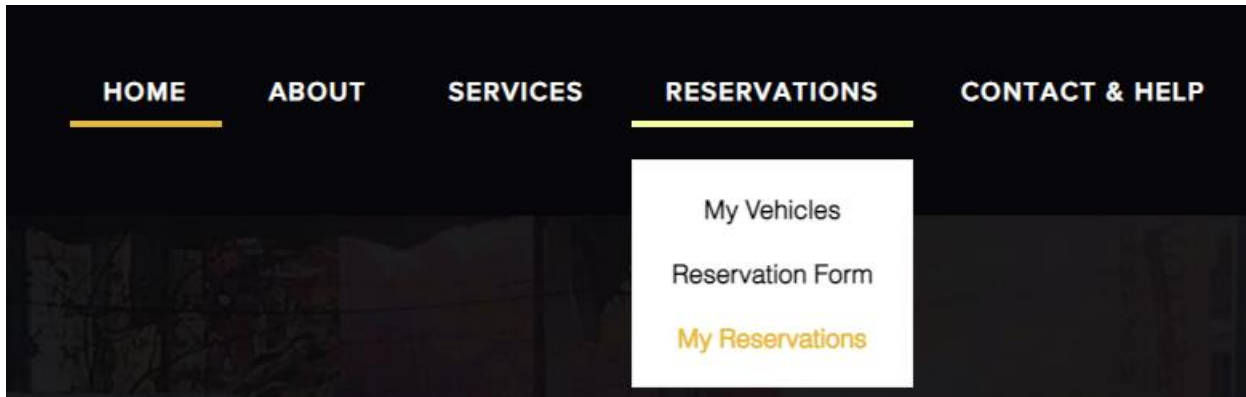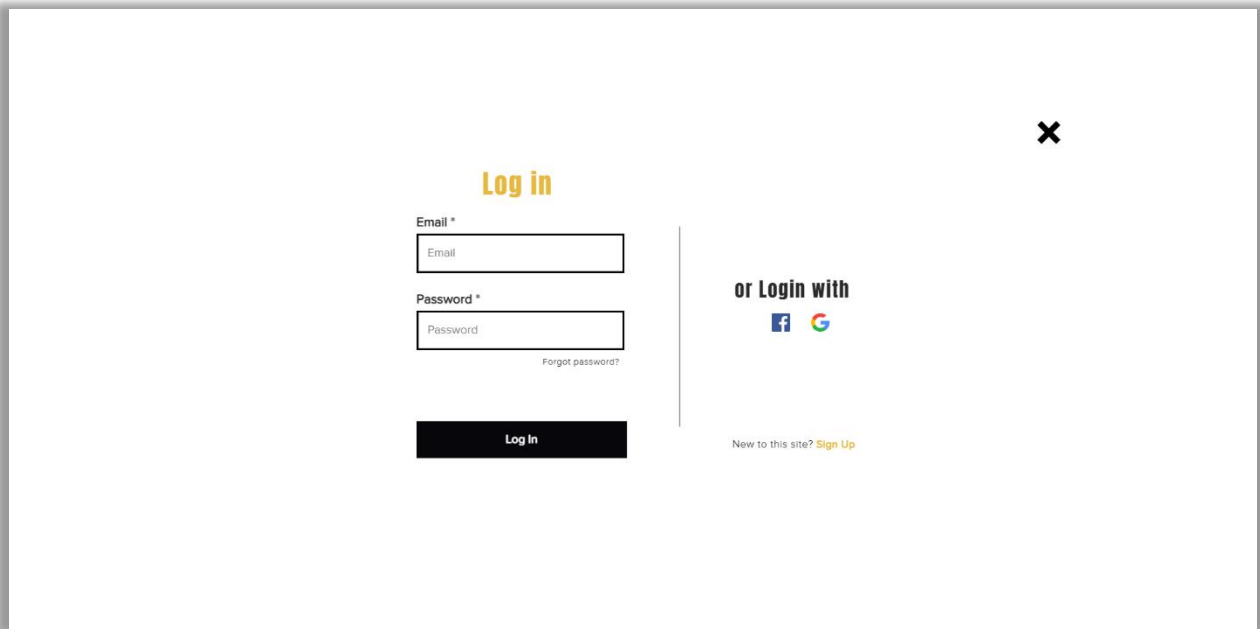


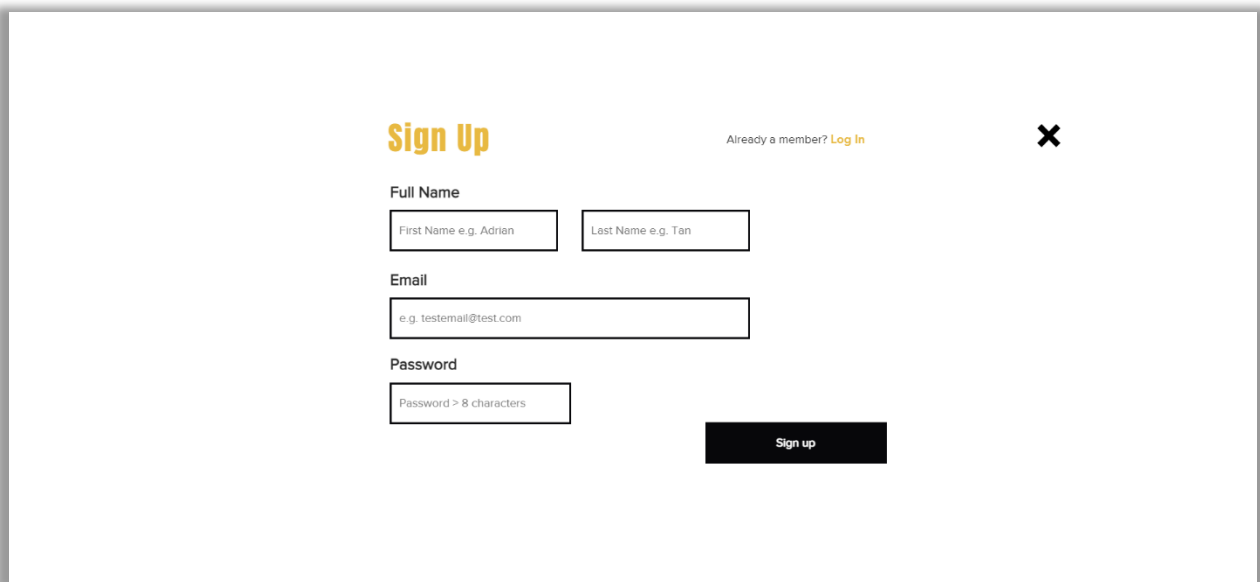***Figure 2.1.2***: The submenu for "Reservations" link

***Figure 2.1.2*** shows the submenu that drops down from "Reservations" when users hover over it. The text of the link within the submenu turns yellow gold when hovered over. The "Services" link also has a submenu with the exact same design.

- **Log in and Sig Up**



***Figure 2.2.1***: "Log in" page (shadow is msWord effect, not part of design)



***Figure 2.2.2***: "Sign Up" page (shadow is msWord effect, not part of design)
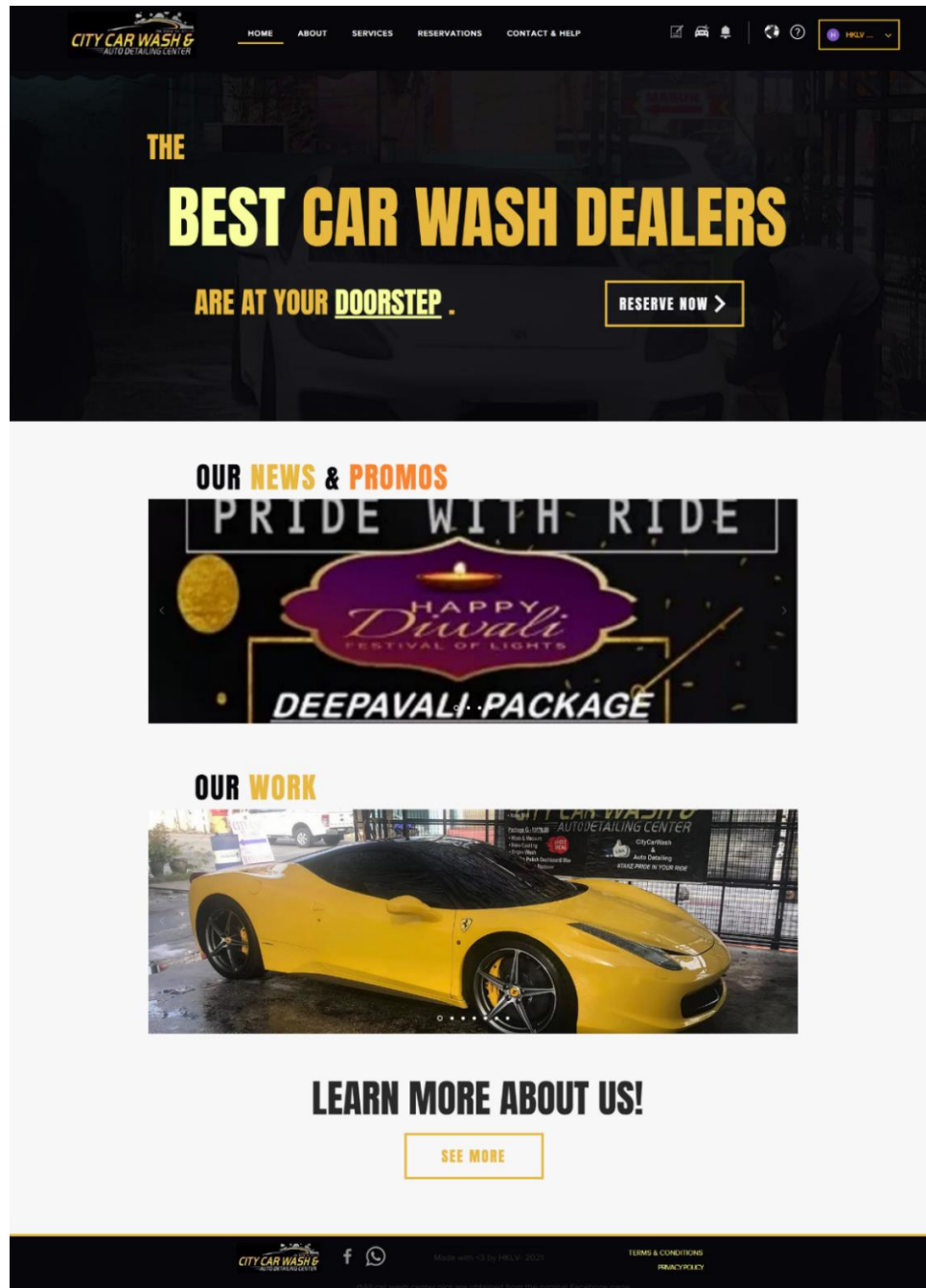
- **Homepage**



***Figure 2.3*:** Homepage of the website

***Figure 2.3*** shows the homepage of City Car Wash & Detailing Center booking website. When users first land on the page, it shows an eye-catching message that lets users know that they are one of the best choices for car wash services. It also consists of their news, promotions, and the best works that they have performed on customers' cars. A call-to-action button which leads to the "About Us" page is placed at the bottom of the page.
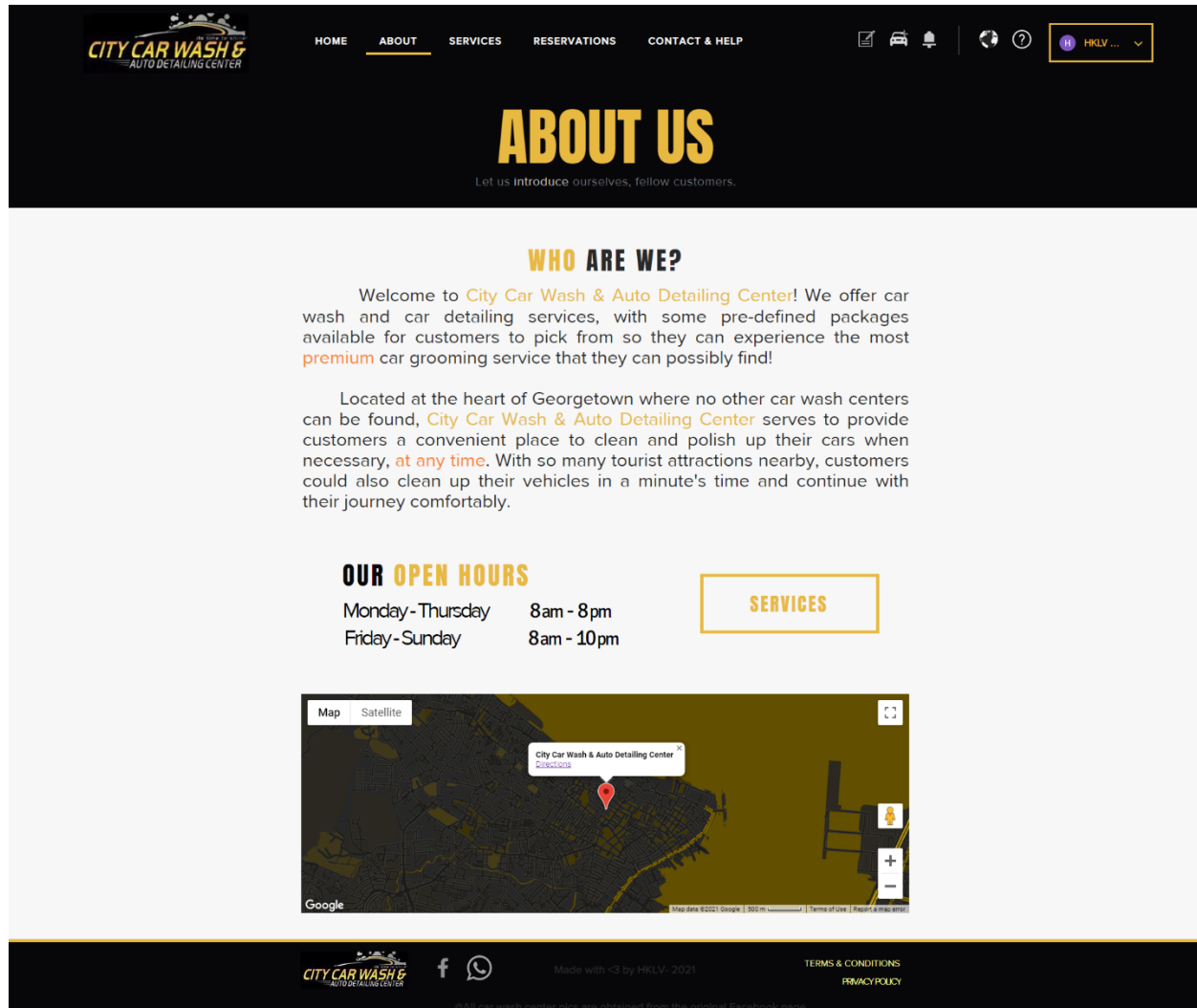
- **About Us**



***Figure 2.4***: "About Us" page of the website

***Figure 2.4*** shows the "About Us" page, which contains a brief explanation of the car wash center, their business hours, and their location in a Google Maps widget. It also has a "Services" button, that acts as a call-to-action button which leads to the "Services" main page.
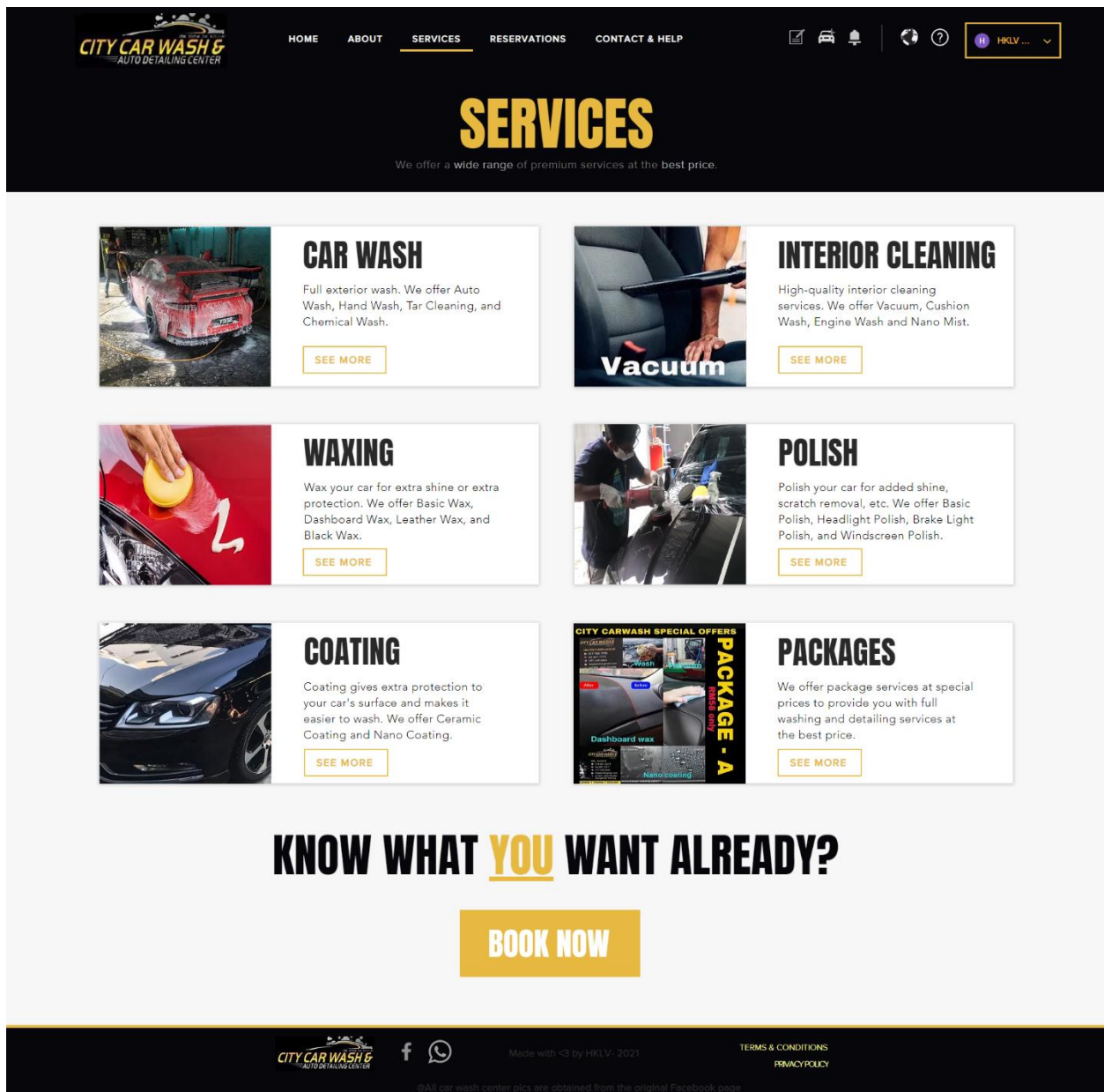
- **Services main page**



***Figure 2.5***: Main "Services" page of the website

***Figure 2.5*** shows the main "Services" page, it shows the main categories of services offered by City Car Wash & Detailing Center. There are short descriptions for every main category, and "See More" buttons that lead users to specific "Services" subpages when clicked. It also has a call-to-action button at the bottom that leads users to the reservation form in the "Reservation Form" subpage.
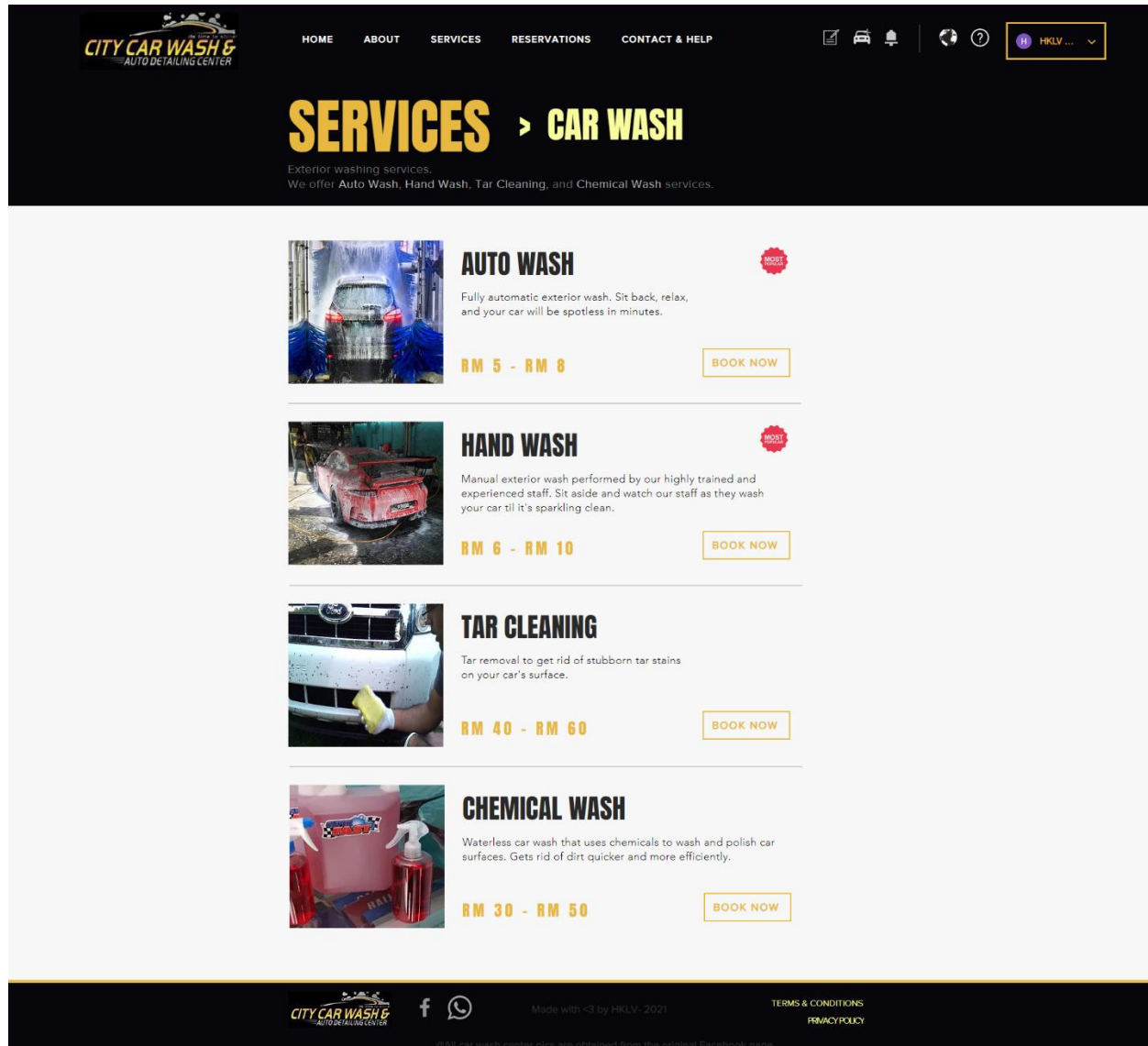
- **Services subpage: Car Wash**



*Figure 2.6*: One of the "Services" subpages of the website, the "Car Wash" subpage

  *Figure 2.6* shows one of the "Services" subpages, which is the "Car Wash" subpage. This subpage shows the specific car wash services offered by City Car Wash. This page shows a vertical listing of specific services. For every service, there is an image of the service, a short description to explain what the service is about, and the prices are shown. Red colour "Most Popular" badges are shown to let users know which services are the most popular. Lastly, there are also "Book Now" buttons for each service, that redirect users to the reservation form. All of the **other "Services" subpages** including "Interior Cleaning", "Waxing", "Polish", "Coating, and "Packages" have the exact **same layout and design**.
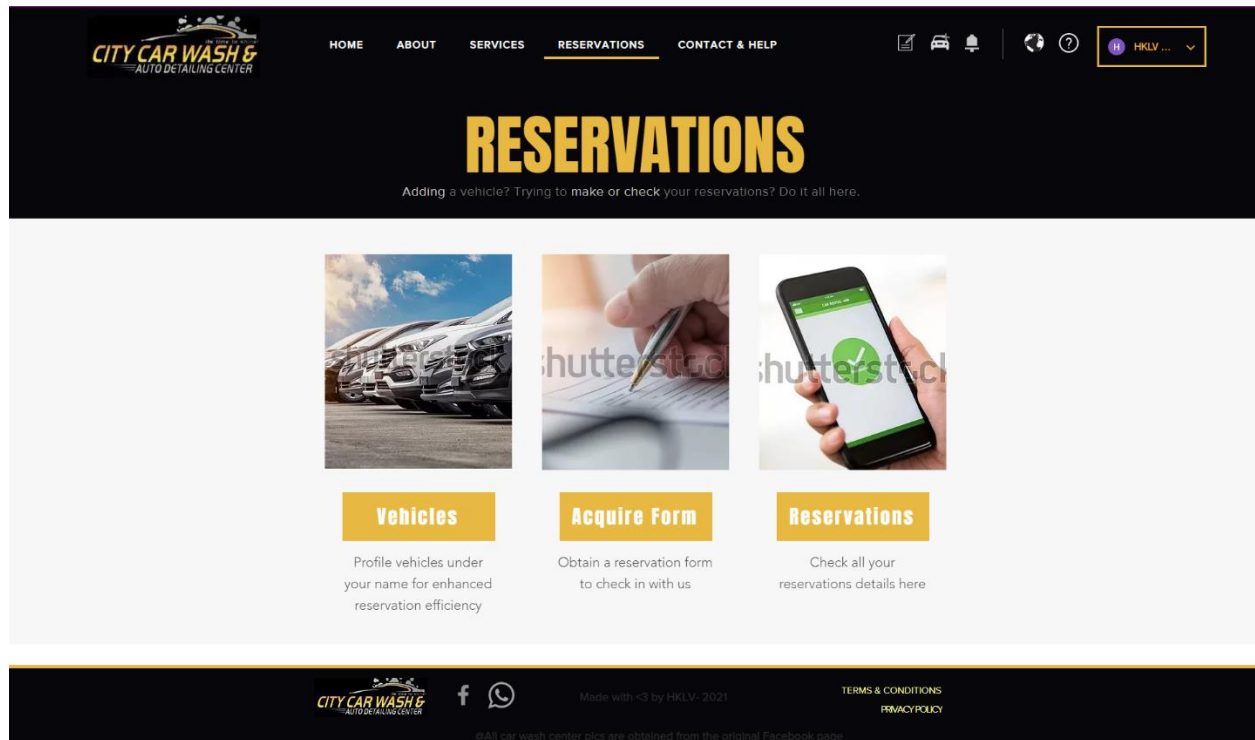
- **Reservations main page**



***Figure 2.7***: "Reservations" page of the website

***Figure 2.7*** shows the main "Reservations" page. This page shows a quick and brief overview of how the reservation system of the website works. It lets users know that the system consists of 3 main parts: adding vehicles, filling and submitting reservation form, and checking reservations. It also has 3 buttons that lead to the "My Vehicles", "Reservation Form", and "My Reservations" subpages, respectively.

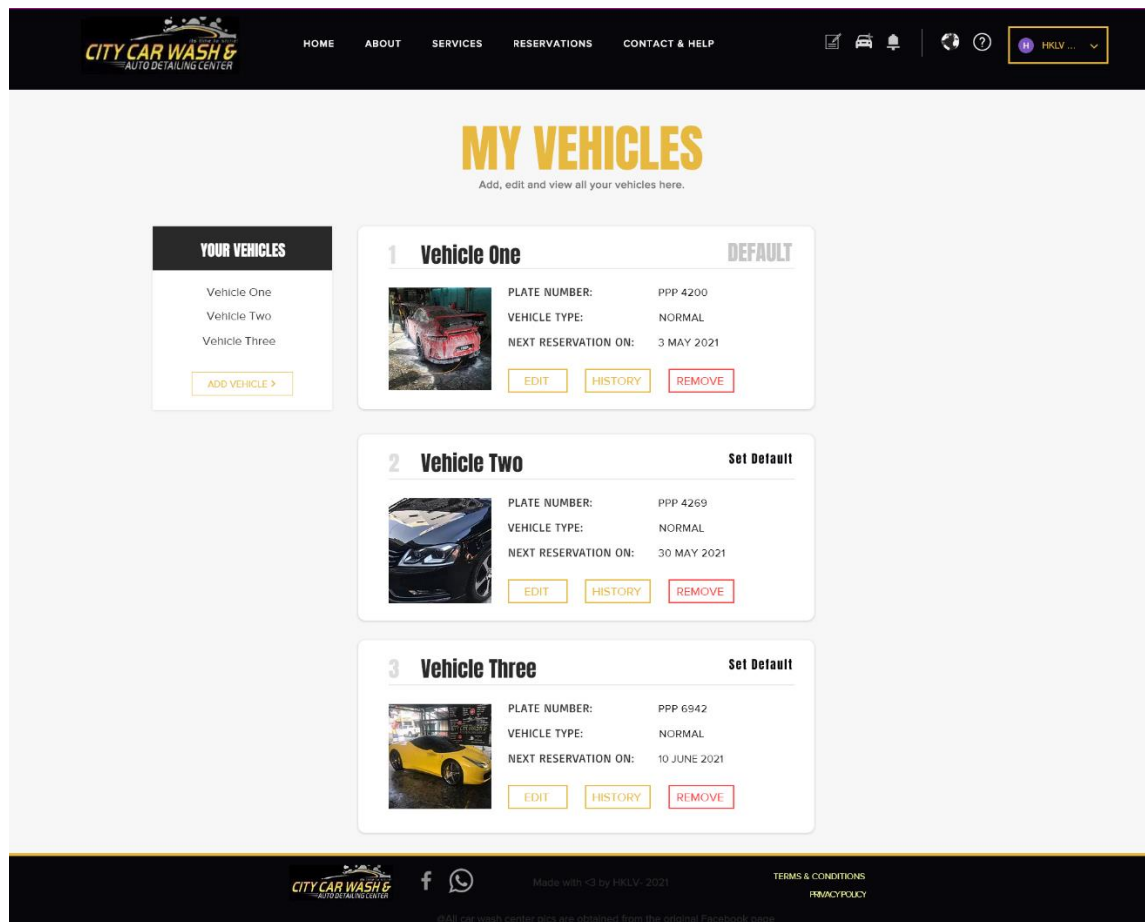- **Reservations subpage: My Vehicles**



***Figure 2.8.1***: "My Vehicles" subpage

*Figure 2.8.1* shows the "My Vehicles" page, which is a subpage of "Reservations". This page consists of the profiles of vehicles that have been added by the user. "Edit", "History" and "Remove" buttons are also included for users to edit vehicle information, view reservations history, or remove the selected vehicle. When users click on "Remove", a confirmation pop-up is shown on the screen (refer to ***Figure 2.8.2***). There is also an option to set a default vehicle, so that every time users make a reservation, that vehicle is automatically selected for the reservation.
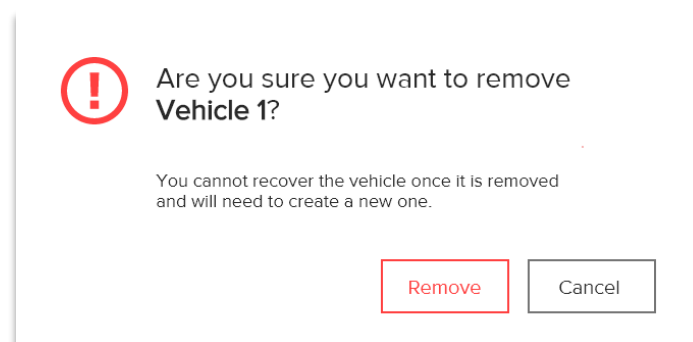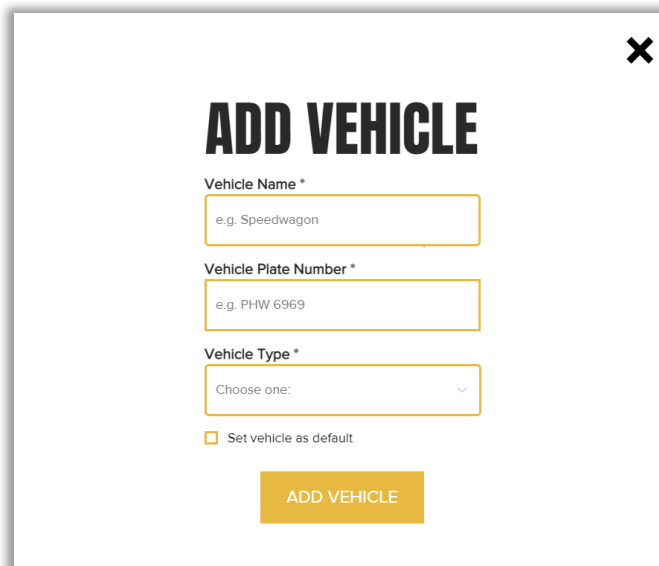


***Figure 2.8.2***: Confirmation for removing vehicle

A small box on the left labelled "Your Vehicles" shows the list of vehicles added by the user. Each vehicle name in the list is a clickable button that is linked to anchor points on the page, which are positioned at each vehicle profile. This allows users to easily locate a specific vehicle profile if they have added many vehicles. There is also an "Add Vehicle" button that allows users to add their vehicles into the system, this is necessary so that they do not have to repeatedly provide details about their vehicle each time they make a reservation.

When users click on the "Add Vehicle" button, a lightbox containing a form pops up on the screen (refer to *Figure 2.8.3*). This form prompts the user to enter details of their vehicle. Once users add their vehicle, a profile of that vehicle is added onto the "My Vehicles" subpage, and a message box pops up at the top right of the screen to notify users that the vehicle was successfully added (refer to *Figure 2.8.4*).



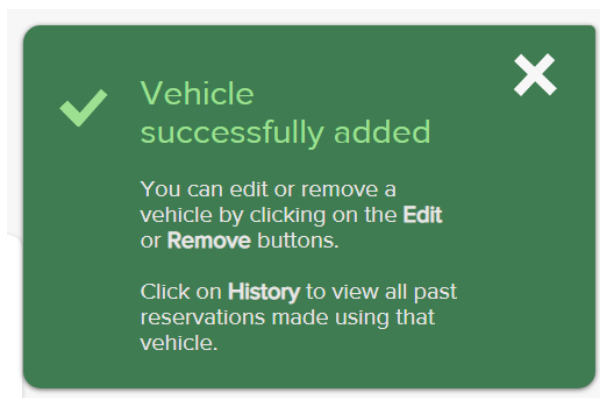*Figure 2.8.3*: "Add Vehicle" form in a lightbox that pops up



*Figure 2.8.4*: Pop-up box with a message to notify users that their vehicle was added successfully

- **Reservations subpage: Reservation Form**



***Figure 2.9.1*: "**Reservation Form" page

***Figure 2.9.1*** shows the full zoomed out "Reservation Form" page. Each section is clearly separated to make it easier for users locate specific fields.

***Figure 2.9.2***: Section 1 of the reservation form (customer info)

In ***Figure 2.9.2***, "Full Name" is a text input field, "Contact Number" is a phone number input field, and "Select Vehicle" is a dropdown field.



***Figure 2.9.3***: Section 2 of the reservation form (reservation date and time)

In ***Figure 2.9.3***¸ "Date" is a date picker field and "Time" is a time picker field.

**Figure 2.9.4:** Section 3 of the reservation form (choosing services)

In **Figure 2.9.4**, users may only choose one option from "Package (recommended)" and "Customize your services". If the first option is chosen, all checkboxes in *Section 3b* will be greyed out and disabled; if the second option is chosen, the dropdown menu in *Section 3a* will be greyed out and disabled. For *Section 3b*, users may choose any specific services according to their preference as long as they do not overlap.

Finally, when users click the submit button labelled "Continue", a lightbox will pop up on screen. Refer to **Figure 2.9.6** (on next page), this lightbox is for users to confirm the reservation details and select their payment method. Depending on the selected payment method, the outcome of pressing "Next" will differ. After completing the whole process of making reservation, a message box will pop up on the top right of the screen, to notify users that the form was submitted successfully (refer to **Figure 2.9.5**).
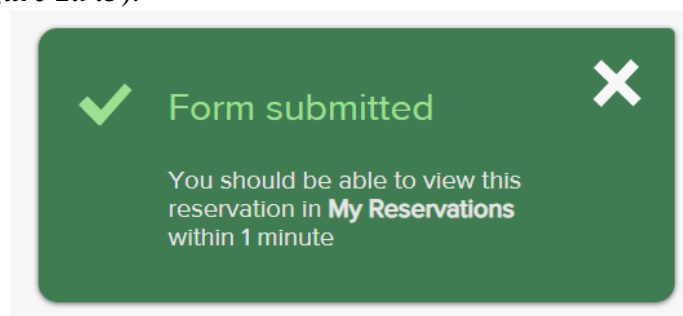


**Figure 2.9.5:** Pop-up box with a message to notify users of successful submission of reservation form

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***Figure 2.9.5*:** Lightbox for confirming reservation details, and selecting payment method

- **Reservations subpage: My Reservations**
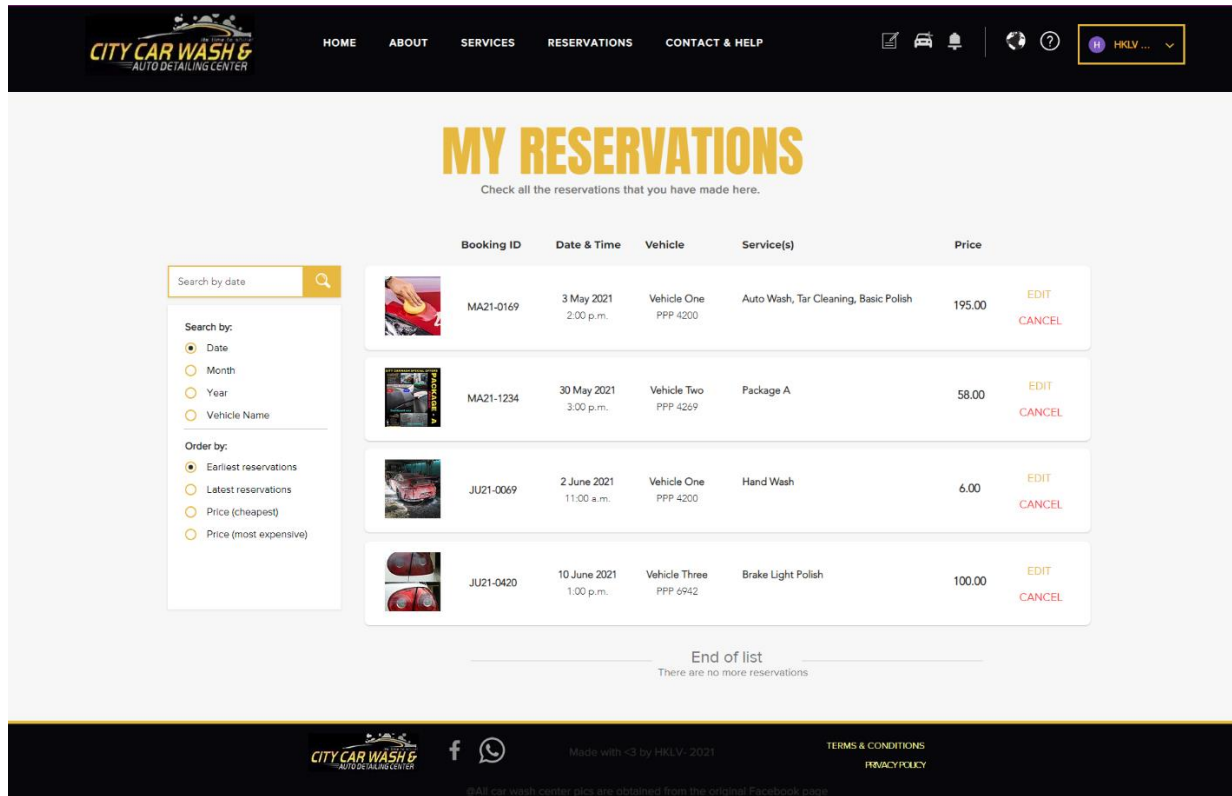


***Figure 2.10.1***: "My Reservations" page

     ***Figure 2.10.1*** shows the "My Reservations" page. This is the page where users can check all the upcoming reservations that they have made. All necessary details of each reservation are provided to users. Users may also edit or cancel their reservations if they need to, under conditions set by City Car Wash. When users click "Cancel", a confirmation box pops up on the screen to ask for confirmation of reservation cancellation from the user (refer to ***Figure 2.10.2***).
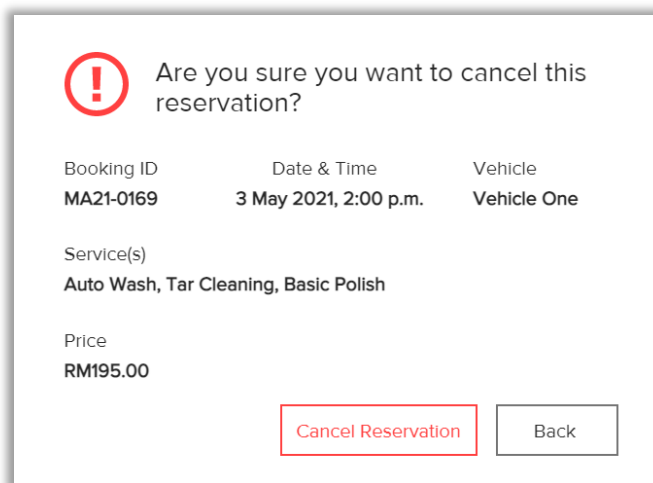


***Figure 2.10.2***: Pop-up box for confirmation of reservation cancellation

- **Contact & Help**
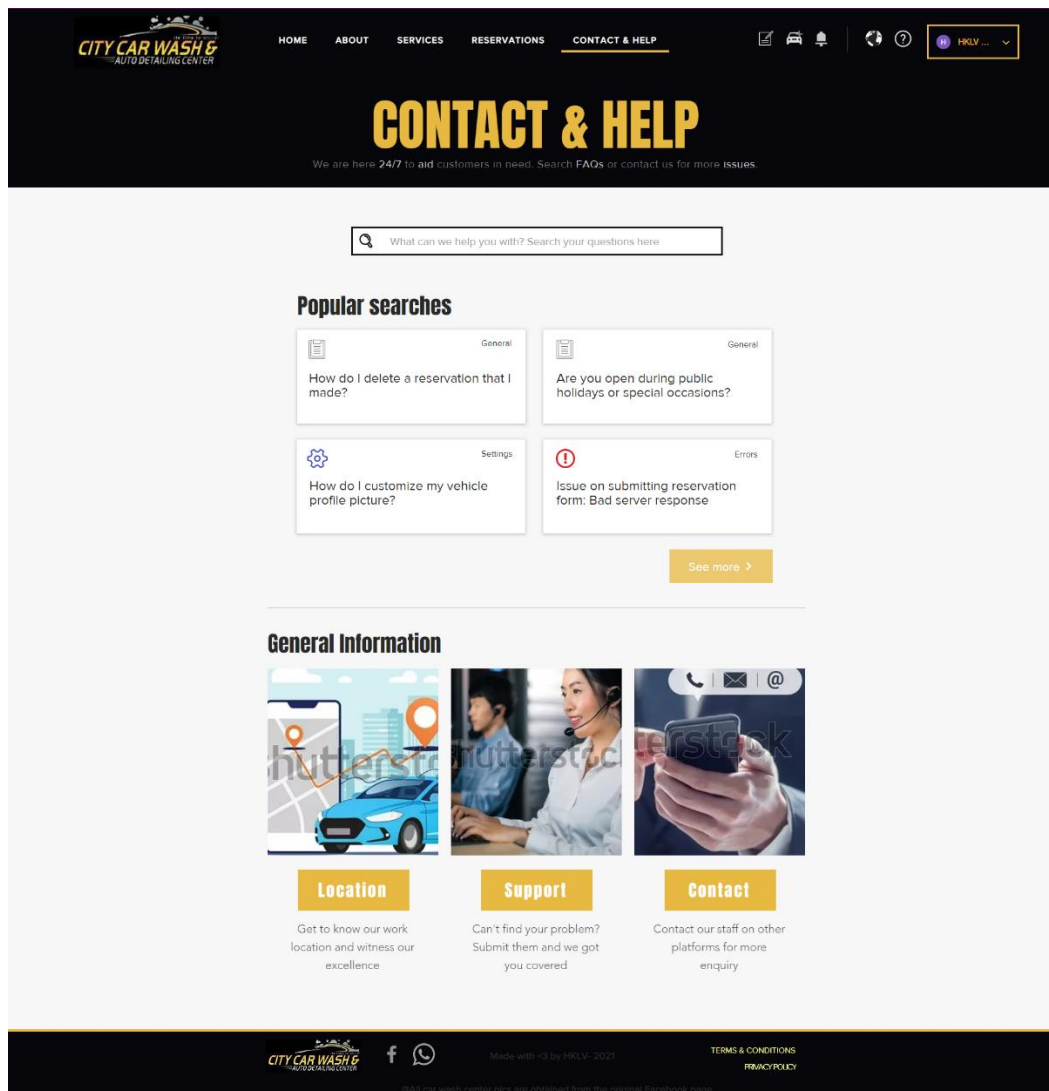


***Figure 2.11.1***: "Contact & Help" page

***Figure 2.11.1*** shows the "Contact & Help" page. The search bar at the top can be used for finding answers to their questions, it leads users to a forum when users enter their search. When users click on the "Location" button, they will be redirected to the car wash center's location in Google Maps. If "Support' is clicked, a help and support form pops up on the screen (refer to ***Figure 2.11.2***). If "Contact" is clicked, a sidebar appears and displays the main contacts of City Car Wash (refer to ***Figure 2.11.3***).

***Figure 2.11.2***: "Help & Support" form



***Figure 2.11.3***: Sidebar containing the main contacts of City Car Wash

# PART 3: JUSTIFICATION OF DESIGN

- **Consistency**

Firstly, the design of City Car Wash & Detailing Center booking website has achieved **real-world consistency**. For example, the menu bar is placed horizontally across the top of the screen, the website logo is placed at the top left of the screen, while the login button and other major functional buttons are placed at the top right of the screen. The positioning of these various screen elements is consistent with most real-world websites, so it matches with the mental model of most users as it meets their expectations of where these screen elements are usually placed.
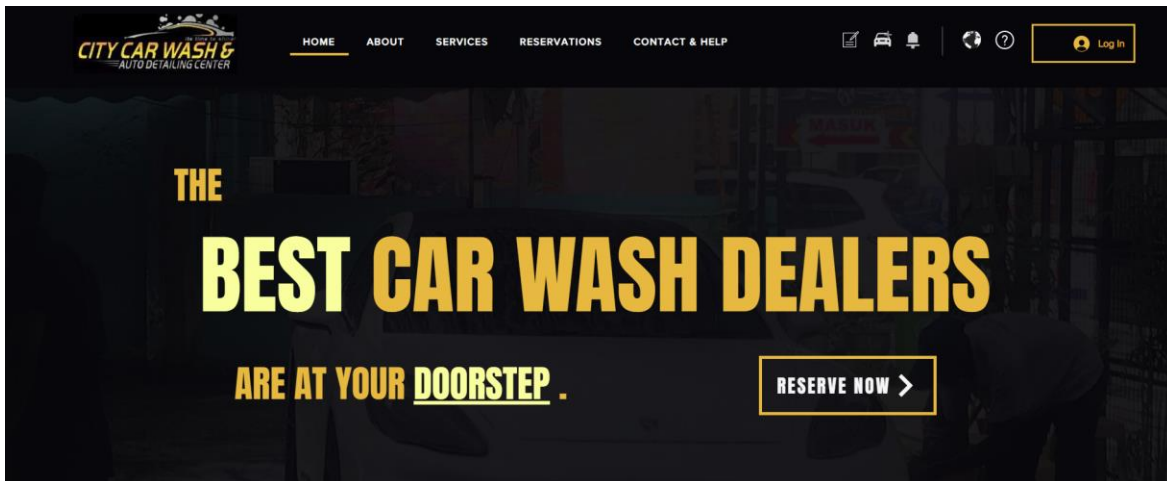


***Figure 3.1.1***: Real-world consistency in positioning of the menu bar, website logo, and login button
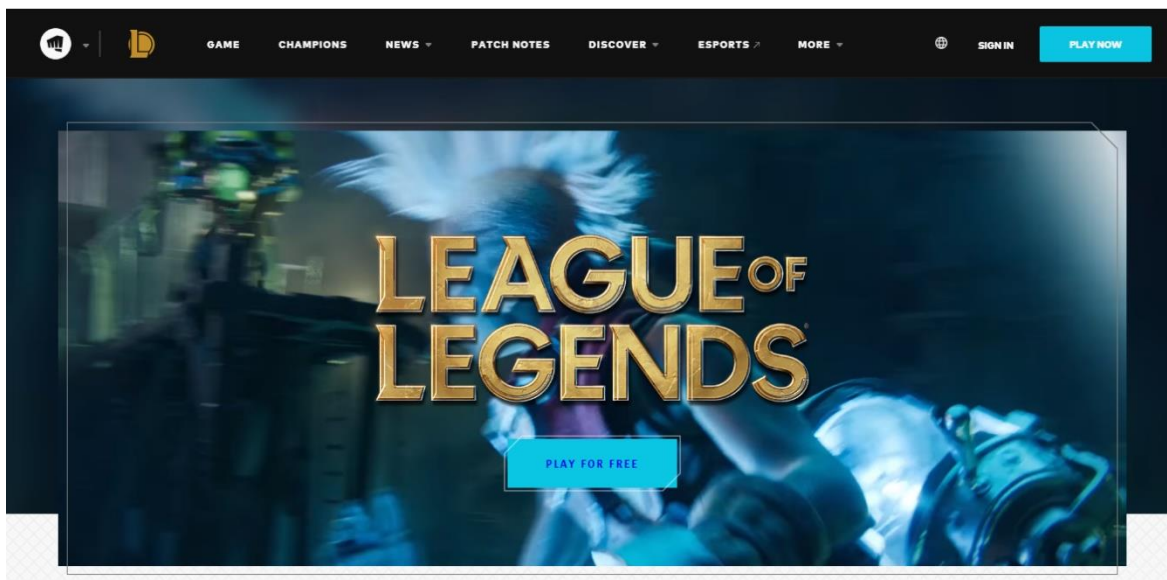


***Figure 3.1.2***: The layout of the header on the League of Legends official website

The design of the website also has **internal consistency** in terms of visual identity or theme, and components of the design. For the colour scheme of the design, it uses colours that can be found in City Car Wash's logo, which include yellow-gold, white, light grey, and black. These colours are applied to all design components consistently throughout the website to achieve consistent visual identity or theme. Aside from the colour scheme, components of the design also use consistent font types, font sizes, shapes, and so on, to achieve consistency in presenting and displaying screen elements to users. For example, descriptions or paragraphs only use the font "Avenir Light" or "Proxima Nova" depending on the font size, main titles and subtitles only use the font "Anton", most important buttons are rectangular, etc. These consistencies allow users to easily identify and differentiate the various types of screen elements from each other.

Although mostly consistent, the website uses some **inconsistency** as the design of some webpages slightly deviate from the main design of other pages. As written in a book by Wilbert O. Galitz, if an inconsistency will benefit the users, consider deviating from consistency (Galitz, 2007, 134). The website's design applies this theory on the "Reservations" subpages, which include "My Vehicles", "My Reservations", and "Reservation Form". Refer to *Figure 3.1.3* and *Figure 3.1.4*, the title strips on these subpages have transparent backgrounds, while other main pages have black background title strips. The purpose is to indicate to users that these subpages are where they will perform most of their manual or important tasks, and the extra white space helps the users perceive that they have more freedom in performing tasks. Meanwhile, other pages with black title strips are mostly for conveying and displaying information. This inconsistency is beneficial for users as it helps them easily differentiate the main purpose of the webpages.
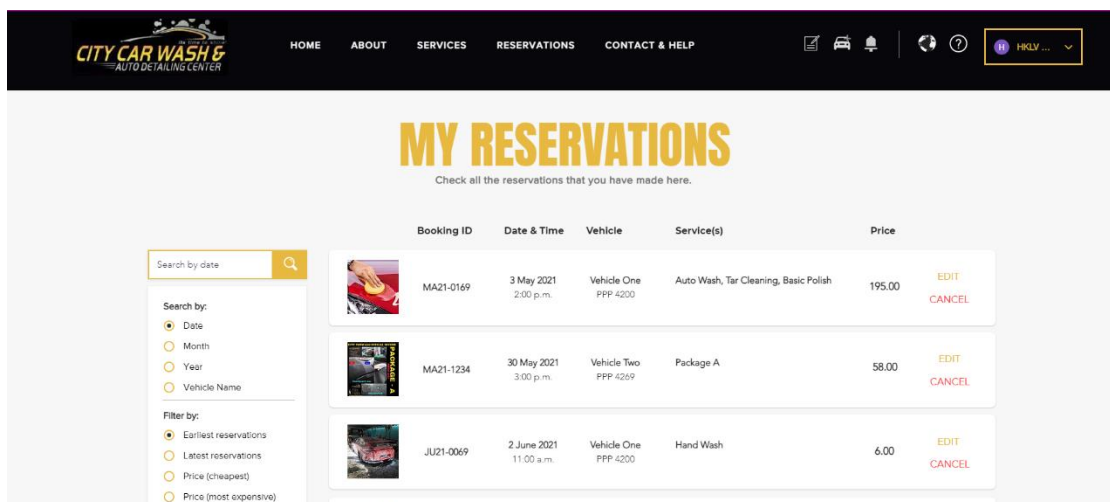


*Figure 3.1.3*: The title strip of the "My Reservations" subpage has a transparent background
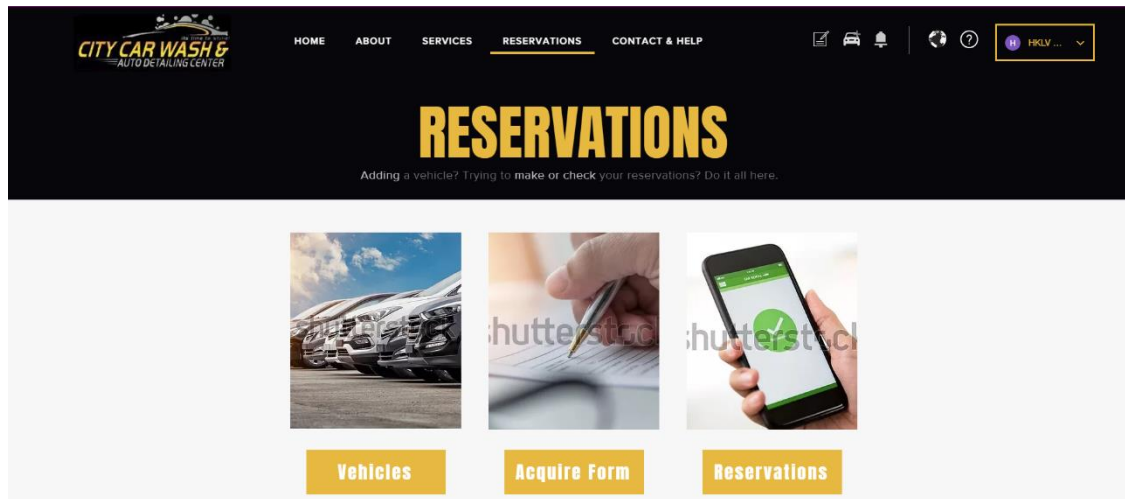
*Figure 3.1.4*: The title strip of the "Reservations" main page has a black background

- **Starting Point**

According to Wilbert O. Galitz, an obvious **starting point** of understanding the design and layout of a webpage is from the upper-left corner of the screen, as it is the location where visual scanning begins and will permit a left-to-right, top-to-bottom reading of information or text as is common in Western cultures (Galitz, 2007, 135).
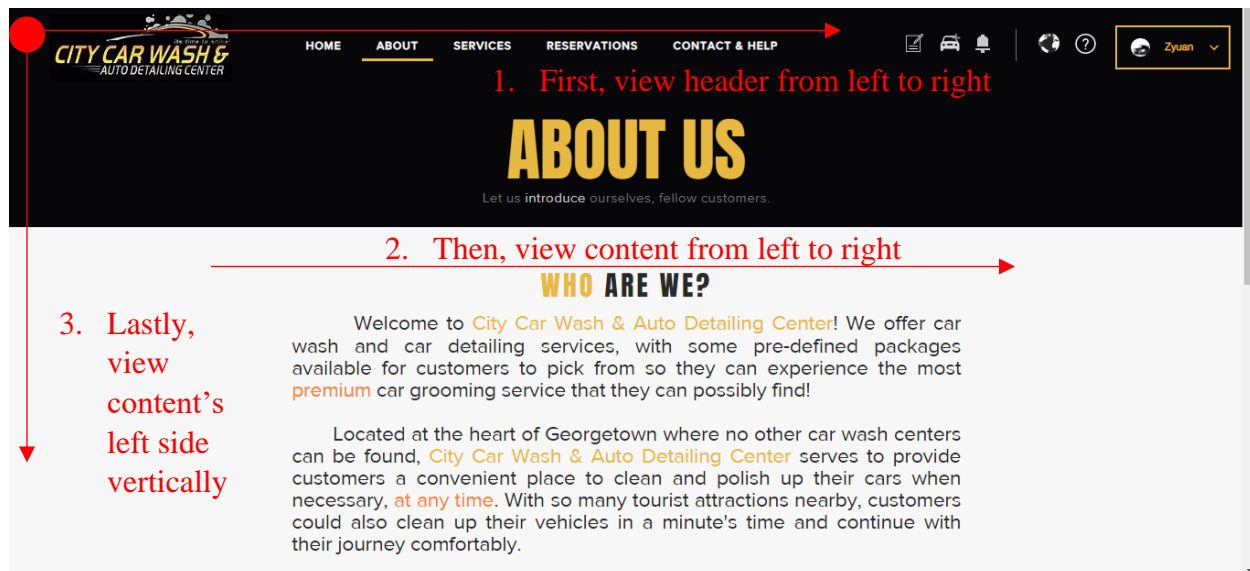


*Figure 3.2.1*: The starting point of most pages in the website, and common eye movement of users as mentioned by Wilbert O. Galitz as being an 'F' shaped scan (Galitz, 2007, 136)

Therefore, when a user enters an unfamiliar website, their eyes would first go to the upper-left corner of the screen. So, the company logo and the menu are affixed to the top left of the screen as a form of the website's identity, which lets users confirm that they are on the correct website. This gives them a sense of having a stable landing position on the website and they are more compelled to continue exploring the website.

Once they have an idea of where to start reading website content, they would then apply this idea when navigating to different pages on to the website. For example, when users learnt that the starting point of reading the website is from the upper left of the screen and they should read following a left-to-right, top-to-bottom pattern, they will also apply that idea when scanning the table content presented in the "My Reservations" page as shown in *Figure 3.2.2*. Instead of feeling confused on where to start reading, they would begin evaluating the table section in the page using the starting point as reference: They would first find a control panel to filter search results on the left, then the table's header on the top right, and lastly its contents on the bottom right.



*Figure 3.2.2*: An order of what the user sees when viewing the "My Reservations" table, using the idea of starting points. Users will see the control panel first as it is the closest to the starting point when users scan from left to right initially

- **Navigation & Flow**

The City Car Wash & Auto Detailing Center website also possesses a natural information **flow** and allows effective user eye **navigation.** This enables information to be clear and easy to understand by presenting information in a logical sequence, and not fit everything in one screen.
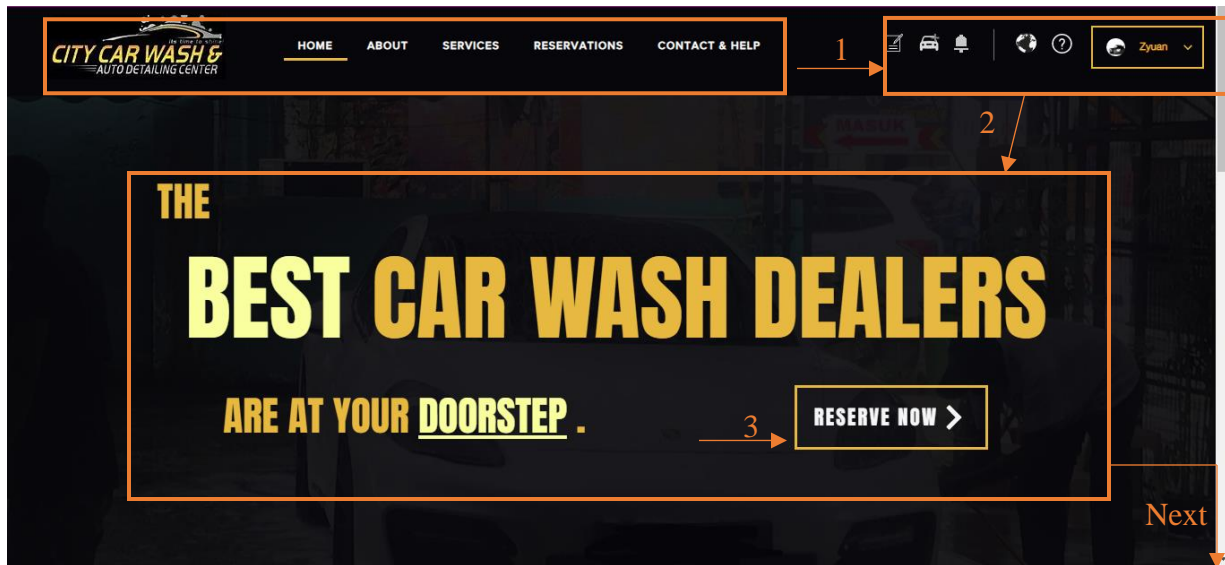


***Figure 3.3.1*:** A simulation of the flow of eye movement to view website content based on progressive questions they will have as they use the website

Navigation is also assisted by distinct spacings and groupings adopted by the website. ***Figure 3.3.2*** shows the sections in the reservation form of the car wash center booking website. Sections are created in the reservation form by maintaining spacing that is adequate for users to visually separate each form section. Related input fields are also placed in proximity, which produces distinct groupings of elements for each form section. So, users can easily distinguish the different sections, which consist of different types of information to be acquired from the user. Line borders are also used to enforce the separation between form sections. Incrementing numbers can be vaguely seen on the left of each form section to indicate the order of user input, but not so visible to avoid distracting the users from their flow of actions.



***Figure 3.3.2*:** The website's reservation form, each form section is separated with a line border, spacing and numbering

The subpages of "Services" and "Reservations" pages are also hidden inside a dropdown menu to differentiate their level of depth. By making them appear only when users hover over their respective columns, it will provide users with a sense that the functions hidden inside the dropdown are more content specific and are unsuitable for displaying them generally. Call-to-action buttons are also placed at the end of each introductory page as a form of quick navigation tool after they have finished viewing the page they are currently in. For example, after users finish viewing the homepage, they might want to check out the introduction of the car wash center to get to know more about it. Therefore, a button that directs them to the "About" page as shown in *Figure 3.3.4* is placed at the bottom of the homepage so they wouldn't need to scroll all the way up again to access the "About" page using the menu bar.
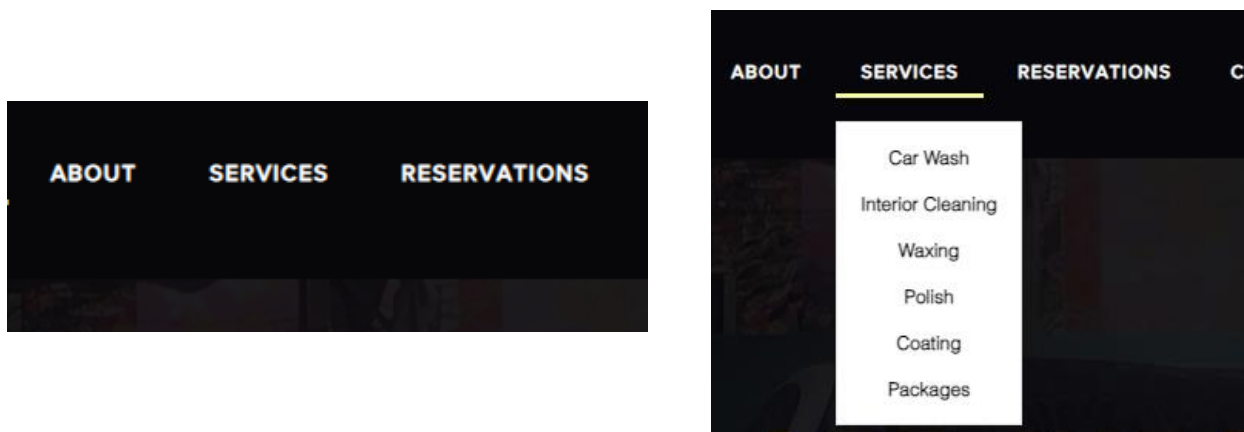


*Figure 3.3.3*: Categories of the services offered by the car wash center is hidden in a dropdown to provide a higher level of depth and a cleaner appearance to the menu



*Figure 3.3.4*: A button that directs user to the "About" page without needing them to scroll all the way up to access it using the menu

- **Focus and emphasis**

  The website uses different **emphasis** techniques to highlight important and critical information that users on the website should be aware of. Some techniques include manipulating website element sizes, styles, transitions, and animations.



*Figure 3.4.1*: The important parts of the message are highlighted as light yellow, and the word "doorstep" is also underlined to emphasize the fact that they are just around the corner.

Focus and emphasis on unique elements can help users distinguish them apart from normal ones, or help sum up the main idea of a group of objects. Referring to *Figure 3.4.1*, the text "Best Car Wash Dealers" in the short sentence that users first see when landing on the homepage of the website is way bigger than the rest of the words in the sentence. This is because it is the main message that the website wants to convey to the users. Emphasis can also be used to accentuate important notes as shown in *Figure 3.4.2*, when the late arrival warning notice is highlighted in red. Because the colour red is irregular in the design's colour scheme, it becomes emphasized, and users will clearly notice it before they click the submit button to confirm their reservation.



*Figure 3.4.2*: The important note is highlighted in red to emphasize its importance and let most users recognize it as a warning or reminder.

Emphasis is not only used for highlighting prominent subjects and affirming important notes, but it is also used to de-emphasize unimportant and secondary information as well. This is very true as the placeholders in the input fields of the website use a lighter colour than actual user input to show that it is just a hint or preview, and the brief description below the title of each page is also slightly greyed out. This is because all of the previously mentioned elements of the website are less significant. However, they are still essential to be displayed as a guide for the users on what and how they are supposed to perform their tasks correctly and accurately.
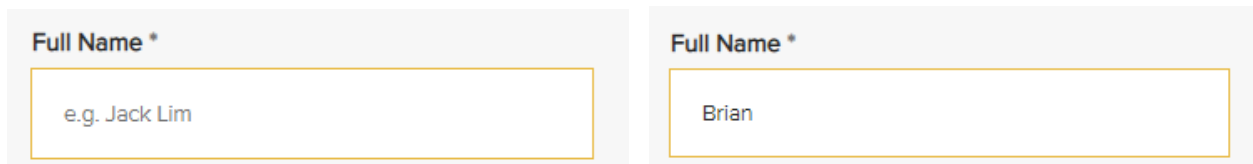


**Figure 3.4.3:** The difference of placeholders and actual text is noticeable enough and it is useful as a guide or hint for letting users know what to type in the input
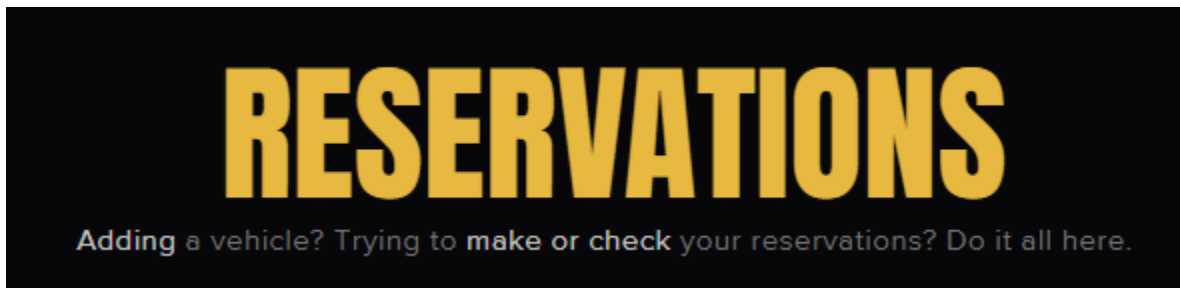


**Figure 3.4.4:** Description of each page is a secondary feature and should not be emphasized too much until it distracts users.

- **Balance & Symmetry**

The website also applies the quality of visually pleasing composition, which is **balance**. An example of a page that applies this is the "Services" page. Refer to *Figure 3.5.1*, it can be seen that there is an equal weight of screen elements on the left and right, top and bottom of the screen, which creates overall screen balance. This gives users a more pleasant viewing experience, as humans tend to feel more comfortable with stability and balance, layout of websites are not excluded from this theory (Bradley, 2015; Galitz, 2007, 142).

Additionally, the "Services" page also applies **symmetry**. Refer to *Figure 3.5.1,* it can be seen that the container boxes for each service category are evenly and symmetrically arranged on the left and right of the centerline. The 3 container boxes on the left of the centerline, are exactly and equally replicated on the right side of the centerline. In short, the alignment, positioning, and similarity of the container boxes effectively produce symmetry. As a result, the screen elements feel more compact and organized, which allows users to find and compare information more easily.



screen centerline
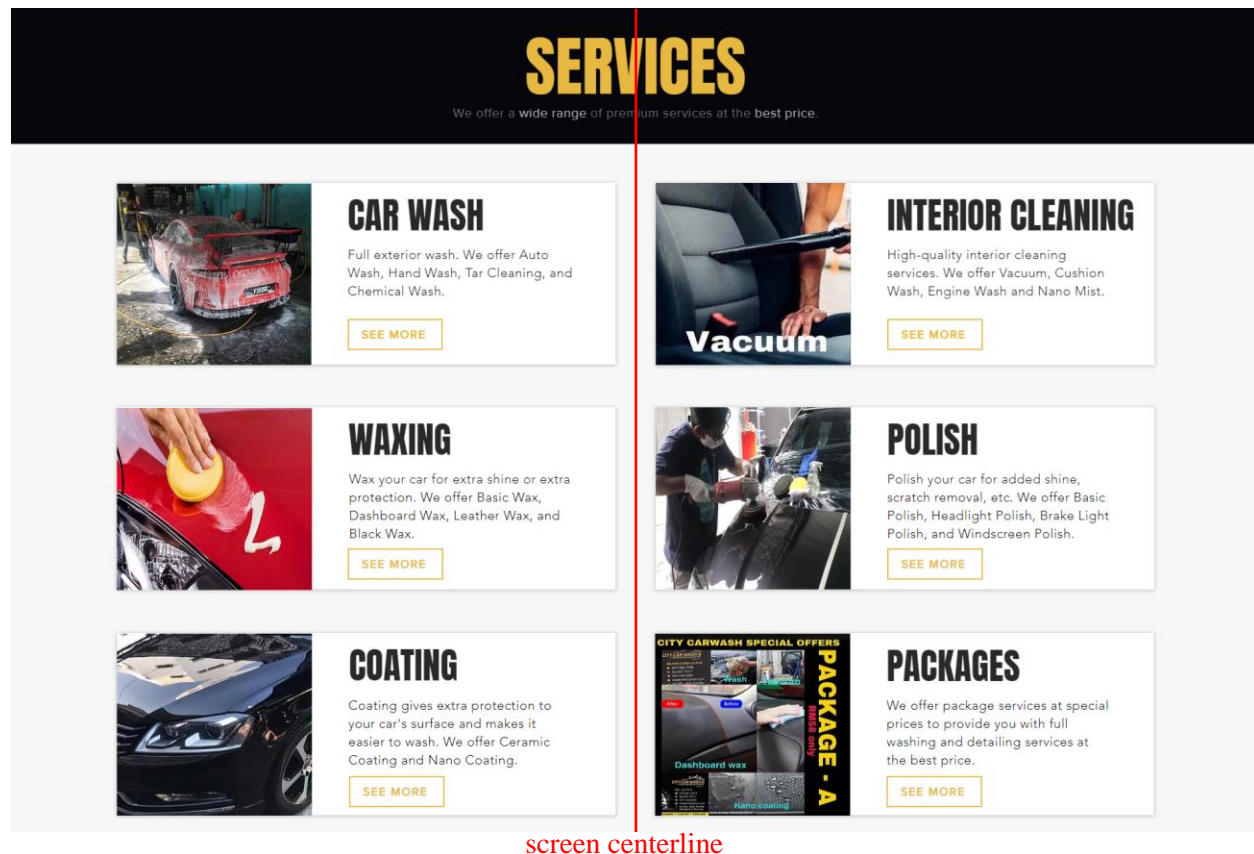
*Figure 3.5.1*: "Services" page applies the qualities of balance and symmetry

- **Predictability**

The website's design has also achieved predictability on some of the pages. According to Wilbert O. Galitz, predictability is when viewing one screen enables one to predict how another screen will look, or when viewing one part of the screen enables the user to predict how the rest of the screen will look (Galitz, 2007, 144). This theory is noticeably applied in the "Services" subpages, including the "Car Wash", "Interior Cleaning, "Wax", "Polish", "Coating", and "Packages" pages. Refer to *Figure 3.6.1,* when a user first loads any of the "Services" subpages, they would immediately see some part of a vertical list of services. Based on this visible part, users can easily predict that the rest of the page will contain the remaining part of the list.
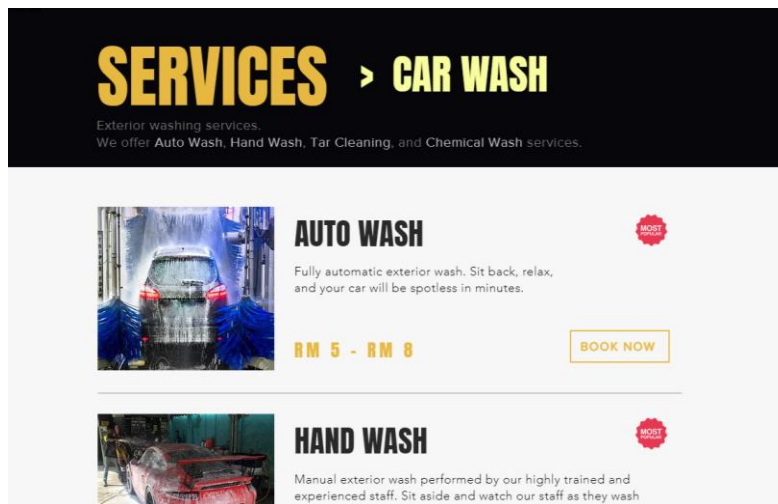


*Figure 3.6.1*: "Car Wash" page with a predictable page layout

Additionally, users will also predict that the other "Services" subpages would have the same layout, which is a vertical list of specific services. This is because these subpages serve the exact same purpose: to display and describe specific services offered by the car wash center. This predictability is further enhanced by the consistent layout and design of each "Services" subpage.
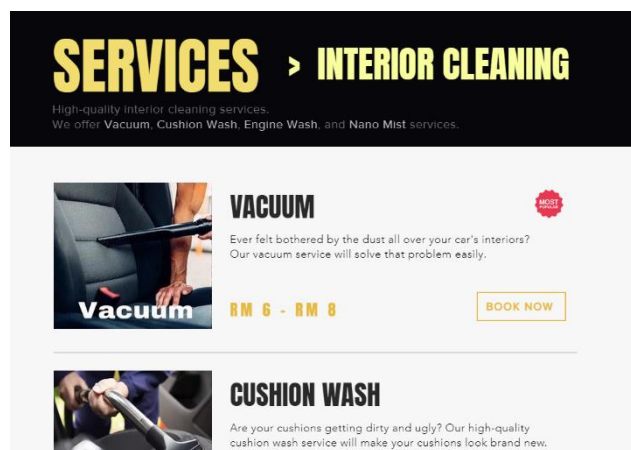


*Figure 3.6.2*: "Interior Cleaning" page with exact same layout
as other "Services" subpages

- **Recovery**

  The website also applies the design principle of **recovery.** This is because the website allows users to recover from mistakes and permits certain actions to be reversed. For example, the edit and cancel buttons are provided for each reservation in the reservations table in the "My Reservations" page as shown in *Figure 3.7.1*. This allows users to edit their reservation details if they found out that some details were wrong, or let them cancel their reservations if they want, under certain conditions specified by City Car Wash.



*Figure 3.7.1*: Edit and cancel buttons on the end of each row in the table

  Other than that, the recovery principle can also be found through confirmation boxes that appear on the website. For example, a confirmation box will appear when users click on the submit button in the reservation form or when they want to delete a vehicle. These confirmation boxes are prompted to ensure that users intend to perform their actions. If users notice any error in their reservation, or if they have just accidentally clicked on the submit button, they may close the box and continue editing the details of their reservation. These features are very important for users, especially new users, so that they would not worry too much about making mistakes, as they know their actions can be reversed.



*Figure 3.7.2 (left)*: Confirmation box that pops up when users submit a reservation form
*Figure 3.7.3 (right)*: Confirmation box that pops up when users want to delete a vehicle

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# PART 4: PROTOTYPE USER EVALUATION

- **Selecting Users**

  After completion of the design prototypes, 5 users were selected for testing and evaluating the usability of the design. The design was evaluated based on 4 of the Nielsen's usability components, including learnability, efficiency, errors, and satisfaction. To measure these 4 usability components, the users were asked to take note of and answer these specific questions:

**Learnability:** When performing the tasks, how many times did you ask for help?

**Efficiency:** How long did you take to complete all the tasks? (in seconds)

**Errors:** How many errors did you make when performing the tasks?

**Satisfaction:** How was your overall experience and satisfaction with the website? (rate 1 – 10)

- **Users' Details**

  **User 1**
  Age: 19 years old
  Occupation: Medical Student
  Computer Literacy/Experience with technology: High level

  **User 2**
  Age: 19 years old
  Occupation: Arts Student
  Computer Literacy/Experience with technology: High level

  **User 3**
  Age: 48 years old
  Occupation: Teacher
  Computer Literacy/Experience with technology: Medium level

  **User 4**
  Age: 21 years old
  Occupation: Illustrator
  Computer Literacy/Experience with technology: High level

  **User 5**
  Age: 21 years old
  Occupation: Student
  Computer Literacy/Experience with technology: High level

- **Set of Tasks Given to Users**

Next, the 5 users were given a set of tasks to perform. The tasks are as below:

1. Create an account, then login to your account without using login via Facebook or Gmail.

2. Add your car to the system, then check the profile of your car.

3. Explore, identify, and understand the services and packages offered.

4. Find the reservation form to make a new reservation. Fill in all the necessary details and information required, then confirm your reservation.

5. Find and check the details of the reservation that you have made in Step (4), then identify the reservation ID.

- **Table of Data Collected**

| Usability Components | User 1 | User 2 | User 3 | User 4 | User 5 |
|---|---|---|---|---|---|
| **Learnability** <br> When performing the tasks, how many times did you ask for help? | 0 | 0 | 5 | 6 | 3 |
| **Efficiency** <br> How long did you take to complete all the tasks? (in seconds) | 603 | 720 | 702 | 450 | 300 |
| **Errors** <br> How many errors did you make while performing the tasks? | 0 | 0 | 10 | 7 | 2 |
| **Satisfaction** <br> Rate your overall experience and satisfaction of the website from 1 – 10. | 9 | 8.9 | 6 | 7 | 7 |

*Table 1*: Nielsen's components of usability, with data collected from user evaluation

- **Users' Comments & Feedback**

Below are the full, genuine comments and feedback by the 5 users.

**User 1:** "Points were given to the website as it has a navigation bar that clearly indicates where the links will bring the user to. Also, the contrast of color at the navigation bar will allow people with color blindness to easily identify the wordings on the navigation bar. The one mark that is deducted from the satisfaction component is that the color of the descriptions for "About Us" "Services", "Reservations", "Contact & Help" pages kind of blends in with the dark background and might make some of the visually impaired people to have a hard time reading them. The services and package stated on the website are easy to understand and the reservations can be easily done as it only requires few details from the user. Users will not feel unsafe as none of the important details such as I.C. number or Bank account number were requested for the reservation."

**User 2:** "The overall look is good, the colors are very prominent, the use of eye-catching yellow, coupled with black and white to highlight the strong contrast. The services and details are also explained very thoughtfully, as the wording is not too complicated, so it is easy for the public to understand the meaning of those services well. In addition, in terms of reservation, it is also necessary for customers to choose either matching packages or custom services according to their preferences. This is worth looking forward to, which is in line with the current car wash service market. I also believe that this website also has great protection in terms of personal account and personal privacy, as it is not easy to leak personal information. The payment is also very convenient, and the procedures are also very convenient."

**User 3:** "Some pros of the website are that the services and packages offered by the center is clear enough and the colour scheme used is good. On the other hand, some cons are the new user sign up is too small to be noticeable, and the words are small in general. Another thing, the website should prompt the user to add a vehicle immediately after they signed up, don't let users find the function themselves."

**User 4:** "I like the UI, good website colour schemes and clear call-to-action buttons. The icon should have real world tooltips as users are dependent on them to understand the icons. The users will most likely press the button in the homepage that directs them to the reservation form first and skip adding a vehicle, so the "Add Vehicle" icon should be incorporated in the reservation form beside the dropdown for choosing vehicles to streamline process. When users choose packages as their services, grey out everything beside the services offered by the package so they know that they selected the right package."

**User 5:** "The website is very simple and clear to operate, and it is also very convenient because all functions can be seen clearly. The lightboxes implemented are very useful because when some buttons are clicked, there is no need change pages to perform the function, the lightboxes appear automatically and conveniently."

- **Evaluation Summary**

**Learnability**

The average number of questions asked by users when performing tasks is 2.8, lower than the expected average of 5. The range is between 0 to 6 questions per user. Users 1, 2, and 5 had few or no questions as they are young adults with high adaptability. User 3 had more questions as they are older and have lower adaptability, while User 4 asked the most questions as they have higher standards and expectations for the design due to their occupation as a professional illustrator.

**Efficiency**

The average time taken for users to complete all tasks is 555 seconds, lower than the expected average of 600 seconds. The range of time taken is between 300 to 720 seconds (5 to 12 minutes). Even the longest time taken is highly acceptable and reasonable for using an online booking website with lots of information and procedures. Hence, the design can be considered efficient.

**Errors**

The average number of errors made by users is 3.8, higher than the expected average of 3. The range of errors made by the users is between 0 to 10, with Users 1 and 2 never encountering any error despite having no questions about the design. User 3 has the highest error count even after asking quite a few questions about the website. User 3 also used up extra time to regain their focus on tasks after they encounter an error, hence the longer time recorded in their "Efficiency" component. User 4 also had many errors, as they intentionally performed more thorough testing to identify more errors.

**Satisfaction**

The average rating in terms of overall experience and satisfaction is 7.6, higher than the expected average rating of 7. The range of ratings given by the users is between 7 to 9. The reasons given behind the deducted points from this component were mostly related to minor issues with the design. So, it can be deduced that users will be able to enjoy a pleasant experience using the website if it operates within their physical abilities and meets their expectations.

In conclusion, 3 out of 4 Nielsen's usability components are fully satisfied, with only "Errors" having slightly worse results than expected. This means that some users are slightly more prone to making mistakes when using the website. It is found that the website is more usable for younger users around their 20s and is more difficult to understand for middle-aged and older users. Users' experience with technologies also plays a part in helping them understand the website

design and boost their efficiency of doing tasks. Specifically, older users will have a harder time understanding modern webpages because their mental models have already fixated on older models of how a webpage should look like. Lastly, it can also be determined that the website has not achieved real-world, professional standards.

# PART 5: REFERENCES

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**[DUD 1204 User Interface Design]**
**MARKING RUBRIC**
**ASSIGNMENT [2]**

**Assignment Weighting (15%)**

**REPORT COMPONENT (100%)**

| LEARNING OUTCOME | MARKING CRITERIA | SCALE | | | | | YOUR MARKS/COMMENTS |
|---|---|---|---|---|---|---|---|
| | | Fail (0-49) | 3rd Class (50-59) | 2nd Lower Class (60-69) | 2nd Upper Class (70-79) | 1st Class (80-100) | |
| CLO3: Creatively design an interface by applying the HCI factors. | Part 1: Introduction to the car wash center service booking system (5%) | No introduction of car wash center is given. The choice of car wash center is not valid (not exist or already having an online booking system). | The introduction of car wash center is not clear and vague. The choice of car wash center is valid. | The introduction of car wash center is given but with missing information. The choice of car wash center is valid. | The introduction of car wash center is clear with adequate information. The choice of car wash center is valid. | The introduction of car wash center is concise with accurate information. The choice of car wash center is valid. | |
| | Part 2: Paper Prototyping .– User Interface Design (25%) | No user interface design is given or all the proposed features for interface designs are not appropriate. | Less than 3 user interface design are given or 2 out of 3/4 proposed features for interface designs are not appropriate. | Adequate user interface designs are derived based on the proposed features. However, the designs have many errors or inappropriate usage/control. | Complete user interface designs are derived based on the proposed features. However, the designs have minor errors or inappropriate usage/control. | Complete and excellent user interface designs are derived based on the proposed features. The designs have proper usages/controls. | |
| | Part 3: Justification of Design (20%) | No or wrong justification of design is given. | More than 3 parts of the justification given for the user interface design are incorrect. | 2-3 parts of the justification given for the user interface design are incorrect. | All justification given for the user interface design are correct but lacking of detailed elaboration and resource support. | All justification given for the user interface design are correct with detailed elaboration and resource support. | |
| | Part 4: Prototype User Evaluation (20%) | No user evaluation was conducted. | User evaluation was conducted with less than 5 users or less than 4 usability components are evaluated. Poor evaluation summary. | User evaluation was conducted with 5 users. 4 usability components are evaluated but the measurements are incorrect. Evaluation summary is not complete. | User evaluation was conducted with 5 users. 4 usability components are evaluated and the measurements are correct. Summary of evaluation is complete but brief only. | User evaluation was conducted with 5 users. 4 usability components are evaluated and the measurements are correct. Summary of evaluation is complete and concise. | |
| | Part 5: References (10%) | No reference is cited in the report and no reference list is provided. | Missing in-text citation (more than 3) in the report, missing references for some justification areas. The format of reference list is incorrect. | 1-3 in-text citation are missing and the reference list is incomplete. The reference list format has 1-3 incorrect areas. | Complete in-text citation and reference list. The reference list is correct. However, more impactful references should be used to support your report justification. | Complete in-text citation and reference list. The reference list is correct. Impactful references are used to support your report justification. | |
| | Part 6: Presentation (20%) | Lack of audience awareness; mismatch for the intended reader. No defined purpose/mode of writing. Presenter lacks a sense of involvement; flat; lifeless | Limited sense of audience; doesn't acknowledge needs of reader Little commitment to topic Inappropriately informal or personal | Presenter shows some awareness of audience Purpose/mode of writing present but inconsistent Occasional sense of presenter behind the words | Presenter recognizes audience; communicates message Committed to topic; Appropriate point of view; shows some originality | Presenter quickly engages audience; strong interaction between presenter and the audience. Strongly committed to topic which comes to life Begs to be read aloud; sincere; expressive; convincing | |
| | | | | | | **Total (100%)** | |

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