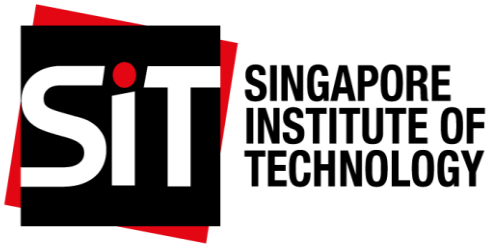

Web Systems and Technologies

Title: Just My Cup of Tea

Team Members:

Name	Student ID
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1. Introduction

Fig.1 Logo Just My Cup Of Tea

The official website of *Just A Cup Of Tea* was developed to enhance user experience, improve accessibility, and support the company's digital presence. Designed to reflect the brand's identity and commitment to quality, the website serves as a central platform for customers to explore products, place orders, and interact with the business securely and efficiently. It incorporates a range of modern web technologies and tools to ensure functionality, reliability, and user trust. Overall, the website plays a vital role in supporting business operations while offering a convenient and professional online experience for users.

2. Objectives

The primary objective of this web development project was to design and develop a fully operational and responsive website that embodies the identity of *Just My Cup of Tea*, while applying the technologies and concepts covered in the course. This project served as a practical platform for reinforcing our understanding of front-end development using HTML, CSS, and JavaScript, with a strong emphasis on creating a mobile-friendly interface that functions seamlessly across all major browsers. Beyond its technical foundation, the project aimed to bridge the gap between theoretical learning and industry expectations by encouraging the application of real-world web development practices and modern design standards. The website is carefully crafted to be user-friendly, visually engaging, and brand-aligned—featuring intuitive navigation, meaningful visual elements, and clear content organization. While the thematic focus is on bubble tea, the broader objective was to simulate a commercial-level product that enhances user engagement, demonstrates branding through digital storytelling, and delivers an immersive and accessible user experience across devices.

3. Tools

In developing our website, we incorporated several powerful tools and technologies to enhance functionality, security, and user experience. One of the foundational tools we used was MySQL Workbench, which served as our database management system. It allowed us to design, model, and manage our database schema efficiently, ensuring structured data

storage and seamless integration with our backend system. MySQL Workbench also provided us with a graphical interface to run queries, manage tables, and monitor performance, making database operations more accessible and manageable throughout development.

To strengthen our website's security and authentication mechanisms, we implemented multiple layers of protection. We utilized Google reCAPTCHA v2 to prevent bots and automated scripts from misusing our forms and authentication processes. This added a simple but effective verification step for users, reducing spam and fake submissions. Additionally, we integrated Google Authenticator to support two-factor authentication (2FA), offering an extra layer of account security. This feature requires users to input a time-sensitive code from their mobile device, making it significantly more difficult for unauthorized users to gain access even if login credentials were compromised.

Communication and real-time user interaction were further enhanced through the implementation of an SMS messaging API. This tool allowed us to send verification codes and important notifications directly to users' mobile devices, ensuring immediate delivery and increasing user engagement. We also incorporated the Google Maps API to provide interactive location services on our site. This was particularly useful for displaying business locations, enabling users to get directions, or pinpoint their addresses for services, all within a familiar and intuitive map interface.

In addition, we integrated Stripe Payment into our platform to handle financial transactions securely. Stripe allowed us to accept credit and debit card payments from users globally, with a secure and seamless checkout experience. The integration supported multiple currencies and included built-in fraud detection, which ensured that our payment processing was both reliable and compliant with industry standards. API keys are also safely stored in a private location of the google virtual machine instead of being parsed in the code.

Lastly, we also integrated SSL, to ensure our connection is secure. This allows us to use HTTPS in the browser which helps to increase the security of data transfer especially since our feature contains credit card information, which is sensitive data.

4. Design and Implementation

The Just A Cup Of Tea website was developed utilizing a comprehensive suite of modern web technologies aimed at delivering a functional, secure, and interactive e-commerce platform. The front-end was constructed using HTML, CSS, Bootstrap, and JavaScript, offering a responsive layout and intuitive interface. The server-side logic is implemented in PHP, while persistent data storage is managed through a MySQL relational database.

User Authentication System

The authentication module employs a modal-based interface to streamline login and registration processes without redirecting users away from the main interface. To mitigate automated access, Google reCAPTCHA is integrated within all authentication forms.

Optional two-factor authentication (2FA) is available, enabling enhanced account security via time-sensitive codes. Session handling ensures consistent user state management, including a "Remember Me" feature that supports persistent login. Password handling adheres to secure coding practices, utilizing both client-side (JavaScript) and server-side (PHP) validation techniques. User input isn't directly concatenating into SQL queries, it's properly sanitized such as using html special chars.

Product Catalog and Menu System

The product catalog is categorized into clearly defined groups such as seasonal offerings, milk teas, and fresh milk options. A dynamic filtering mechanism enables users to refine their browsing experience by category. Each product entry includes high-resolution images, descriptive content, and prominently displayed pricing, designed to support user decision-making and streamline the ordering process.

Drink Customization Interface

An interactive drink customization interface facilitates detailed personalization of orders. Options for sugar level (0% to 100%) and ice level (none to extra) are provided, alongside a diverse selection of toppings represented with visual cues. Customizations trigger **real-time price calculations**, ensuring transparency in cost adjustments. The interface incorporates a draggable topping feature, allowing users to simulate the appearance of their selected drink, thereby enhancing engagement and interactivity.

Shopping Cart Functionality

The shopping cart system leverages AJAX to allow real-time updates without requiring full page reloads. Users are able to increment or decrement item quantities with immediate price recalculations. Items may be removed individually, and a comprehensive pricing breakdown—incorporating base prices, customization fees, and totals—is displayed. Security measures such as Cross-Site Request Forgery (CSRF) protection are implemented to safeguard transactional operations. Additionally, a loyalty point redemption mechanism is embedded within the cart, enabling users to apply rewards to their purchases.

Checkout and Payment Integration

The checkout process is integrated with the Stripe API, ensuring secure handling of credit card transactions while maintaining PCI compliance by avoiding local storage of sensitive data. A detailed order summary is presented to users for review prior to payment submission. Upon successful transaction, an optional SMS confirmation is issued via the Twilio API, providing users with a digital receipt and reinforcing transaction legitimacy.

User Profile and Loyalty Program

User accounts include profile management tools that allow modification of personal and contact information. An order history feature enables users to track and reference previous purchases, simplifying repeat orders. The integrated loyalty program calculates points based on spending behavior, logs point accrual and redemption, and supports monetary discounts

at checkout. This system is designed to encourage customer retention through reward incentives.

Administrative Dashboard

The administration panel supports key business operations through a user-friendly dashboard. Visualizations of sales performance and order activity assist in operational decision-making. Administrative tools permit customer data management, including account editing and status control (e.g., deactivation or deletion). Menu management functionality enables the addition, modification, or removal of drink items. An order monitoring system provides real-time visibility of orders in various states—pending, in progress, and fulfilled—facilitating efficient processing.

Quiz Functionality

To add more fun and interaction, we have added the quiz functionality to make the user play around with the quiz, to find out what bubble tea the user likes based on a set of questions. With the personality vibe, colour choice and weekend activity, we can deduce and display the result of bubble tea choices. The result is dynamically shown on the same page below without reloading the page which provides a more engaging experience. Furthermore, it follows the bubble tea theme of colour and structure, making it more lively for users. The form captures user inputs through radio buttons, and upon submission, JavaScript evaluates the answers to output a corresponding bubble tea type, showcasing a smooth integration.

Spin Wheel

The spin wheel feature was implemented to introduce a fun and interactive element to the website. Using a combination of HTML, CSS, and JavaScript, we designed a visually engaging wheel with multiple colored segments and a central spin button. When the user clicks the “SPIN” button, a JavaScript function is triggered to animate the wheel, creating a smooth spinning motion that randomly stops on one of the segments. This simulates a reward or result mechanism, commonly seen in gamified platforms. The component is fully responsive and styled to match the overall theme of the website. By integrating it through a modular include (spinwheel.inc.php), the page remains clean and easy to maintain. This implementation demonstrates both the front-end development skills and the ability to enhance user engagement through interactive web features.

Database Architecture

The database is structured into normalized relational tables to support system functionality. The `Justmycupoftea_members` table maintains user credentials and authentication settings. The `Justmycupoftea_menu` table stores product-related data including categorization, pricing, and customization metadata. Order transactions are logged within the `Justmycupoftea_orders` table, containing order contents, payment references, and fulfillment tracking. The `reward_point` table manages loyalty point balances, logs accruals, and maintains redemption records per user account.

Overall Design

The system embodies a robust and modular approach to e-commerce website design, integrating modern development practices and security mechanisms. Through comprehensive implementation of frontend interactivity, backend functionality, and administrative support tools, the platform delivers a consistent and efficient experience for both customers and business operators.

Database Design

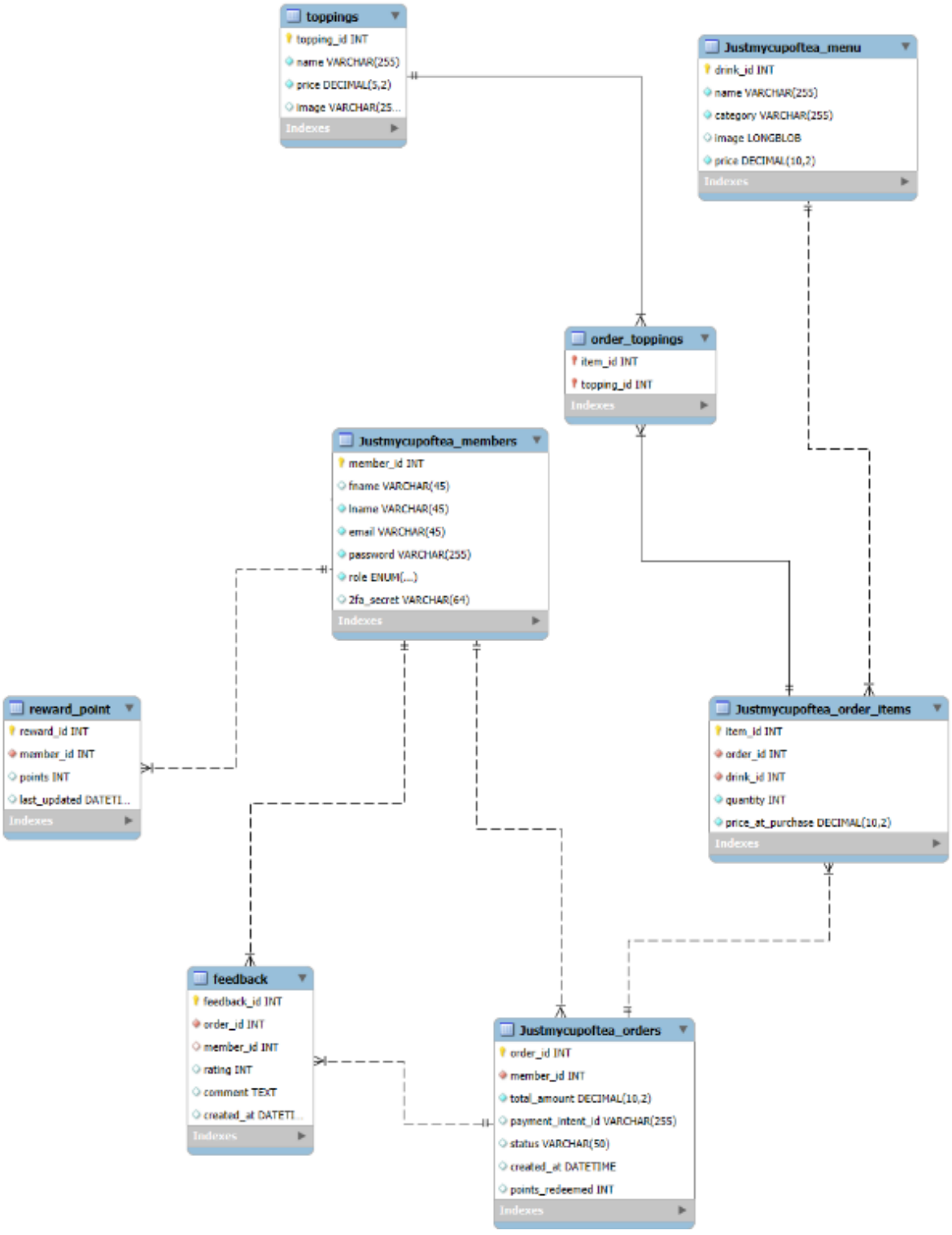

Fig.2 ERD Diagram

The website functions with a total of 10 tables, and each tables have its respective functions from the MySQL Database.

Based on the above Fig.2 here is the breakdown of each table and its contents:

1. Justmycupoftea_members
    a. **member_id:** Unique identifier for each member.
    b. **fname:** Member's first name.
    c. **lname:** Member's last name.
    d. **email:** Member's email address (used for login/communication).
    e. **password:** Hashed password for account security.
    f. **role:** Enum indicating the user role (e.g., admin, customer).
    g. **2fa_secret:** Two-factor authentication secret for added security.

2. Justmycupoftea_orders
    a. **order_id:** Unique identifier for each order.
    b. **member_id:** Foreign key linking to the member who placed the order.
    c. **total_amount:** Total value of the order at the time of purchase.
    d. **payment_intent_id:** Reference to the payment processing transaction.
    e. **status:** Status of the order (e.g., pending, completed, cancelled).
    f. **created_at:** Timestamp of when the order was placed.
    g. **points_redeemed:** Number of loyalty points used for this order.

3. Justmycupoftea_order_items
    a. **item_id:** Unique identifier for the order item.
    b. **order_id:** Foreign key referencing the parent order.
    c. **drink_id:** Foreign key linking to the drink ordered.
    d. **quantity:** Quantity of this drink in the order.
    e. **price_at_purchase:** Drink price at the time of the transaction.

4. Justmycupoftea_menu
    a. **drink_id:** Unique identifier for each drink.
    b. **name:** Name of the drink.
    c. **category:** Drink category (e.g., milk tea, fruit tea).
    d. **image:** Image file (BLOB) representing the drink visually.
    e. **price:** Price of the drink.

5. 5. Toppings
    a. **topping_id:** Unique identifier for each topping.
    b. **name:** Name of the topping (e.g., pearls, pudding).
    c. **price:** Price of the topping.
    d. **image:** Image representing the topping.

6. Order_toppings
    a. **item_id:** Foreign key to Justmycupoftea_order_items (the item receiving the topping).
    b. **topping_id:** Foreign key to toppings.

7. Feedback
    a. **feedback_id:** Unique identifier for the feedback.
    b. **order_id:** Foreign key linking the feedback to a specific order.
    c. **member_id:** Foreign key indicating the member who gave the feedback.

    d. **rating:** Numeric rating (e.g., 1 to 5 stars).
    e. **comment:** Textual comment/review.
    f. **created_at:** Timestamp when the feedback was submitted.

8. Reward_point
    a. **reward_point_id:** Unique identifier for the reward point record.
    b. **member_id:** Foreign key referencing the member.
    c. **points:** Number of points accumulated.
    d. **last_updated:** Timestamp for the last point update.

Overall, the database for Just My Cup of Tea is designed to support the full functionality of a bubble tea e-commerce platform by managing user accounts, orders, product customization, rewards, and feedback through a well-structured relational model. Key tables such as Justmycupoftea_members, Justmycupoftea_orders, and Justmycupoftea_order_items ensure accurate tracking of user activities and transactions, while toppings and order_toppings provide flexibility for drink customization. The system also incorporates a loyalty program via the reward_point table and enables user engagement through the feedback table. Historical purchases are captured through purchase_groups and purchase_history, supporting data analysis and business insights. Overall, the design ensures data integrity, scalability, and responsiveness, aligning with industry best practices and course objectives.

5. Conclusion

The development of the **Just A Cup Of Tea** website represents a successful implementation of a fully functional, user-oriented e-commerce platform tailored to the bubble tea industry. Through the integration of modern web technologies such as HTML, CSS, JavaScript, PHP, and MySQL, the project effectively demonstrates the practical application of front-end and back-end development principles covered throughout the course.

The system's design emphasizes usability, responsiveness, and security, incorporating essential features such as a robust user authentication system, an interactive drink customization interface, a dynamic shopping cart with real-time updates, a loyalty rewards program, and a comprehensive administrative dashboard. Each module was implemented with a focus on scalability, modularity, and user experience.

The underlying database structure supports all aspects of the platform—from user management and order processing to reward tracking and feedback collection—through a well-organized relational model. This structure ensures data integrity, operational efficiency, and provides the foundation for meaningful business insights.

Ultimately, the project bridges theoretical learning with real-world application, simulating a commercial-grade product that aligns with modern web development standards and user expectations. The outcome is a reliable and engaging online presence that not only reflects the brand identity of **Just A Cup Of Tea** but also supports its digital growth and customer engagement goals.

6. Acknowledgement

We acknowledge the use of ChatGPT (https://chat.openai.com) to assist with grammar correction and rephrasing during the writing process of this report. The content generated by the tool was limited to language refinement.

7. Team Contribution

DONE BY	TASK DESCRIPTION
Muhd Wafiyuddin Bin Abdul Rahman	**1. About-Us Page** Develop this page to showcase what we're selling, explain the meaning behind our logo, and introduce the team behind the website. ● Made it user-friendly, and easy to read. ● Tell the user a story so that the user can relate to our bubble tea for them **2. SSL Encryption** Integrate data flow security with our website to ensure that the data that is sent over such as credit card information is encrypted ● Using OpenSSL to create a self-signed SSL certificate ● Using the Diffie-Hellman 2048-bit key exchange algorithm to ensure the encryption is robust, reliable and extra secret. By default, the server may have a week of Diffie-Hellman parameters ● Configure the SSL to point to our Server IP address and redirect the server to point to HTTPS (Port 443) every time the user tries to access HTTP (Port 80) **3. Contact-Us Page** To tell the user where we are located and have a contact form if they need to contact us for further enquiries or bulk purchases. ● Using Google Map API, to make users able to navigate, zoom in and zoom out, so that it will be easier to locate us. ● Having the user email address and the message they want to put so that from our side, we can get back to them about any enquiries **4. Quiz Functionality** Having the quiz implementation makes the website much more user-friendly and interactive. The user can complete a set of short quizzes and from those answers, a preference bubble tea is displayed. ● Using Javascript, and CSS to make it more user-friendly allows dynamic results based on the user answering the question

	● It is flexible and able the user to show the result instantly after finishing the quiz. ● The quiz is about knowing the user's lifestyle (i.e. vibes, colour and weekend activity) then from there, we deduce based on that lifestyle what bubble tea the user might like.
Muhammad Muhaimin Bin Abdul Rahman	**1. Index(Homepage)** The homepage is designed using Bootstrap for a responsive layout and includes a custom carousel to showcase content dynamically. ● Built with a modular structure using head.inc.php, nav.inc.php, and footer.inc.php. ● Utilizes Bootstrap's grid system for responsive design. ● Features a **unique Bootstrap carousel** with multiple rotating slides and navigation controls. ● Carousel highlights key visuals or announcements to engage users. ● Clean and structured layout enhances user experience on all devices. **2. Navbar** The navigation bar is included on all pages and is fully responsive, providing consistent access to key sections of the site. ● Designed using Bootstrap's navbar classes for responsive behavior. ● **Collapses into a hamburger menu** on mobile devices for better usability. ● Links to main pages (Home, Spin Wheel, etc.) for smooth navigation. ● Reused across all pages via PHP include for consistency and maintainability. **3. Footer** The footer appears at the bottom of every page and provides a polished, professional look to the site. ● Contains copyright or general information. ● Clean and minimal design complements the overall website theme.

	● **Reusable includes** ensures a consistent look across all pages. ● Easy to maintain and expand with links or contact information if needed. **4. Spin Wheel page** The spin wheel page adds an interactive element where users can spin a wheel to get a random result or reward. ● Created using HTML, CSS, and JavaScript for dynamic front-end interaction. ● Clicking the **"SPIN" button** triggers a rotation animation on the wheel. ● Wheel stops at a random segment, simulating a prize or result. ● Showcases creativity and ability to build **gamified web features**. ● Responsive layout and modular structure maintain consistency with the rest of the site.
Ng Xuanqi	**1. Admin Dashboard** Develop a comprehensive dashboard for administrators to manage users, view orders, and gain insights into sales metrics. ● Designed and implemented a user-friendly interface for displaying key order metrics (total orders, total sales, average order value). ● Created a system for managing user accounts, including functionalities for viewing, editing, and deleting user profiles. ● Developed an order management system allowing administrators to view order details and search orders. ● Implemented pagination and search functionalities for both user and order management tables, enhancing efficiency. ● Ensured secure access to the dashboard by implementing role-based authentication. ● Addressed and fixed HTML errors, such as duplicate IDs and multiple head tags. **2. User Profile:**

	Implement a secure and functional user profile section where users can manage their personal information and security settings ● Developed a profile editing interface that allows users to update their personal details (name, email). ● Implemented password reset functionality with robust security measures, including password strength requirements. ● Implemented password validation using javascript. ● Ensured data integrity and security by utilizing prepared statements and password hashing. **3. Drinks Menu (User and Admin Sides):** Create a dynamic drinks menu that is accessible to both users and administrators, with different functionalities for each. ● Developed a user-facing drinks menu that displays available drinks with relevant details (name, price, image). ● Implemented an administrative interface for managing the drinks menu, including functionalities to add, edit, and delete drinks. ● Ensured consistency in the presentation of the drinks menu across both user and admin interfaces. ● Made the menu database driven. ● Ensured that the admin side of the drink menu has proper form validation.
Oh Jia Rong	**1. Infrastructure Setup:** ● Established the foundational backend environment by configuring a Google VM, initializing the SQL database, and setting up Apache server configurations. **2. Authentication & Security:** ● Designed and implemented a dynamic login and registration modal overlay to enhance user experience and maintain site immersion. ● Implemented user registration rules and password confirmation logic. ● Ensured user stored passwords are encrypted and hashed.

	● Integrated reCAPTCHA for registration and login to safeguard against malicious intent. ● Added a “Remember Me” option on login that autofills users entered email based on saved cookies for easier access. ● Ensured session-based login, logouts via user intent or when browser closes. ● Set up Google Authenticator for 2FA capabilities, including both setup and verification steps that are optional for users and dismissable if user wishes. ● Created the User Profile lock mechanism with dynamically displayed timing, to add an additional layer of security ○ Implemented reset and deletion functionality for 2FA within user profile. 3. **E-commerce Payment Sandbox with SMS capability:** ● Streamlined payment processes by integrating a sandbox environment for Stripe checkout, using integrating Stripe API ● Added SMS notifications for order confirmations, ensuring users receive updates upon their purchases. **4. Data Sanitization & Validation:** ● Added input sanitization such as sanitize_input function iin registration processes. ● Used filtering and pattern matching for data validation. ● Ensured the use of html special chars for input sanitization, preventing XSS. ● Enforced Content Security Policies and Improved overall code safety by removing inline <script> tags. **5. SQL Security:** ● Secured database interactions by using prepared statements and avoided direct concatenation of user input in SQL queries. ● Used prepared statements to separate SQL logic from data, ensuring safe execution. ● Implemented secure database operations for adding and removing items.

	● Organized sensitive API keys and database configurations in secure, private files instead of being directly parsed via code.
Lim Tian Long	**1. Drink Customization Interface** ● Implemented draggable topping elements to visually simulate drink customization. ● Integrated real-time price calculation logic that updated totals based on selected customizations. ● Ensured all customization data was passed to the cart and checkout modules for accurate order processing. ● Designed a responsive layout compatible with mobile and desktop interface (mobile is able to add and remove toppings through toggling) **2. Shopping Cart/Checkout** ● Developed an AJAX-powered shopping cart supporting real-time updates without page reloads. ● Implemented item quantity adjustment controls and dynamic price recalculations. ● Added functionality for item removal and a detailed cart summary including subtotals, customizations, and final totals. **3. Loyalty Point System** ● Implemented a loyalty point system that rewards users based on total spending. ● Developed logic for earning, storing, and updating point balances within the database. ● Integrated a point redemption option into the checkout process, allowing users to apply discounts. ● Displayed current point balance and redemption history in the user profile dashboard. **4. Order History/Rating** ● Built an order history page displaying detailed past order information.

	● Implemented a rating system enabling users to submit feedback on completed orders. ● Linked rating data to corresponding orders in the database for future reference.
Everyone	**1. Report Writing**