# Swinburne University of Technology

School of Science, Computing and Engineering Technologies

# ASSIGNMENT AND PROJECT COVER SHEET

Subject Code: SWE30003 Unit Title: Software Architectures and Design

Assignment number and title: 1, Requirements Due date: 25th February 2024

Tutorial Day and Time: Tuesday 11:00AM Project Group: 9

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**Introduction**

This document is for All Your Healthy Foods, a healthy food store nestled on Glenferrie Road. With the aim of extending their reach beyond their physical storefront and catering to a broader audience across Australia, the owners are eager to embrace the convenience and accessibility of e-commerce. This document aims to cover the requirement and quality attributes of the All Your Healthy Foods store through the identification of primary user tasks and utilization of the Tasks and Support method.

**Project Background**

**Overview**

The store owners of *All Your Healthy Foods* noticed that the brand chain only has one physical store, still needed to be more developed. On this condition, new online service is compulsory for the progress, which not only helps the customers purchase products from long distance, but can also receive directly from delivery systems. Whereby, Swinsoft Consulting is assigned to be responsible for analyzing the potentials, and developing the new online presence for this brand of Healthy Food, to reach the desired outcomes.

**Domain Vocabulary**

* **Customers, Users**: Online users that want to purchase products in any method
* **Products:** Healthy Foods in the store
* **Account:** Online individuals’ corner that can access online platforms
* **Catalogue:** Types of Healthy Foods separated on the store
* **Payments:** Transaction made by customers
* **Order:** Request of customers to purchase the products
* **Statistics:** Data of sales performances, trends recorded

**Assumptions:**

* The Swinsoft UI/UX design guidelines document illustrates reasonable measurements for client testing and generic design level prerequisites
* The online presence reach customers Australia-wide
* Accounts are created using individuals’ email address, with high secure.
* Food types are divided rationally, similar to actual food stalls
* Customers can receive online receipts after their purchase, which can be used for refund
* Record the profits, along with sold products in the past for statistical analysis. The service is expected to automatically display the trending items.

**Scope**

The *All Your Healthy Foods* wants to expand its operation through an online store, to promote its popularity beyond current brand, aiming to reach customers Australia-wide. Online users must be able to create their account, browsing store catalogues, managing and updating their purchase cart. In particular, the online store should also have high security in payments, support basic statistics about the sold items over various periods, thereby predicting trending products and customer preferences. The system also can allow store owners to change the types of products available for sale as new products become available.

**Problem Domain**

**Pain Points**

* Limited reach due to reliance on physical store location.
* Inability to serve customers outside of surrounding suburbs.
* Manual processes for managing orders, invoices, and receipts.
* Lack of insights into sales performance and trends.
* Limited flexibility in updating available products.

**Domain Entities**

* Customers: Individuals browsing and purchasing products.
* Staffs: Store owners & salespeople
* Products: Items available for purchase in the store.
* Orders: Requests made by customers for purchasing products.
* Invoices/Receipts: Documentation of purchases made by customers.
* Payment: Transactions made by customers to complete purchases.
* Shipping: Process of packaging and delivering orders to customers.
* Database: Data related to sales performance and trends.

**Actors**

* Store Owners: Initiate, oversee and manage the development of the online store.
* Developers: Build and maintain the online store system.
* Customers: Interact with the online store to browse and purchase products.

**Tasks**

1. Creating and managing customer accounts.
2. Browsing the store catalogue.
3. Managing the shopping cart.
4. Handling payments securely.
5. Creating invoices and receipts for customers.
6. Managing goods packaging and shipment.
7. Generating basic statistics on goods sold over various periods.
8. Updating the available products as new items become available.

**CRUD Check**

| **Task** | **Entity** | **Create** | **Read** | **Update** | **Delete** |
| --- | --- | --- | --- | --- | --- |
| Creating and managing user accounts | Users | C | R | U | D |
| Browsing the product catalog | Products | - | R | - | - |
| Managing the shopping cart | Carts | - | R | U | - |
| Creating invoices and receipts for orders | Invoices | C | R | U | D |
| Handling payments securely | Transactions | C | R | U | - |
| Managing goods packaging and shipment | Shipments | C | R | U | - |
| Generating basic statistics on sales | Sales | - | R | - | - |
| Updating product availability | Products | C | R | U | - |

**Domain Model**

**A diagram of a process

Description automatically generated**

Basically, the model illustrates the entities that participate in the online presence of All Your Healthy Foods.

First and foremost, there are two main types of online account that access this webpage, customers, and staffs (the store owner & salespeople). Customer will access the webpage through Product page or the Menu (navigation pane, which is included in UML). On this condition, customer can opt for their purchase options, regarded as orders, which displays invoices produced by the Staffs for them.

Each invoice requires to be paid. After the Payment step, receipts are printed out for the customers. After the customers’ payment, orders and products are sent to shipping services for delivery purposes. Finally, after customers received the products successfully and complete their purchase experience 100%, the database will record sales statistics and trending products based on the receipts.

**Functional Requirements & Tasks Descriptions**

**Task 1: Create and manage customer accounts**

|  |  |
| --- | --- |
| **Task: Create and manage customer accounts** | |
| Purpose: | Establish and maintain records of customer information for future interactions and transactions |
| Trigger/Precondition: | A new customer expresses interest in purchasing or inquiring about products/services |
| Frequency: | Occurs with each new customer interaction |
| Work area: | Online platform (application or website) |
| **Subtasks** | |
| 1. Collect customer information | Design an intuitive registration form on the application or website where customers can input their details securely. Use clear labeling and minimal required fields to streamline the process. Employ input validation to ensure accurate data entry and provide real-time feedback for any errors. |
| 1. Enter information into the system | Upon submission of the registration form, automatically input customer data into the database backend. Utilize encryption protocols to protect sensitive information during transmission and storage. Implement error handling mechanisms to address any issues that may arise during data entry. |
| 1. Verify and update information | Allow customers to review and edit their account information through their profile settings on the application or website. Provide clear instructions and options for updating personal details such as contact information or preferences. Send email notifications to confirm any changes made to the account. |
| 1. Assign unique identifiers | Automatically generate unique account IDs or usernames for each customer upon registration. Ensure that these identifiers are easily distinguishable and not tied to personally identifiable information. Use alphanumeric characters or a combination of letters and numbers to create robust identifiers. |
| **Variants** | |
| 3A. Verify customer information via Email Verification | Send a verification email to the customer's provided email address after registration. Include a unique verification link that the customer must click to confirm their email and activate their account. This process ensures that the email provided is valid and allows customers to review their account details before activation. |
| 4A. Assign unique identifiers via Customizable Usernames: | Allow customers to choose their usernames during the registration process. Implement validation rules to ensure uniqueness and suitability of usernames. Provide suggestions or availability checks to assist users in selecting appropriate usernames. This approach adds a personal touch to the account creation process. |

**Task 2: Browse the store catalogue**

|  |  |
| --- | --- |
| **Task: Browse the store catalogue** | |
| Purpose: | Enable customers to explore and discover products offered by the store. |
| Trigger/Precondition: | Customer enters the store or accesses the store's website/application. |
| Frequency: | Varies based on customer interest and engagement. |
| Critical: | Providing an intuitive and engaging browsing experience to facilitate product discovery and encourage purchases. |
| Work area: | In-store displays or online platform (website/application). |
| **Subtasks** | |
| 1. Display product categories | Organize products into distinct categories (e.g., electronics, clothing, home goods) visible at the entrance of the store or on the homepage of the website/application. Utilize clear signage or navigation menus to guide customers to their desired product categories efficiently. |
| 1. Showcase featured products | Highlight select products or promotions prominently within the store or on the homepage of the website/application. Use eye-catching displays, banners, or carousel sliders to showcase featured items that may be of particular interest to customers. |
| 1. Provide search functionality | Implement a search bar within the store or on the website/application, allowing customers to quickly search for specific products by name, category, or keyword. Utilize autocomplete suggestions and filtering options to enhance search accuracy and efficiency. |
| 1. Enable product exploration | Arrange products in an organized and visually appealing manner within the store or on the website/application. Utilize attractive displays, product images, and descriptions to engage customers and encourage them to explore different product offerings. |
| **Variants** | |
| 2A. Personalized Featured Products | Implement a personalized recommendation system that dynamically showcases featured products based on each customer's preferences, browsing history, and purchase behavior. On the website/application homepage or designated sections within the store, display a curated selection of products tailored to individual customers, increasing the relevance and appeal of featured items. |
| 3A. Visual Search Capability | Integrate visual search functionality into the website/application, allowing customers to search for products by uploading images or taking photos of items they're interested in. Utilize image recognition technology to analyze visual input and retrieve matching products from the catalogue, offering a novel and intuitive search experience for customers. |

**Task 3: Manage the Shopping Cart**

|  |  |
| --- | --- |
| **Tasks: Manage the Shopping Cart** | |
| Purpose: | Gathering desired products & checking users’ purchased options, along with the total price |
| Trigger/ Precondition: | After users have completely selected what to buy |
| Frequency: | Appears when customers access Cart button |
| Critical: | Accurate selection, along with price calculation |
| **Sub tasks:** | |
| 1. Customer creates order | An new order will be automatically created after customers opt for their first purchase selection |
| 1. Adjusting Cart | The customer navigates the product catalog and select their desired items, adding them to the Shopping Cart |
| 1. Updating Items Quantity | If customers want to change the quantity of an item, they can easily adjust the number |
| 1. Removing Items from Cart | Customers should have options to remove the products that they decide not to purchase anymore |
| 1. Displaying Cart | The app displays a summary of your Cart (products, quantity, and price) |
| 1. Calculating Subtotal | The application automatically calculates the subtotal of all the items in the Cart |
| 1. Checkout | The customer proceeds to checkout, observe the invoices for payment |
| **Variants:** | |
| 2A. Out of stocks | Unavailable products are still added to cart but cannot be purchased at that time. Nevertheless, customers can receive notifications when those products are available again. |
| 5A. Incorrect Cart | Purchase is still able to be cancelled after “Purchase” button has been pressed, in case customers change their mind about their options. |

**Task 4: Create invoices and receipts for customers**

|  |  |
| --- | --- |
| **Tasks: Create Invoices and Receipts for customers** | |
| Purpose: | Illustrated as proof of payment |
| Trigger/ Precondition: | After customers complete their payment |
| Frequency: | Repeat on every transaction that success |
| Critical: | Accurate price, products, transactions |
| **Sub tasks:** | |
| 1. Retrieving Order details | Fetching the details of the order for which the invoice is to be created. This includes information such as order ID, date of order and customer account. |
| 1. Listing Ordered products | The invoice list all the products that were included in the order, along with their quantities and price |
| 1. Applying Discounts or Coupons | If users have any discounts or coupons, the app will notice users to provide them options for this. |
| 1. Calculating Total Amount | The total price is calculating by adding the total discounted and the tax amount |
| 1. Including Shipping Details | The invoice should include details about the shipping method, address and shipping fees |
| 1. Saving the Invoice | After details are included and calculation is done, the invoice is saved and are sent to the customers |
| **Variants** | |
| 6A. Misunderstanding Invoice | Sending feedback for confirmation |

**Task 5: Handle payments securely**

|  |  |
| --- | --- |
| **Task: Handle Payments** | |
| Purpose: | Verify payment, ensure that all payments are processed accurately and on time |
| Trigger/Precondition: | The customer proceeds to checkout and choose their payment method to complete a purchase |
| Frequency: | Repeat on every transaction |
| Critical: | COD (cash-on delivery) |
| **Subtasks** | |
| 1. Payment detail | Customers fill in their payment details then the system will collect that with the customer’s name, email/phone number from their account. All customer information will be kept confidential. |
| 1. Verify payments | Customers will receive a confirmation note from the bank or e-wallet to confirm their transaction.  To ensure the reputation of the store, COD shipping is only accepted when the customer’s address is in the same city as store’s address |
| 1. Print out bills for customers | Customers will receive digital receipts display their shipping detail, transaction method and the amount they paid. The system will automatically update the database to keep in track of the transaction.  If incorrect charge is happening, customer can contact the store's customer service department to ask for a refund |

**Task 6: Manage goods packaging and shipment**

|  |  |
| --- | --- |
| **Task: Manage goods packaging and shipment** | |
| Purpose: | Ensure customers will receive the product in the best quality and within the best time frame |
| Trigger/Precondition: | After customer finish their payment |
| Frequency: | Repeat on every transaction that success |
| Critical: | Australia-wide order |
| **Subtask** | |
| 1. Contact the customer | Contact customers again by phone to confirm their orders. Confirm with them their shipping detail, contain their order, delivery address and phone number. For remote customers, discuss with the customer the time they will likely receive the goods. |
| 1. Identify the items need to package | To avoid incorrect packaging or missing items, employees must recheck customer orders before packaging. Then, order information (recipient name, home address, ordered items) will be printed and pasted on the package.  Long distance orders will be packed extra carefully.  If the product inside has errors or is missing items, customers can contact the store for a refund or exchange. |
| 1. Contact the delivery party | Connect with a reputable nationwide delivery party. Because the store's products are mostly food, the delivery party must ensure food hygiene and safety, especially for long-distance orders.  For orders close by within a 5km radius of Glenferrie Road, the store will support free shipping and express delivery. |
| 1. Deliver the goods to the shipping party/delivery guy pick up the order | For long-distance orders, the shop will send the goods to the shipping units as soon as possible so they can transport them to customers as quickly as possible. For nearby orders, the shipper will pick up the goods directly from the shop. |
| 1. The goods are being delivered | All activities, from packing the goods to the shipper transporting them, until the goods are delivered to the customer, are carefully updated in the shop's database system.  Customers can also view the status of their order in their account. |
| **Variant** | |
| 1a. Customer denied the order | Stop all the packaging and refund to the customer |
| 5a. Shipper cannot find/contact to customer | The shop will inform that the goods have already arrived at the customer’s address by different method (call, email, etc.)  The customer will not get a refund or exchange if they do not response back to the shop |

**Task 7: Record statistics of goods sold based on receipts over various periods**

|  |  |
| --- | --- |
| **Task: Generate basic statistics on goods sold over various periods** | |
| Purpose: | Give insight into the amounts of sales in a period |
| Trigger/Precondition: | Requested by the Staffs |
| Frequency: | As much as requested |
| Critical: |  |
| Work area: | Owner’s website or application |
| **Subtasks** | |
| Process request from owner | System takes request from the owner when interacted with through the website/app to send statistics |
| Check number of sales in history | Data of the amounts of sales will be sent over from the website’s information system to the system |
| Visualize the data of sales | Said data above collected will then be used as a dataset for creating chart showing number of sales in requested time |
| Display the statistics | System shows chart created by displaying through the website/app |

**Task 8: Update the available products as new items become available**

|  |  |
| --- | --- |
| **Task: Update the available products as new items become available** | |
| Purpose: | Updating the product list from the store with the newest ones available |
| Trigger/Precondition: | Before the store opens |
| Frequency: | Everyday |
| Critical: |  |
| Work area: | In the website or application |
| **Subtasks** | |
| Check for available products | System gets a list of available products from company’s warehouse, storage with their associated images, descriptions, etc. |
| Add/remove items | System will update its current version of product list with the new one including all the new/removed items |
| Display the product in the store | System adds the product to the store front menu |
| **Variants** | |
| 1A. Items have missing information | Systems will fill it with generic information such as “Picture of (item’s name)” and send a notice to owner |

**Quality Attributes**

**Usability**

Food ordering website/application needs to be intuitive with their interaction with users for a seamless and satisfying experience. Sometimes, users will not understand something in the interface of the system, there needs to be explanation and some help from the system to highlight what those thing does in a simple and easy way to understand. Customers can also interact with some features that they don’t quite understand or by accident, like buying an item without realizing, the system must help to alleviate those issues.

To do this, the system will do the following:

* Most UI interactable features will have brief explanation when hovered.
* When making a major decision, the system will request for process to continue or cancel with pop-up description showing what are being done.

**Security**

For an online food store system, security is necessary and needs to be highly evaluated. The system needs to securely process the customer request when purchasing items via handling their money or credit cards to prevent actors stealing money. Also, it’s important for proof of purchase when delivering products bought by customers online who can fake their identity.

To achieve this, the system will need to do the following:

* Hiding customer’s credit card details
* Invoices sent to customer the moment purchase is made that will be requested when products are delivered.

**Correctness**

The system in question should only work as intended as an online food delivering system, no more no less, meaning customers are legally bound to the fact that their personal information won’t be used by third parties before, during and after their transaction, if used, the change needed to be shown to the customers. Additionally, aside from buying goods, customers need to also allow to refund their items in situation of low-quality item not meeting standard as promised.

To achieve this, the system will:

* Not saved important personal data from customers (such as address, name, etc.), only account login details are stored for easier access.
* Customer should be able to refund within specified days after purchase given in their receipts if they can prove the product fails to achieve normal standard (rotten, bug-infested, etc.)

**Reliability (Availability)**

The system providing access to food for customers need to be available at least before midnight for customers to leniently purchase and get delivered as soon as possible, especially during holiday season when more people are home, potentially more will be shopping for holiday food items. For critical situation such as possible local electrical outages, the system still needs to be able to function normally.

To get this, system will do the following:

* Have scalable servers to handle website/application high usages during predicted or unusual spikes.
* Have backup electrical generators in-office where the system is to manually restart and run normally.

**Performance**

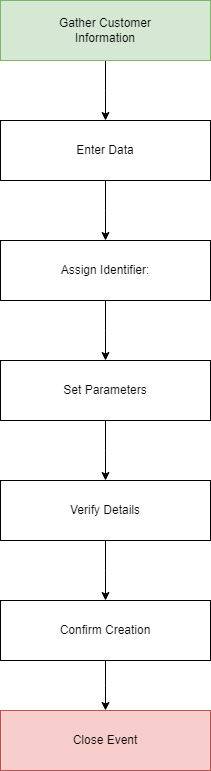
Considering the scope of the system being used across Australia, problems arose such as delay in loading items list and purchase processing and so on need to be as minimal as possible. Aside from this, the number of purchases the system can handle should be specifically quantified to stop system from overworking or vice versa.

To do this, the system will do as follows:

* The system response to purchase or when a customer interacts with anything in it needs to be within 4 seconds.
* Number of purchases handled need not to be lower than 200 and higher than 1000 purchases per day.

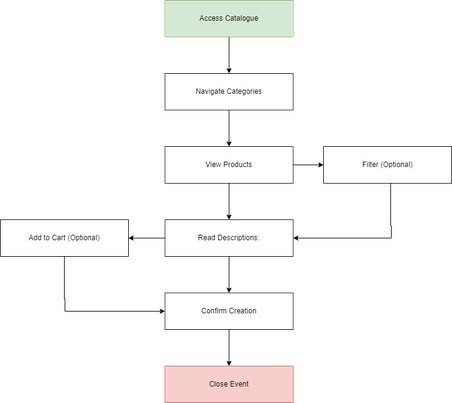
**Workflow**

**Task 1: Create and manage customer accounts**



Create and manage customer accounts

**Task 2: Browse the store catalogue**



**Task 3: Manage the Shopping Cart**

A diagram of a process

Description automatically generated

Managing the Shopping Cart

**Task 4: Create invoices and receipts for customers**

A diagram of a process

Description automatically generated

Including Shipping details

Calculating Total price & fees

Saving Invoices

Retrieving Details

Listing Products

**Task 5: Handle payment securely**

Handling payment

Payment detail

Verify payment

Print out bills for customer

Close event

**Task 6: Manage goods packaging and shipment**

Managing goods packaging and shipment

Contact the customers

Cannot contact to the customers

Identify the items need to package

Contact the delivery party

Deliver the goods to the shipping party/delivery guy pick up the order

Customer denied the order

Close event

The goods are being delivered

**Task 7: Record statistics of goods sold based on receipts over various periods**

Visualize sales data

Recording sales history

Process Request

Display Chart

Close event

Show sales statistics

**Task 8: Update the available products as new items become available**

Update current products

Close event

Show the products

Check available products

Update products

**Possible Solutions**

**Possible Solution 1 – Website Based system**

The website serves as a platform for online customers to create and manage their accounts, access the store inventory and purchase products. This approach involves developing a website tailored to the needs of the company. By offering a user-friendly design and intuitive interfaces, the website promotes the brand chain of the store with more opportunities than physical stores by means of conveniences and productivity.

First and foremost, by accessing the website link, the *Home Page* will appear first, along with some popular items of the store. Then, the website will guide online users to create a new account, or sign in with existing account using username & password to become an online customers of the store. Online users must sign in their account to make transactions on the website, as well as purchase items.

Once unique username and password has been entered, detailed list of items will be available at ***All Your Healthy Foods***, arranged for easy access in the *Home Page*. Users can also navigate the Product Page to review product descriptions, and add their desired products to Cart by clicking *“Add to Cart”* button, which appears below each product. The website allow online users to add, remove and verify the purchase items in their shopping cart, which can be observed in the Cart page. After ensuring the purchase cart, the website will display various payment methods for customers to pay with secure payment process.

*Receipt Page* will be illustrated after successful payment have been made, which displays information about the previous transaction, the total price, payment, along with purchased products. These types of information will be recorded in the database of the website, which can only be observed by the developers, the owners of the storechain, not the online customers.

To know when the products will be delivered, or when it will arrive the address, customers can tract the status of their orders in real time, receive notifications with order updates and delivery schedule in the Delivery logo, which will display the progress of all your purchased items. For any helps or concerns, like other online sale platforms, online users definitely can contact customer service representatives from the website for assistances, using the contact information at below of the website (footer).

Based on the database recorded from all the orders, the website will provide basic data on products sold in the past, allow store owners to gain insights into sale trends and customer preferences.

By implementing this website-based system, ***All Your Healthy Foods*** can enhance not only its online presence and customer loyalty, but also valuable insights into customer behavior and market trends. This will be regarded as significant step towards expanding the business, and reaching the expected outcomes.

**Posible Solution 2 – Application Based system**

To launch All Your Healthy Foods into the digital sphere and broaden its reach, deploying an application-based system provides a comprehensive answer. This strategy entails creating a dedicated mobile application suited to the needs of the company and its clients.  
The application will function as a consolidated platform for customers to explore the store inventory, place orders, manage their accounts, and monitor delivery. By providing a user-friendly design and straightforward navigation, the application improves the whole purchasing experience, making it convenient and accessible to customers across the country.

The application's key features are as follows:  
  
1. Customer Accounts: Users may set up individualized accounts to maintain their profiles, track order history, and receive tailored suggestions based on their interests.

2. Store Catalogue: The program will provide a comprehensive list of items available at All Your Healthy Foods, organized for simple access. Customers can easily navigate through categories, examine product descriptions, and add goods to their cart with a few taps.  
  
3. Shopping Cart Management: The program allows customers to simply add, delete, and alter goods in their shopping cart, making necessary adjustments for a smooth checkout process.  
  
4. Order Management: Customers may see the progress of their orders in real time, from processing to delivery. Customers can receive push alerts with order changes and delivery timetables.

5. Payment Processing: The program will offer secure payment processing, allowing consumers to pay for orders with a variety of payment methods such as credit/debit cards, digital wallets, and online banking.  
  
6. Customer Support: With integrated customer support capabilities, customers may contact customer care personnel from within the application for help with orders, product queries, or other issues.  
  
7. Analytics and Reporting: The program will give basic information on commodities sold over various time periods, allowing company managers to develop an understanding of sales patterns and consumer preferences.

All Your Healthy Foods can strengthen its internet visibility, attract new consumers, and increase customer loyalty by creating a bespoke mobile application. The application will be a valuable tool for expanding the business outside its physical presence and capitalizing on the rising trend of online-buying.