

Hi-Lo Supermarket Online Shopping System

Final Document

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Problem Statement

For our problem we chose HI-LO Supermarket which is located at UWI MONA Student Union as our client for this project. It is the only Supermarket located on campus where students shop for most important goods that cannot be purchased from the vending stalls that are located all over campus grounds. With that being said, we want to use that Supermarket as our target to help solve or reduce the long waiting in lines and the amount of students that visit the store (since there are a lot of students attending the school) and making it easier for us students by implementing a system to do such.

DESCRIPTION OF CLIENT

HI-LO food store is a prominent supermarket in Jamaica which supplies fresh goods and services to its customers. However, with their motto being “Making Life Easier”, they didn’t bring it up to standard. They had issues with their store being congested due to tight spaces especially during peak hours.

VISION

We wish for all activities in the supermarket to be efficient and easily monitored without hiring additional staff.

ISSUE STATEMENT

There is congestion in the small area of the supermarket at peak times throughout the day. This presents many other issues pertaining to customer service that hiring more staff will only make worse due to space constraints. If these issues continue to persist, the supermarket will experience a loss of business, reduced profit, and reduced quality of service.

METHOD

The DMAIC approach will be used to gather information and data to determine how exactly we can improve and refactor the process of what is currently employed.

Software Requirements Specification for

Hi-Lo Supermarket Online Shopping System

Version 1.0.2

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.0.1	Glenroy Logan, Jason Williams, Shanice Reid Sania Spence Rowan Atkinson	As our program was implemented we had to modify our Operating Environment to include the operating systems needed to run the software and our Design and Implementation constraints.	25/10/18
1.0.1	Glenroy Logan, Jason Williams, Shanice Reid Sania Spence Rowan Atkinson	In our Software Design Specifications, we updated the General Constraints to our System	3/11/18

1 Overall Description

1.1 Product Context and Need

HI-LO food store is a prominent supermarket in Jamaica which supplies fresh goods and services to its customers. However there are some issues with congestion due to tight spaces especially during peak hours at our target store, located at the UWI Student Union.

We wish for all activities in the supermarket to be efficient and easily monitored without hiring additional staff.

If this problem persists, the business may lose revenue as well as customers, and experience a reduction in its quality of service. There is also a possibility of a competitor overshadowing the store.

Our team aims to create a mobile application that will allow customers to order and pay for items available in the Hi-Lo supermarket. After making said order, customers will be able to pick up their items at the supermarket in a timely manner. If our system is implemented, the store can truly live up to its motto of "Making life easier".

1.2 Product Functionality

Here the Users are able to sign in on the application and get information relating to the list of items available at the Hi-Lo food store branch at the UWI Mona as well as to select tasks necessary to obtain products. These include being able to:

See the quantity of items available

Determine whether or not item is available for purchase.

See The prices of items available

Make Purchases for item/ items selected

Determine A time period in which customers can be able to pick up items of purchase

This will be beneficial to the customer as they will be able to view items within in their own time, and thereby correct the issue of long lines being created in the store when they come to collect their items. This also helps in putting significantly less strain on the employees working within the store as they are better able to efficiently cash purchases from students. The manager shall be able to update the database of the food items and their prices in a timely manner to customers to be displayed on application so that their information can be updated at any given time.

1.3 Stakeholders and Users Characteristics

Customer Experience Manager: One of the main persons contacted at the Hi-Lo main office, this person is able to provide the list of food items and their prices that is to be distributed across all the Hi-Lo food stores including the one at the UWI Mona Branch so as a result they would provide the necessary database that is necessary for the Branch Manager to use in determining the price for the available food items.

Branch Manager: A main stakeholder in the system, The manager would use the system to view the list of items available at the UWI Mona branch as well as to be able to search for specific items in order to check the quantity available so as to know when specific items needs to be restocked in the store. This information is then sent back to the Customer Experience manager at the Hi-Lo main Head Office to indicate to them that they are running low on specific items in the store that needs to be restocked. The manager would be able to manage the information presented more through the use of the application itself and the database given to them with the list of items containing their prices and quantity. The branch manager may use the application much more frequently than that of the Customer Experience Manager .

Customers – Another main stakeholder is the customers shopping at the food store . The customers would interact with the application – the web application, as they would be able to log on to the system with their credentials and be able to view the status of their items at their convenience and pick up items at any appointed time presented.

1. Describe the pertinent characteristics of each user. Certain requirements may pertain only to certain users.

Customer Experience Manager : Provides the necessary database and items from the Hi-Lo main head office to be sent to the Branch manager for the type of items that are to be sold at the UWI Mona Branch or restocked.

Branch Manager: Uses the database provided by the Customer Experience Manager to determine the prices and quantity of items that are sold at the UWI Mona Branch and updates this database on whether they are running low on items and send back this data back to the Customer Experience Manager at the main head office.

Customer: Uses the application to be able to view and purchase items of their choice and is indicated as to when they can come pick up those specific items.

The most important users of the product is that of the customers as they are the ones who would heavily rely on the application to know whether or not an item is available before arriving to the store for pickup.

The next most important user of the product would be that of the Branch Manager as they would be the ones updating the system to let the customers know whether or not an item is available for purchase and to also send the information to the Customer Experience Manager at the Hi-Lo main office on whether they are running low on stock.

The least important user of the Product is that of the Customer Experience Manager as they would just need to use the system to be indicated on whether an item needs to be restocked from the Branch Manager and if necessary to just send the Branch manager an updated database on any new items that may be added to be sold at the store branch.

1.4 Operating Environment

The software will operate on many devices with networking capabilities and browser access such as PCs, smartphones, tablets and Desktop computers. The interface of the product is heavily graphical based and will require the use of a peripheral device such as a mouse or trackpad to navigate smoothly. The system will operate on operating systems with support from modern web browser software.

Minimum Hardware Requirements
Intel Pentium 4 Processor

Minimum Software Requirements
Android 5.0 +
iOS 7.1.2 +
Windows 7,8, 10
macOS 10.9+
Linux
-64-bit Ubuntu 14.04+, Debian 8+, openSUSE 13.3+, or Fedora Linux 24+

1.5 Design and Implementation Constraints

A Constraint could include that customers are only allowed to make item purchases on the application during the hours in which the store is opened

The internet connection is also a constraint for the project. Since the project fetches data from the database over the Internet, it is crucial that there is an internet connection for the application to work.

A constraint is if there is no operating system they would not be able to access the application software at all.

1.6 Assumptions and Dependencies

If a mobile application version of the software system was to be implemented then this would have to be done on the basis that the Operating systems would have to be taken into consideration when making that version of the application
eg: When creating the application then it would have to be decided on if the application is going to be build on Android Os, Ios or both or any other existing mobile OS.

These factors are not designed constraints on the software but are, rather, any changes to them that can affect the requirements in the SRS. For example, an assumption may be that a specific

operating system will be available on the hardware designated for the software product. If in fact, the operating system is not available, the SRS would then have to change accordingly.

One assumption of the Hi-Lo Management System is that if the client doesn't have a genuine software version of Microsoft Excel they may not be able to use the database to update the Food items at the Store, because after a period Microsoft may ask the user to enter a product key or renew the software, that only exists with a genuine copy of the application software. The web-based component of the system and the backup storage of the data via Microsoft Outlook is dependent on the internet and will not work without it.

2 Specific Requirements

2.1 External Interface Requirements

2.1.1 Hardware Interfaces

The website is accessible from Windows And Linux PCs as well as Android and iOS powered mobile devices through their respective browsers. Each hardware device listed above must allow the user to input text on the website.

PC

Since the application must run over the internet, all the hardware to connect to the internet will be hardware interface for the system. As for e.g. Modem, WAN – LAN, Ethernet Cross-Cable.

The hardware devices will not secretly store private information on the customers.

Mobile

Android is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open source software and designed primarily for touchscreen mobile devices such as smartphones and tablets. About 80% of mobile phones in the world run Android. The phones range from very expensive to very cheap which allows them to be owned by a wide variety of users. Most Android phones today have a home button, back button, multitask button and volume keys. When it comes to interacting with our website users are able to use said hardware features to navigate the website properly.

iOS based phones or iPhones are more secure than Android devices and tend to be rather costly. The phones are known for having one main button at the front (home button), power, and volume keys. The phone should allow the user to navigate the website easily.

2.1.2 Software Interfaces

The Hi-Lo System shall be accessed through web browsers running on Windows, macOS Android and iOS. The System shall use Excel Spreadsheets (CSV) to store the database and create reports and communicate with Microsoft Outlook 2010 to have backup storage of the information that is stored in Excel database. The System shall export all reports created to PDF format. The System will also need to interact with an external credit/debit card payment system such as Paypal or Mastercard to facilitate online transactions.

2.1.3 Communications Interfaces

The website works best on Google Chrome version 59 and up and Firefox version 3.0.1 and up. The Aforementioned browsers are the two most popular in the world and are most likely to be installed on the customers hardware device. Aside from providing adequate speed both browsers are also fast. The more up to date the users browsers the more secure and feature filled it should be. The website shall utilize TCP in an effort to ensure no data gets lost during transmission. HTTP provides good forms that the customer can use to input data and save it.

Through the use of SMTP the Manager on the other end of the system will be notified of the order that was made. It is of utmost importance that the information is communicated to the manager as soon as possible so that the goods may be readied in time. If any data regarding the information is lost then the order will not be carried out properly. The data being sent will be encrypted in order to ensure that information is secured. STARTTLS will be used to encrypt the data.

2.2 Functional Requirements

Requirement #: 1 Make Order

Use Case: 1-Make Order

Rationale: Necessary for the system to facilitate users' selection of items to be purchased

Description (User Requirement): The system should allow the user to browse available stock then select the quantities of select items they wish to purchase

Details (System Requirements):

1. The system shall display the items available for order
2. The system shall allow the user to select an item they are interested in
3. The system shall allow the user to input the quantity of a selected item they wish to purchase
4. The system shall allow the user to add items to be purchased to a virtual shopping cart and continue to shop

Acceptance Criteria:

1. The user is able to add an item to their shopping cart having entered a valid quantity for the item selected

Relates to/Dependencies: 2/5

Priority: High

Team Owner: Rowan Atkinson

Requirement #: 2 Checkout Order

Use Case: 2-Checkout

Rationale: Finalizes the order made by users and facilitates payment transactions

Description (User Requirement): The system shall allow the user to review and pay for the items in their cart

Details (System Requirements):

1. The user will be allowed to select an on-screen option to proceed to checkout
2. The system shall display a detailed view of the user's order including prices and quantities
3. The system will calculate and display an estimated time to compile the user's order
4. The system shall allow the user to select the preferred method of payment
5. The system shall transfer the user to a payment interface to complete the transaction
6. The system shall display a digital receipt summarizing the purchase
7. The system will prompt the user for the time and date for pickup of the order

Acceptance Criteria: The user is displayed a receipt if the transaction is successful or an error message if the transaction fails

Relates to/Dependencies: 1/1

Priority: High

Team Owner: Jason Williams

Requirement #: 3 Update Inventory

Use Case: 3-Update

Rationale: To reflect changes in available stock on system for accuracy in online purchases

Description (User Requirement): The system shall update item information

Details (System Requirements):

1. The system shall read item information from the store database
2. The system shall listen and react to updates in the database
3. The system shall adjust the database quantities based on orders checked out

Acceptance Criteria: The system shall update item information locally once the data has been successfully read from the online store database

Relates to/Dependencies: 1 / 2

Priority: Medium

Team Owner: *Sania Spence*

Requirement #: 4 Send Notifications

Use Case: 4-Notifications

Rationale: Notifies both registered and unregistered users of promotional events at the supermarket such as deals and discounts

Description (User Requirement): The system should send store notifications to the user's device

Details (System Requirements):

1. The system shall generate notification messages based on available promotions and account information
2. The system shall push regular notifications messages to users
3. The system shall direct users to further promotional details when notifications are pressed notifications

Acceptance Criteria:

1. The system shall display a notification on the screen once the notification message has been generated successfully and the user has notification services enabled.

Relates to/Dependencies: 5/6

Priority: Low

Team Owner: *Rowan Atkinson*

Requirement #: 5 View Items

Use Case: 5-View Items

Rationale: It is important for customers to browse the items that are available in the store for purchase

Description (User Requirement): The system shall allow the user to see and search for any items available. The system shall display important information such as price and quantity for each item.

Details (System Requirements):

1. The system shall display the last time that the inventory was checked.
2. The system shall organize items into categories
3. The system shall display items in lists and menus for users to browse
4. The system shall provide a search functionality for users to find items based on keywords
5. The system shall ensure that the displayed items can be selected for purchase.

Acceptance Criteria: The user is able to browse items after a list of items readily available for purchase has loaded on the screen

Relates to/Dependencies: 1/3

Priority: High

Team Owner: HR Manager

Requirement #: 6 Account Management

Use Case: 6-Accounts

Rationale: To properly associate and authenticate an identity to an order

Description (User Requirement): The user shall be able to create an customer account on the system.

Details (System Requirements):

1. The system shall allow a user to login to an account
2. The system shall allow a user to create an account if there is no existing account
3. The system shall allow a user to edit and view account details such transaction history

Acceptance Criteria: The user shall be allowed to browse store items after an account is successfully created, edited or logged into.

Relates to/Dependencies: 1, 4/None

Priority: Low

Team Owner:

2.3 Behaviour Requirements

2.3.1 Use Case View

In total we have six Use Cases: View Items, Make Order, Checkout, Notification, Update Inventory and Accounts.

View Items allows the Customer(actor) to see all the goods available for purchase.

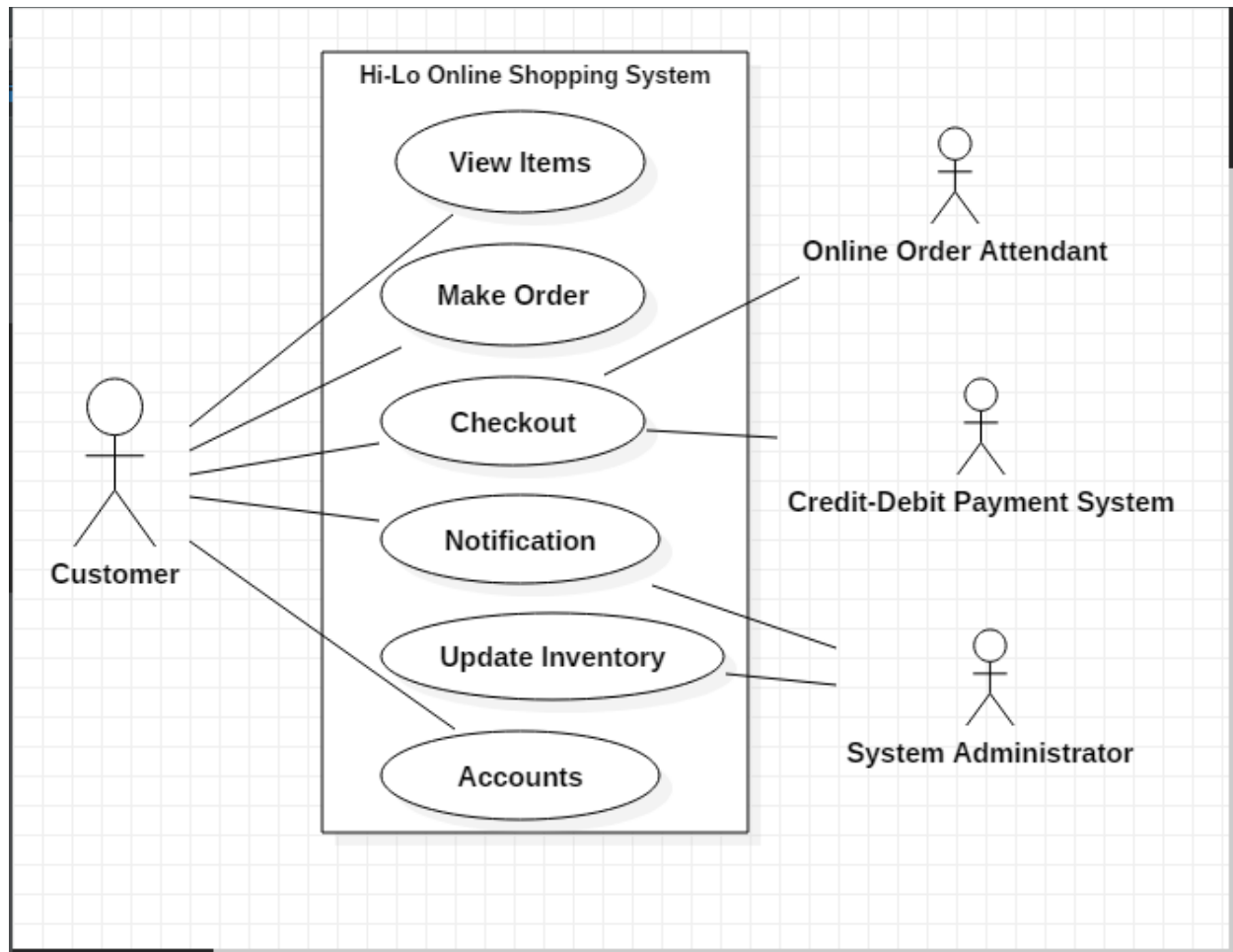
Make Order gives the Customer the power to add items he or she desires.

Checkout enables the Customers to purchase the items that were added to the cart and receive a digital receipt. The Online Order(actor) attendant is informed about the items that were checked out and immediately starts to fulfill the order. Customers may use the Credit-Debit Payment System(actor) to purchase their goods.

Notification alerts the Customer when the purchased items are available for pickup. The System Administrator(actor) oversees the notification system to ensure that messages are sent out in a timely manner regarding the completion of an order by the Online Order Attendant.

Update Inventory is done to ensure that the amount of goods available for purchase is as accurate as possible. The System Administrator(actor) is in charge of keeping track of all items going in and out of the Inventory.

Accounts is used to manage the various users that login in to the website.



3 Other Non-functional Requirements

3.1 Performance Requirements

1. Browsing items should be seamless and streamlined

2. Loading Items from database should take no more than 10 seconds
3. Adding items to the shopping cart when making orders should be almost instantaneous
4. Item Menus should be updated in the background without affecting the performance of other services
5. Searching for items should take less than 1 minute.
6. Transactions should be possible on slower internet connections
7. Any transaction should produce a response within 10 seconds
8. The system should be able to accommodate up to 100 users without performance loss
9. The database of the system should be able to efficiently handle up to 1000 or more requests at any given period.

3.2 Safety and Security Requirements

Safety requirements defined based on our interactions with the client include specifications on the transfer of data between interfaces and the integrity of this data. The system must transfer orders to a online web server over a secure connection using encryption methods and the system must accurately communicate order details without data loss. The system will also only take orders from registered users so that activity on in the system can be traced to an identity. The client expects this product to have a medium level of security. Most sensitive data will be handled in external software interfaces. Only basic account information and order details will be processed in the local system. Security requirements include:

- The system will immediately shutdown after unauthorized breaches in order to prevent more customers entering information.
- The system has a scheduled maintenance every week in order to ensure all aspects are working well and up to date.

3.3 Software Quality Attributes

Maintainability- The system should be maintainable and designed for change by providing accurate and complete documentation for the sake of future developers and help in the evolution process of the software.

Robustness- The system shall not fail more than 3 times in a month and it shall not be down (non-responsive) for more than an hour.

Portability and flexibility- The system should be able to run on different devices such as smartphones and laptops across different platforms taking into consideration operating systems, browsers etc.

Correctness- The reports generated by the system should be consistent with the input data that it correlates with at least 100% of the times.

4 Other Requirements

Supporting Information

Interviews with Stakeholder

Collecting Necessary Data Necessary to implement in the software system such as the prices of the items at the store.

Database Requirements such as:

Type of information used by various functions

Frequency of use

Accessing capabilities

Data entities and their relationship

Data Integrity Constraint

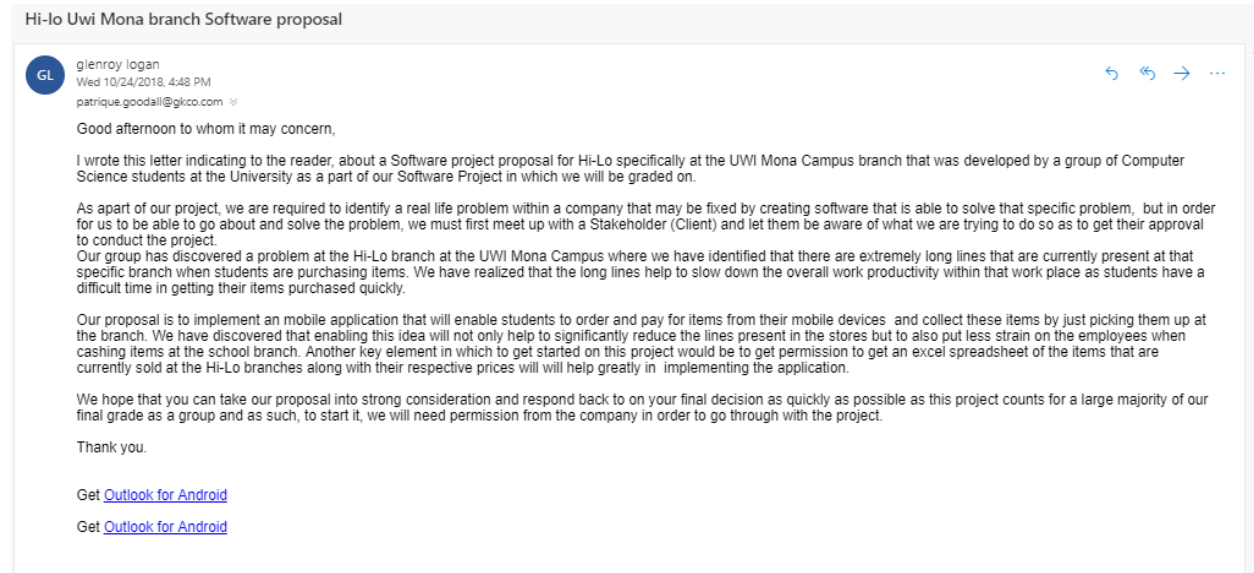
Data Retention Requirements

Appendix

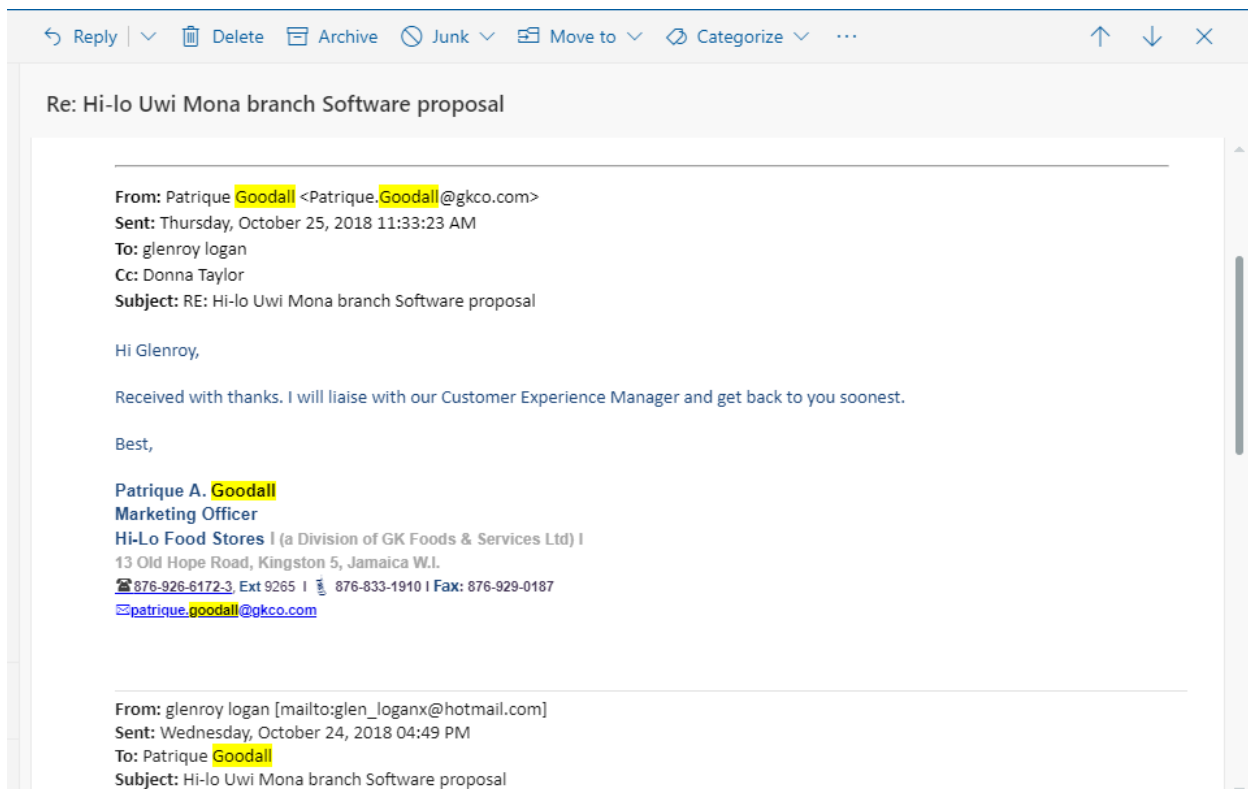
<Please include here a description of what was done to elicit requirements, include dates of interview and who was interviewed, questionnaires, interview logs, observation activities, client responses etc.

Essentially, this section should provide proof of activities that resulted in the compilation of this document>

Failure to include supporting evidence here may be construed as evidence that requirements elicitation and analysis activities were not done!!



The software proposal was conducted first by visiting the UWI Mona Hi-Lo branch where the manager was spoken to about the situation. We were then recommended to speak with various personnels at the Hi-Lo main head office in cross roads in order to gain permission to go through with our proposal as well as to gain the necessary information and items required which was done through a form of interview process with the Marketing Officer. The head office was contacted through phone call where we got through with the Marketing Officer for Hi-Lo at their main head office. The idea was then suggested to the marketing Officer where through email as can be seen in the screenshot above.



Here we see the response of our Client where the proposal was sent to their Customer Experience Manager where the proposal was further explained through phone call and was approved. The Marketing Officer also left their contact information in the email.

Interview on September 19, 2018 with the Customer Experience Manager:

Question 1: Could you tell me some issues that Hi-Lo UWI faces?

Answer: Overcrowding, Theft, Stressful work environment, Overburdened staff just to name a few.

Question 2: What is the main problem that Hi-Lo UWI is faced?

Answer: Not being able to fulfill the all the orders in a timely manner.

Question 3: Does the main issue result in loss of business?

Answer: Some customers put back their goods and leave the store when the lines are too long or if the cashier is seemingly processing orders slowly.

Question 4: Would you be interested in an online system that should solve the issues at Hi-Lo?

Answer: If such a system could be created I would sure love to have it.

Interview on October 25, 2018 with the Customer Experience Manager:

Question: For an Online Ordering System, what are some important features do you think it should have?

Answer: Well, I think it should allow customers to pay for their goods with a credit or debit card and there should also be some kind of digital proof to show that the goods belong to them.

Question: Do you think this system should be highly secured?

Answer: Clearly, since customer privacy is of the highest priority. If customer information gets leaked then people will lose faith in the system and it will damage our company.

Question: How many persons do you think would be needed to fulfill the online orders?

Answer: There would need to be at least two person i.e. one gathering the physical items ordered online and the other overseeing the order.

Question: How fast do you think this system should be?

Answer: We live in a fast paced society so as soon as the customer pays for their order, it should be ready within the next 15 minutes.

Hi-Lo UWI was observed at varying times for the last two weeks in september; these times included 12pm, 5pm and 7pm. We noticed that there was a recurring problem of overly long lines. We could see upset customers leaving Hi-Lo to seemingly buy goods elsewhere. Given that the space is so small and the university is host to so many students, it tends to get over crowded easily.

1.0 Project Overview

Our client is the Customer Experience Manager at the Hi-Lo Food Store. We would like to solve the issues at a particular Hi-Lo Store namely Hi-Lo UWI. The Hi-Lo Store at the University of the West Indies has major congestion issues due to having relatively small space. This problem becomes a lot worse especially at peak hours. Many of the customers end up leaving the store which contributes to a loss of revenue.

Our software shall implement an Online system that will make the product buying process much more efficiently. The intended users, the customers/students, should be able to order their goods online and pick them in store. The system shall allow users to browse items available for purchase, add them to a cart and pay for said items via a credit/debit card system. The ordered items should be gathered and placed at a specific area, waiting for the individual to pick them up. The customer must show their digital receipt, which is given at checkout, in order to receive items.

2.0 Architectural Design

Layered Architecture Design:

It is the most commonly used architecture pattern. Components within the layered architecture pattern are organized into horizontal layers, each layer performing a specific role within the application which means the layers are isolated. Each component represents an

operation that must take place before the lower component can perform. The components were designed to properly streamline the process of shopping online while taking the clients requirements into consideration. The login serves as authentication for users. Users who refuse to login or sign up will be regarded as guests and be limited to browsing items. The checkout cart component represents the main service of the system. It encompasses the adding of items to a cart then submitting an order based on the cart's contents after a successful payment has been made by a customer. The local database component represents the convergence of customer and store data. This database comprises of data from two parties and is required to be regularly updated to facilitate communication with minimal errors. Data such as customer orders or item information from the Hi-Lo database is frequently updated in the local database. The Hi-Lo database represents the store's main database containing critical item information. It is managed by Hi-Lo and is an external but essential component on which the system depends that stores the information needed for the company and its customers to interact with online.

2.1 General Constraints

We had to consider the type of device being used by a customer. Some customers are still using old windows operating systems with outdated web browsers. Designing a website for older browsers may pose a security issue. Some Operating Systems have stopped receiving support for example Windows Xp, which means they are open to attacks from hackers. It becomes a lot more difficult to protect user information. It took us quite some time to consider which design would be able to best serve all our customers and be most efficient for our application, regardless of which device they were using. The Android operating system of today is far more secure now than it was say 5-6 years ago. Customers using an outdated android phone place themselves at the risk of having their information hacked. Many applications on the Google Play Store are hosting malware inside. Android being the most popular mobile operating system means that hackers are more likely to target it over an iOS device.

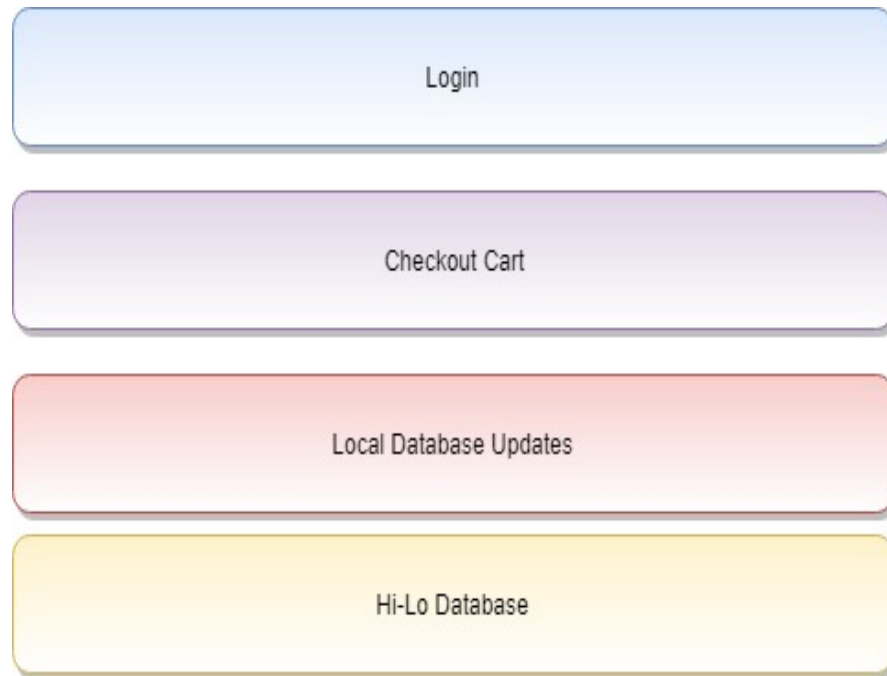
Some customers may have a slow or horrible wifi connection. This connection may result in information being lost after entering data on a form. An appropriate design pattern had to be chosen that could allow even users with "bad" wifi to have the least stressful experience. The great thing about our website application is that, no matter what kind of mobile phone you are on, you should be able to use the website. We were aware that some users have cheaper phones

than others. The really important aspect was the type of browser being used to access our website. Browsers like Chrome, Safari and Firefox should have no trouble when using the website. There are however some mini browsers like Opera Mini, that may give users a slightly different experience since those browsers are “slimmed” down.

The design of the website is made in such a simple manner that anyone can use it. It was clear that we couldn't make the website too advanced or confusing since some customers only have a basic knowledge when it comes to technology. Widely known objects, a simple system user interface and an easy to navigate menu had to be implemented.

2.2 System Architecture Diagram

LAYERED ARCHITECTURE DESIGN



2.3 Alternatives Considered

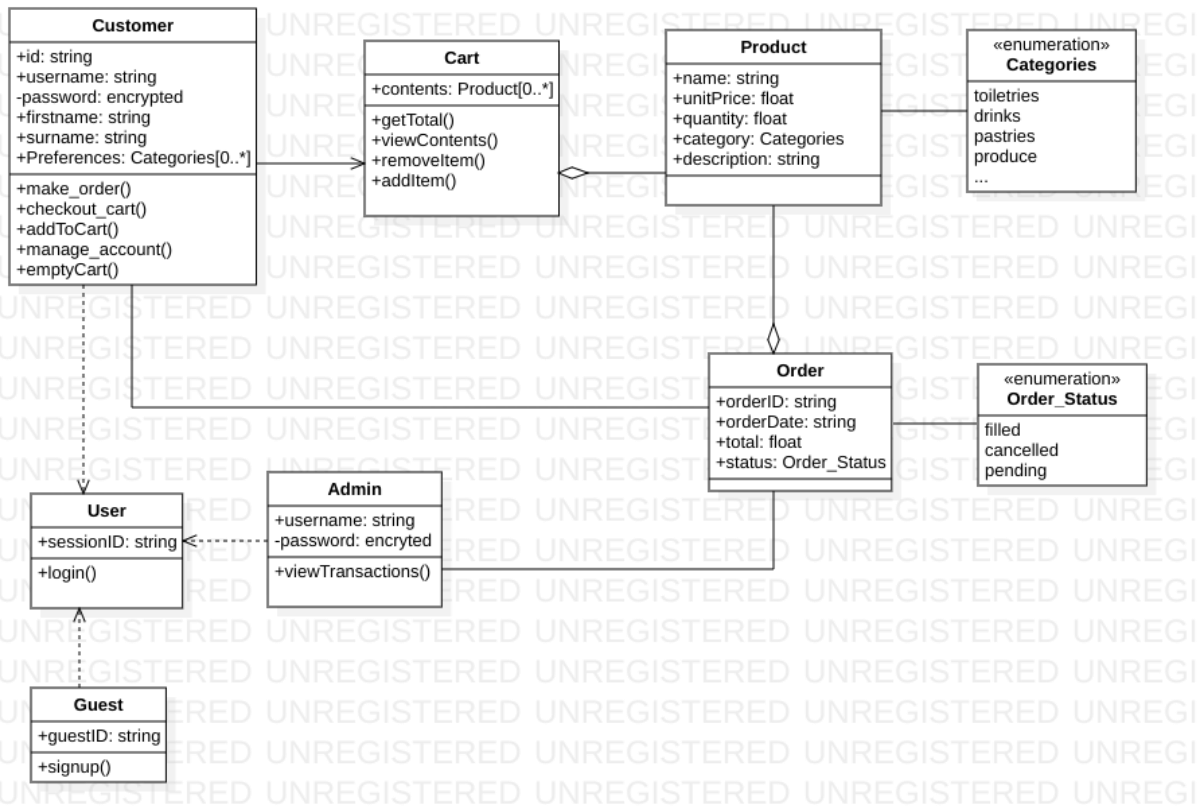
Repository Architecture Design: All data in a system is managed in a central repository that is accessible to all system components. Components do not interact directly, only through the repository. Repository pattern is used when managing large volume of information that are generated to be stored for long period of time. We considered using Repository because reading the description of using a Repository pattern and thinking of our application we thought it was the perfect fit but then looking through the other types and focusing on the Layered pattern we realised that for our application we would have isolated body parts meaning that each part of our system would have to be done one at a time starting from top to bottom and have teams taking responsibility for each layer. Plus our application doesn't have one central repository, hence, our system won't fail if one part fails but instead if our interface is stable then other parts of the pattern can be replaced. Lastly, it just wasn't a fit for the application we plan to do.

2.4 Architecture Justification

The Repository pattern allows for large volume of information to be stored for long periods of time. Our application is just for students/customers who prefer to order online rather than going to the Hi-Lo store and be caught in a line that might take forever to get through. This means that not every student/customer would want to do the online shopping but for those students/customers who wants to, the option will be available. If one part of the system fails then everything fails while the Layered pattern we used as long as the Interface is working then other parts are able to be replaced if any part of the system fails. In addition as said above in 2.3 we do not have one central repository instead we have layers in which teams /actors are responsible for. Lastly, it just didn't match up to what we wanted to do for our application. Our application depends on layers and service is given to the layers above, meaning, that the first one has to be done then the second and so on, hence, the name layer of isolation is given.

3.0 Class Diagram

CLASS DIAGRAM



3.1 Design Notes

Product: With the implementation of this class, the system allows for viewing specific details about a particular item sold at the Supermarket, these being the item name, unit price, quantity and category. This was done so as to be able to differentiate between products and product types to help remove the assumption that if a product has the same name it can be differentiated using the other attributes such as the Category and Price and as a result this class was added onto the diagram design

Cart: Adding a cart class was necessary so as to store all the items to be purchased by the customer and saving them so that they can be able to view them, get the total price for the item as well as to add any additional items before purchase. An assumption was made that the customer would want to be able to store items in a specific location while browsing the system

that would allow them to go back and remove or add additional items to their final purchase and so the Cart class was added to help solve this potential issue and so this was considered into implementing the diagram design.

Categories: The category enumeration was added as to ensure that items were grouped according to their product type thus helping to make the process of searching for a particular product much easier. One assumption that was made was that a customer might be looking for a product that may be very difficult to find and by placing these products in groups it helps the customer to find the product much faster compared to if all products were not categorized.

Order: This class is implemented to represent the order issued by a customer after successfully checking out a cart. This order is accessed by the system admin who is able to relay the order to staff for preparation. This class also ensures that when customers purchase items the orders are done within the opening hours in which the store is opened as well as to indicate to the customer as to when they can come and pick up their product at the store. An assumption that was taken into consideration was that the customer might try to purchase products outside of the available times that the store is opened as well trying to purchase a product that may be out of stock and so to ensure that this is prevented an option to indicate to the user that their particular product is unavailable was implemented as well as an option only allow users to purchase items only according to the opening times of the Hi-Lo store

Guest : This class is used for persons visiting the site without membership to only view items in stock. An assumption that was made was that users may want to purchase an item without proper authorization and to prevent this issue the Guest class was created so as to prevent persons who have not created an membership account to only see the available items in the store.

Admin: This class is used by the branch manager, that will manage and control operations on the website such as customer activity. The assumption was made that only an authorized member(s) of staff would be allowed to manage this information in the system.

TEST PLAN 2

<u>Test</u>	<u>Data</u>	<u>Expected Result</u>	<u>Actual Result</u>	<u>Requirement</u>	<u>Pass/Fail</u>	<u>Comments</u>
Case 1:User adds 2 “Ting” sodas to cart	item= “Ting” count= “2”	-items added to cart /cart++	/cart++	#R1	Pass	Test Case was Successful as items were added to cart.
Case 2: User clicks on view items	items.display	-All items available are shown to the user. /displayAll	/displayAll	#R5	Pass	Test Case was Successful as user is able to view items.
Case 3: User adds more than the maximum amount of “Listerine” to cart	item= “Listerine” Count =”97”	-Error!! Amount not available //displayError	/displayError	#R1	Fail	Test Case Unsuccessful, user added more than maximum.
Case 4: User checks out items in cart with valid payment	cart= “out” items = “sold” inventory.update()	-items sold to customer /sale /upInventory	/sale /upInventory	#R2 #R3	Pass	Tesacssful as the application was able to update items in the inventory and record sale.
Case 5: the user tries to purchase items with a guest account	account=”guest”	Accounts-real account needed. /Initialize account setup in order to be able to	/Initialize account setup unsuccessful ly	#R6	Fail	Test Case was unsuccessful as The user is expected to create an account with the application so that they may purchase goods

		access full features of the application so as a result the user can only view the items available but not make any form of purchases to it				
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