A EZ Ordering Application System for Coco Blend House

An Information System Presented to the Faculty of the

College of Computer and Information Science

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Part I

SYSTEMS ANALYSIS REPORT

Introduction

It is an undeniable fact that coffee has been popular for centuries as a morning refreshment or at any time of the day. People all over the world often start their day with a cup of coffee. However, the way people intake it differs significantly. Pour-overs are preferred by some, espresso machines and the French press are preferred by others, and instant coffee is liked by many. However, there are several methods to enjoy a cup of coffee, and most coffee drinkers believe their style is the finest. Coffee, on the other hand, has a lot older history than cafés and Keurig machines. People have been drinking coffee for hundreds, if not thousands, of years, and they did so use ways that are familiar now and yet feel like they belong in the past. Hence, a lot of people became fond of the different flavors blended with coffee as it becomes tastier when mixed with other mixtures such as syrup and creams.

Coffee's origins as a worldwide traded commodity may be traced back to the Arabian Peninsula in the 13th century. The

customary technique of brewing coffee at this time was to soak the coffee grinds in hot water, which may take anywhere from five to half a day (clearly not the best method for people on-the-go). Coffee's popularity grew in the 17th century, and it was carried back to Europe by European travelers returning from the Arabian Peninsula. It quickly gained popularity, and coffee shops started opening up all throughout Europe, beginning in Italy. In the same manner that coffee shops are utilized now, these coffee shops were places of social meeting.

As it becomes globally popular even in the Philippines, but why is it that the coffee shop industry continues to be so popular? As a nation, most citizens love drinking coffee, but there are countless additional factors that contribute to the success of coffee shops.

Given the facts stated above, few businesses have enjoyed the type of long-term success that coffee shops have. Coffee shops have evolved from being largely viewed as a stop-and-go site to becoming an integral part of life that many of us use for both socializing and working. The group decided to partake in this matter through generating a study on a particular coffee business company that the researchers have chosen – the

Coco Blend House. This research discusses how the chosen organization monitors the flow of the business transactions and manages the sales and inventory to run the business smoothly on a day-to-day basis. Also, the paper will also elucidate the problems that they have encountered along their journey and the way they handle certain matters. Through deeper analyzation and discussion of how the group will solve the determined problems, the researchers' goal is to create an efficient and convenient way for the business to handle the ordering, monitoring, and management through an automated system to reduce the company's difficulties. The system shall provide a convenient and efficient way of taking order information and keeping track of the company's performance and the record of sales and inventory.

The Organization

Coco Blend House is a small café with premium quality coffee and non-coffee beverages, coupled with a great selection of freshly baked cookies as well as Egg drop sandwiches that melt in your mouth. Currently there are 3 members in the crew, the server, the barista, and the cook. The different areas are located closely with each other making

communication and service to customers easy and straightforward. The owner takes care of gathering supplies online and going to cities to acquire ingredients while the crew runs the cafe. Although the coffee shop is fairly new, they are very accommodating to customers as they always listen to concerns and act fast to fix issues faced. They are also keen on asking for feedback from customers on how they can improve their product and are highly active in social media.

Figure 1

Organizational Structure

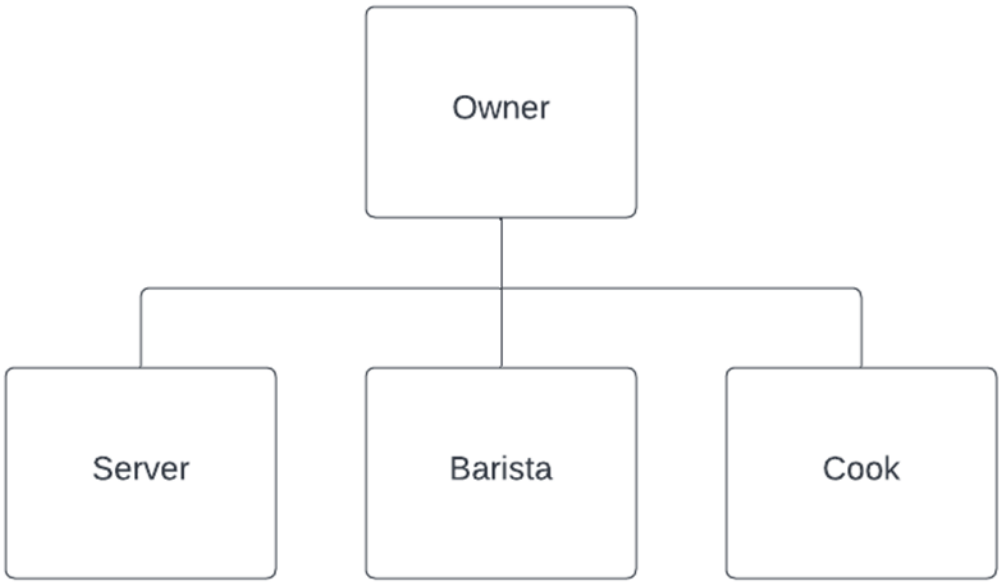


Figure 1 shows the structure of the Coco blend house café. Ms. Rafael, the owner, acts as the operating manager of the business. She takes care of the executive planning and

decisions as well as retrieving the supplies and ingredients used in the business. Directly under her is the crew who works for the café, which includes the server, who serves the customer, the bartender, who brews the beverages, and the cook, who makes the food and snacks.

Figure 2

Floor Plan

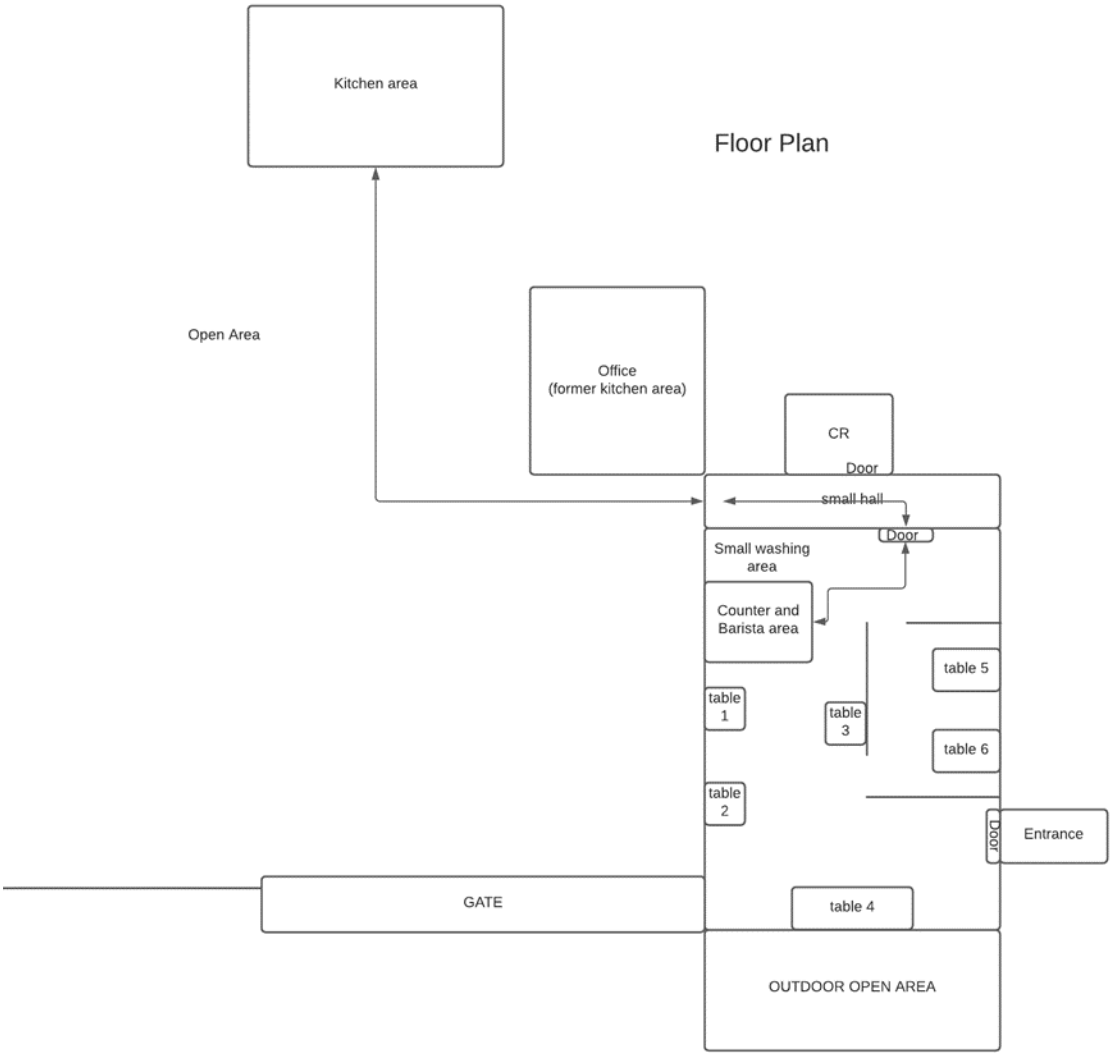


Figure 2 illustrates the overall working area of the establishment. A manual process we see is the relaying of information from the counter/barista area to the kitchen area. Every time a customer makes an order that includes food, the server must inform the cook in the kitchen area verbally due to no implemented automation for the process.

Vision

The Coco Blend House makes sure to serve customers good quality coffee from our local farmers.

Mission

The Coco Blend House's mission is to be recognized for providing/maintaining delicious food and coffee.

Business Environment

Coco Blend House is situated at 9800, Tacurong, Davao City, they have a quality standard area that will accommodate customers daily. It is a sole proprietorship business in the local area with a soothing ambience of coffee and books. The café is situated close to the highway, which helps in procuring materials lacking for daily functioning, as well as easily accessible to customers.

The floor plan presents how small the establishment is, making manual processes easy to do.

Critical Success Factors

The Coco Blend House continue to rise in the local café industry even though they are not strategically located in a busy street and is hard to find with the eye due to its small logo mark, by gaining more popularity through their social media page used to promote the products that they are selling. Aside from being social media active, they also have a unique and fresh brewing and baking technique that creates high quality tasting foods and beverages which garners them loyal customers.

The Current System

Coco Blend House is a small café that has manual methods of monitoring, transacting, and bookkeeping. All executive roles are acted by the owner in a flat organization structure. The owner waits for the crew to time in before opening the shop. General cleaning is done along with checking common items inventory, such as ice, making a list for it then buying it at a nearby store. Then the café sets out all the equipment and materials needed and opens for the day. The transaction process with customers is done without any automated technology. Jotting down the order received from the customer on a paper where they will also consider the preference of the customer. If the selected product is unavailable, the server

informs the customer that the product is not available as there is no indication in their menu if a product is unavailable. The information is then relayed to the barista and/or cook verbally. If the order includes food, the server informs the cook by going to the kitchen area, which is a big issue for when a busy afternoon comes since the server will have to move back and forth between the counter and the kitchen for each customer that orders. After the order is made, the server serves it to the customer's table. Before closing the café, the crew counts the order receipts and calculates the total sales made that are all manually taken, which poses some problem with the accuracy of the records. Lastly, the cleanup and inventory checking of supplies is done before logging out. The resupplying of the inventory is done either by the owner or a barista crew member at a set date.

Figure 3

Activity Diagram of the Current System

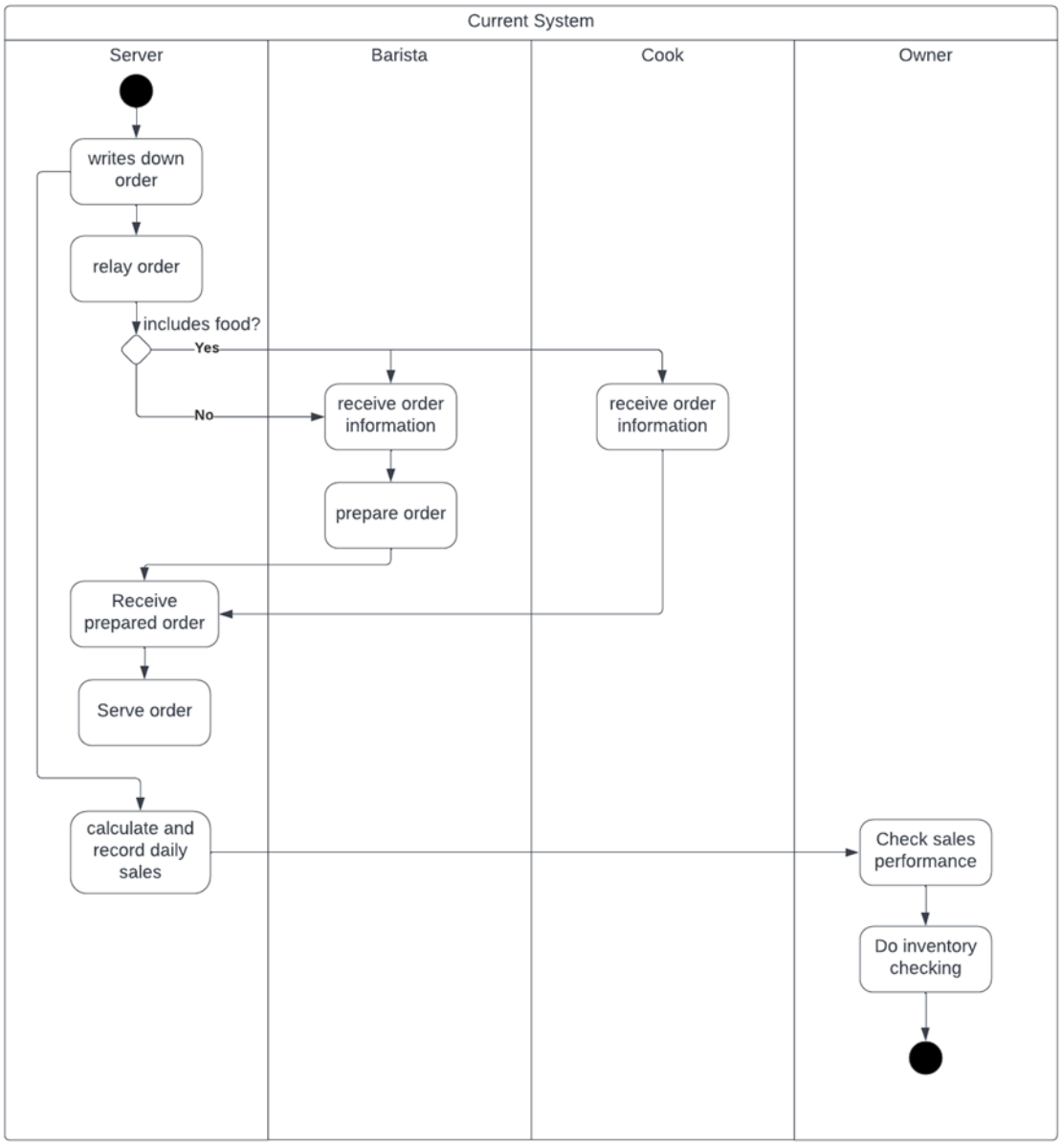


Figure 3 illustrates the general process of daily transactions and management of the establishment. As it shows in the diagram, first, the server takes the order from the customer, lists it down and checks if it includes food. If it

includes food, the server also informs the cook of the customer’s order. The barista prepares the drinks and in the kitchen area, the cook prepares the food orders which will then be picked up by the server to serve it to the customer. After serving hours, the server manually records the daily sales, then the owner checks the company’s sales and inventory to ensure the product restocking is scheduled if needed and if the daily profits are performing well.

Figure 4

Current Data Flow Diagram (Current System)

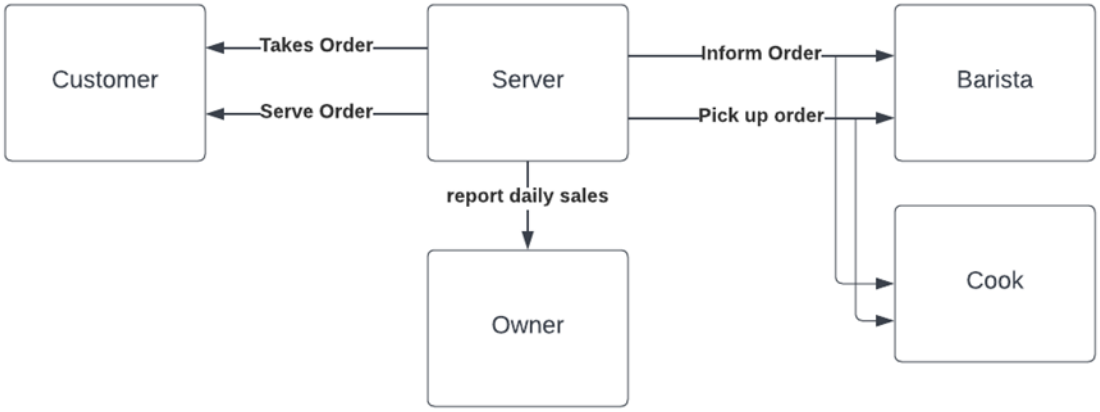


Figure 4 shows the main processes of the establishment. In this manual system, the data flow is centralized on the employee working as the server side by side with the barista. The customer, the cook, and the owner communicate with the server(person). The server takes the order information from the customer and serves it after the order is prepared. If the order includes food, the cook is informed by the server of the order information. After the food and beverage is ready, the server comes to pick them up to be served to the customer. At the end of the day, the server records and calculates the daily sales and is reported to the owner. The owner then checks the sales performance and inventory of the establishment.

Figure 5

Level 0 Data Flow Diagram (Current System)

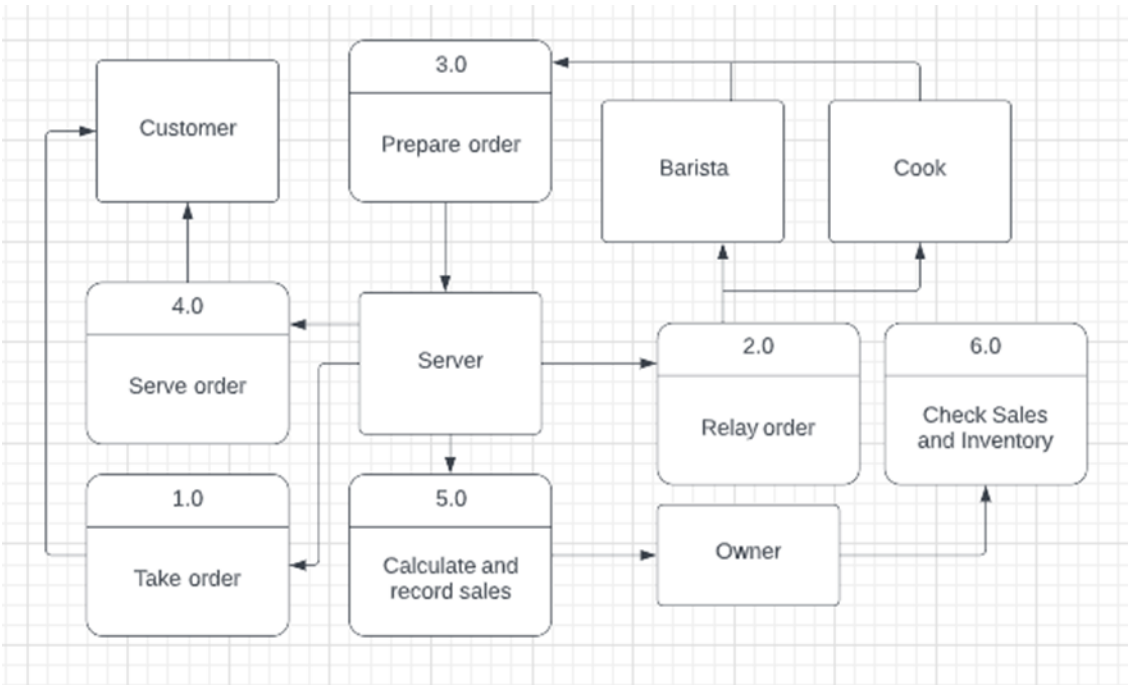


Figure 5 illustrates how the data is relayed between entities as the processes occur. The first process is the taking of order by the server from the customer. An order receipt is generated in a manually written method on recycled paper. It is then followed by confirmation of order and receiving of payment. The second process is the relaying of order information to the barista and the cook. The barista is instantly informed since she is located beside the server in the counter/barista area. The cook is informed by the server by passing through a door and walking a few meters to reach the area, and this is done repetitively for each customer that orders. The third process is the preparation of the customer's order by the barista and the cook which is then picked up by the server after it is complete. The fourth process is the

serving of the customer's order to their respective table. The fifth process is done by the server after the shop closes for the day, she will calculate and record the daily sales into the logbook. The logbook is checked by the owner and will also check inventory of the shop.

Problem/Opportunity Definition

Through deeper analysis, the significant problems identified include the need for an automated process for communication between the server and the cook, and the accuracy issue of the records due to manual methods of taking orders and calculating sales. Considering this as a major

problem, if the identified issues cannot be resolved, then there's a higher possibility that the establishment may experience a poor management system when it comes to communication issues between the counter area and the kitchen area. This will result in a time-consuming and inefficient method for the workers doing the assigned task knowing that the person-in-charge (the server) of taking orders manually relays the information back and forth to the kitchen area in every transaction being done. This problem will also affect the services being provided to customers as it may cause some delay in processing orders. Another issue is the manual recording of daily sales and transactions may affect the establishment's capability to handle a larger volume of orders that may become inconvenient.

Table 1

Description Budget Computation for the Current System

(Attachment A)

Items	Quantity	Price/Unit	Amount
Fiber Internet	Monthly	**₱ 1,699.00**	**₱ 1,699.00**
Water Bill	Monthly	**₱ 750.00**	**₱ 750.00**

Electricity Bill	Monthly	**₱ 5,000.00**	**₱ 5,000.00**
Calculator	1 pc	**₱ 359.00**	**₱ 359.00**
		Total:	**₱ 7,808.00**

Table 1 shows the current materials for Coco Blend House. This illustrates the budget computation for the current business has paid monthly services like internet, water, and electricity including a calculator used for customer transactions and sales.

Table 2

Problem Opportunity Definition Matrix

	Problem	Opportunity	Cause(s)	Effect(s)

Performance	Lack of management in monitoring performance of each product.	Hire an IT worker or any assistant worker and adopt automation software that monitors each employee and customer from current transaction activity.	Delayed processing for customer orders due to lack of manpower.	Poor feedback management on products and services from the customer
Service	Orders sometimes take too much time due to pending orders.	Automation in the information system for taking orders and disseminating information.	Postponement schedule of pending orders.	Inconsistent records from the manual system.
Information	Inaccurate records written down and calculated.	Double check any written records like the computation that saves on an automation	The process could take longer to calculate the order payment as usual.	The customer is sometimes slightly frustrated with the

		system and allows you to edit details.		manual payment.
Control	Unexpected demand for products creating a lack of supply issue.	Using the business contingency plan that uses alternative resources will lessen the demand for supply restocking	Products were temporarily out of stock, due to a supply shortage.	Marketing disruption will cause any financial losses or closedown shops.
Efficiency	Some order information takes time to be relayed due to manual method of relaying information to the kitchen area.	Find an IT professional to organize the order records for improvements in the transaction.	The process is delayed for manual order confirmation.	Customer satisfaction regarding the slowdown transactions may be resulting negative feedback.
Economics	The establishment	The owner needs land expansion	Difficulty experience on	Low customer

	area is too small. Hard to locate for new customers.	for outside fresco dining. Additional details about the coffee shop from travel application.	the establishment from a customer's feedback.	demand for the attraction in a coffee shop.

Functional Requirements

Issues faced with the current manual method of processes could be solved by adopting an automated system. The current system uses a manual method of recording information which is inefficient as it can become inaccurate or take too long. A solution made by the owner to reduce the long waiting time issue was to make an announcement on their fb page stating that customers can make orders online through the fb page chat or contact number to be able to cater to the orders as soon as possible. An unexpected demand for strawberry products was not immediately addressed due to lack of monitoring of their product performance causing the temporary unavailability of

strawberry products. A solution was to become vigilant about the performance of their product sales.

Ordering System

I. Digitalized menu.

a. The system should be able to display all the products being sold in the establishment and ensure the product status and availability from time to time. It should be able to update the status of the stocks on-hand and remove the unavailable items to the selection.

a. The following data are necessary:

i. Date of Transaction

i. Order and Receipt Number

i. Product Name

i. Price of each product, as well as the total price of all items being ordered every transaction.

i. Order Status

II. Generate an order receipt which will inform the cook.

a. Once the counter area confirms the order transactions, this is used for displaying the set of

orders in the kitchen area and to start processing the orders.

a. The kitchen crew are responsible for managing and dividing the task per order since the cook is in-charge of the food and the barista is in-charge of the drinks such as coffees and frappes.

III. Tracking of product sales.

a. In relation to ordering systems and monitoring daily purchases, the system should be able to record all the transactions being made in order to check the total profits daily, if the target sales are achieved.

a. The tracking system will also serve as inventory re-checking of the product status in the system for restocking purposes.

Table 3.

Use Case Glossary

Use-Case Name	Use-Case Description	Participating Actors and Roles
a. Making Order	This use case describes the event of getting orders from customers.	Server
a. Relaying Orders	This use case describes the event of processing the confirmed orders and transactions by the counter area to kitchen and barista.	Server, Cook, Barista
a. Recording of Daily Sales	This use case describes the event of tracking and recording the daily sales and profits of the establishment.	Server, Owner

Table 3 depicts the resources used to solve the corresponding issues identified, as well as the researcher's collaboration throughout the data collection and the client's

assistance through response – to suggestions and recommendations.

Figure 6.

Use Case Diagram

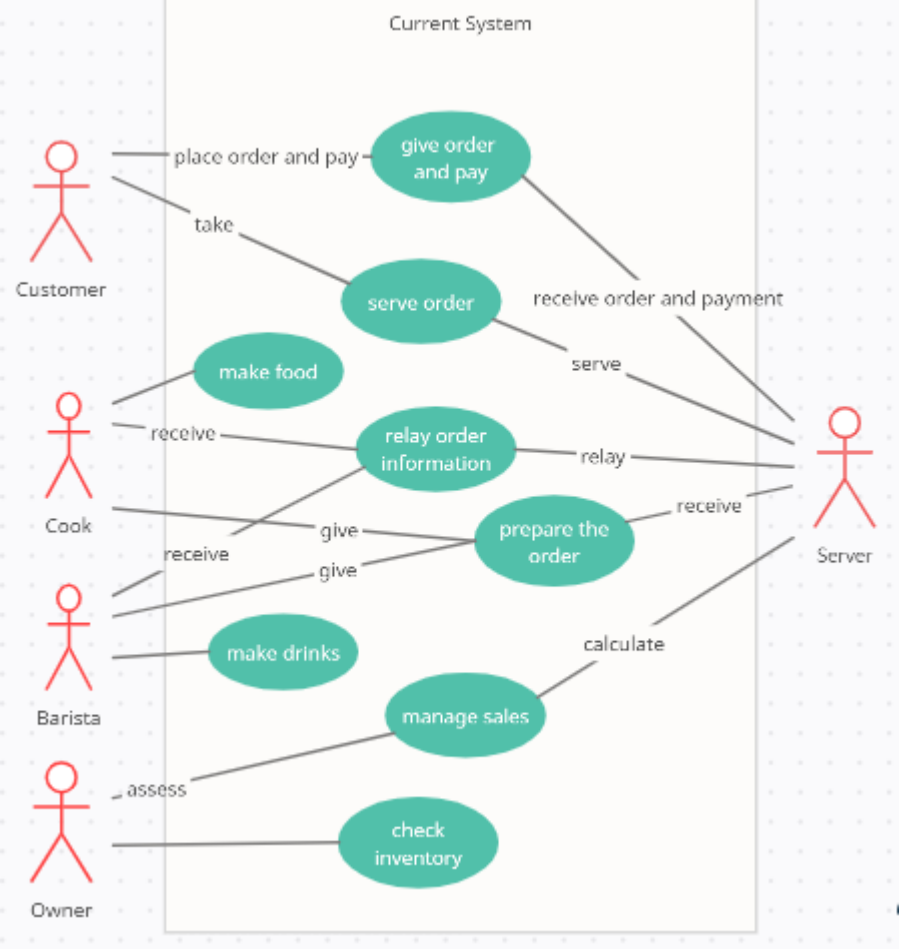


Figure 6 shows the current process of Coco Blend House. This figure illustrates each process in the daily transactions of the establishment.

Feasible Alternatives

Problems with the establishment's manual ordering and monitoring system can be resolved using the automated system. For various reasons, the manual method that they currently use for ordering causes them a time-consuming and inconvenient way that affects the processing time of orders to take longer than expected and a delay due to a higher volume of transactions recorded. Furthermore, the inefficient method of tracking and recording the daily sales and profits of the company results in inaccurate records and miscalculations. The first solution that the owner did was to use their social media page via Facebook application, using their Facebook page, the establishment may be able to entertain customer's inquiries and accept orders ahead of time, as well as to prepare the orders before it gets pick up at the physical store. Second, the establishment uses a manual method of generating order receipts through a piece of paper that will also serve as their guide for product sales tracking and processing. Third, the monitoring system aspects in which the establishment uses the traditional way of recording the inventory and sales daily in a logbook.

Alternative Solutions

1. Candidate 1(Use social media page as ordering system)

The establishment uses a social media page via Facebook application to entertain customers' inquiries, accept orders ahead of time in order to prepare and process the orders before it gets picked up at the company's physical store. This alternative solution will lessen the higher probability of doing multiple tasks at the same time, traffic in processing of orders due to multiple and high volumes of orders being received daily.

2. Candidate 2(generating order receipts)

A manual method of making order slips by writing on pieces of paper is done by the server to record customer orders. This will be used for the processing of their orders, as well as for the calculation of daily sales.

3. Candidate 3(Monitoring sales)

The server manually records the daily sales in a logbook after calculating the total sales. This will be used to assess the performance of the coffee shop and assist the owner in checking inventory.

Table 4

Description Budget Computations for the Candidate 2

(Attachment B)

Items	Quantity	Price/Unit	Amount
Ballpen	50 pcs	**₱ 12.00**	**₱ 150.00**
Notebook	10 pcs	**₱ 45.00**	**₱ 450.00**
		Total:	**₱ 600.00**

Table 1 shows the candidate 2 computations for Coco Blend House. This illustrates the budget computation for additional solutions that purchase backup materials such as ballpens and notebooks, when the automated system is unavailable.

Table 5

Description Budget Computations for the Candidate 3

(Attachment C)

Items	Quantity	Price/Unit	Amount

Record Book	5 pcs	**₱ 80.00**	**₱ 400.00**
Calculator	1 pc	**₱ 359.00**	**₱ 359.00**
		Total:	**₱ 759.00**

Table 1 shows the candidate 3 computations for Coco Blend House. This illustrates the budget computation for additional solutions, when the automated system has temporary offline, many alternatives for manual transaction data such as record book and calculator.

Feasibility Analysis

Operational Feasibility

This section compares the different alternative solutions in the aspect of their applicability to solve the problem from the establishment's current system.

Candidate 1

This solution is feasible because the organization only needs to use their existing social media page in Facebook application to interact and entertain customer's inquiries and orders. The owner strategy is based on the current state of the company and its capability to manage and process orders. The current staff are capable enough to operate the said alternate solution as the application is user-friendly and widely used by netizens all over the world.

Candidate 2

This is also feasible because it uses a traditional method of taking orders since you only need to write the received order on a paper or notebook.

Candidate 3

Candidate 3 is feasible because you only need to use a calculator to compute the sales and record them in a logbook using a pen.

Technological Feasibility

This section compares the different alternative solutions on the aspect of their applicability to the relevance of addressing the problems for the current system.

Candidate 1

This alternative solution in the current system is feasible in terms of technological aspect since they only need any computer or mobile devices that the owner and staff have in order to login the establishment's social media account and accept orders through it.

Candidate 2

Candidate 2 will require an automated method to avoid inaccuracy of information and for the cook to be informed efficiently.

Candidate 3

This solution needs to have an automated system for calculating and recording the daily sales to be precise and convenient.

Economic Feasibility

This section compares and elucidates the different alternative solutions on the aspect of their applicability, given the circumstances of the current economic and financial resources that the organization has.

Candidate 1

This alternative solution only needs the user's device and an internet connection to be functional. The internet connection is paid monthly.

Candidate 2

This solution requires a minimal budget which includes ballpens, and a notebook.

Candidate 3

Candidate 3 uses a calculator, pen, and a record book which is replaced occasionally when needed.

Schedule Feasibility

This section shows the schedule feasibility of each alternative can be accomplished within the given time frame.

Candidate 1

This alternative solution is automated and does not take much time.

Candidate 2

The order takes time to be written down and be relayed to the barista and cook.

Candidate 3

Candidate 3 is time-consuming and inconvenient as it requires all the written order slips to be calculated using the calculator before being recorded to the logbook.

Feasibility Analysis Matrix

Table 6.

Weighted Scoring Model for the Different Candidates

Feasibility Criteria	**Wt.**	**Candidate 1**	**Candidate 2**	**Candidate 3**
Operational Feasibility **Functionality.** A description of to what degree the candidate would benefit the organization and how well the system would work.		Candidate 1 benefits the establishment in dealing with pending orders	This solution provides ease and simplicity in doing work.	The logbook uses manual method and may be easily lost due to damage.
Political. A description of well-received this solution would be for both user management, user, and	**30%**	This solution still has room to be improved in automation.	The client should accept this solution because it could help them in all stages of the daily transaction	It is better to use an automated system to have a precise and convenient way of managing sales.

organization perspective.			by integrating the taking of orders, relaying information, and managing sales.	
		Score: 85	Score: 80	Score: 70

Technical Feasibility Technology. An assessment of the maturity, availability (or ability to acquire), and desirability of the computer		The organization needs a comprehensive and active way of catering to customers both in the	Candidate 2 requires an automated method of storing and informing the workers.	Same as candidate 2

technology needed to support this candidate.	**30%**	establishment, and online.		
Expertise. An assessment of the technical expertise needed to develop, operate, and maintain the candidate.		The candidate will only need a small intervention from the server or the owner. Score: 80	This traditional method is easy to use and maintain Score: 85	The assigned worker is inconvenienced in calculating the sales daily and poses problems like inaccuracy and damage prone. Score: 60
Economic Feasibility **Cost to develop:** **Payback period:**		Php 7,808.00 N/A	Php 600.00 N/A	Php 759.00 N/A

Net preset value:	**30%**	No monetary Value involves	No monetary Value involves	No monetary Value involves

Detailed calculations:		See Table 1 Score: 80	See Table 4 Score: 90	See Table 5 Score: 90
Schedule Feasibility An assessment of how long the solution will take to design and implement.	**10%**	Three weeks Score: 90	Three weeks Score: 90	Three weeks Score: 90
RANKING	**100%**	**Average:82.5**	**Average:85.5**	**Average:75**

Scope and Limitations

This project will be addressing the identified significant issues in the establishment current system by deploying the functional requirements through an automated system of a digitalized menu for easier access of customers, taking and receiving orders that will generate receipts within the system. As well as recording the daily transactions of the company for efficient and convenient tracking of sales and inventory.

Scope

4. The owner can register the inventory and product information in the system – the Coco Blend House.
5. The owner and the server can access the overall records in the system.
6. The project solves the defined issue in the ordering system of the company in which it can cater the customer's orders and record it in the automated system.
7. The server in the counter area can confirm the final set of order list and generate the order number and receipts digitally.
8. The cook can view the set of orders on the display screen to process the orders.

9. This solves the problem of monitoring sales and inventory systems of the company as the project can keep all the records of daily transactions. Through this, the organization can locate all the needed information easily.
10. There is an owner and server involvement in the system in terms of reviewing and tracking the daily sales and inventory status.

Limitations

1. The system would not be able to function without human intervention.
2. The data will not be processed without the input and confirmation from the user.
3. The system functions only as a display for the cook.
4. The product inventory status cannot be identified and analyzed by the system unless it has been customized by the owner to set the number of stocks and product availability from time to time.
5. There is no cloud backup data storage of the system.

Given the circumstances of the limitations of this project, the possible factors that can hinder from being completed is the time allotted and the ability of the

programmers to address the issues identified by complying all the functional requirements into one system.

The Proposed System

The proposed system is a system that focuses on the ordering system and communication process between the counter area and kitchen area of the establishment as this will enhance their ability to work efficiently. The system will be able to display a menu for easier access and to confirm customers' orders. The system can generate receipts for every transaction made and display it from processing of orders processes. It will also record the said transactions for monitoring of sales and inventory purposes.

General Problem

The poor management system of the company in pursuing a traditional way of taking orders and relaying the orders manually from one place to another consumes time and lacks communication technology.

Specific Problem

- Walk-in bulk orders and take-out orders cause orders to become pending.
- Listing orders through a piece of paper in every transaction consumes more time and is inconvenient for customers' experience.
- The relaying of orders is inefficient, especially if the person-in-charge of taking orders needs to send the receipts back and forth per transaction to process the orders.
- Gathering orders from a manual system causes anomalies and redundancies due to late fulfillment.
- Accidentally compute for listing of food orders from the customer receipt that is considered invalid, either manually or automatically data records.

General Objectives

This project aims to help the company with its current ordering management system in a way that from the manual method of listing down the orders in a piece of paper will let the establishment adopt the automated system being proposed for overall efficiency and benefit of the organization.

Specific Objectives

- The system displays a menu for product selection and easier access.
- The system generates order receipts for processing orders purposes.
- Create a function that allows the product details customization.
- Develop a function in the system where it can monitor the product availability from time to time.
- Develop a function that displays the status of the order.
- Records all the transactions made for sales tracking and inventory checking purposes.

Scope of Automation

The information system is based on the ordering system of the establishment. The order receipt is generated from input given by the customer. Next, the intervention of the server to confirm the order and disseminate the information to the barista and cook. After closing for the day, the sales will be calculated from the total orders made, which will show each product’s performance and how much profit is made. The

group proposed a system to address the issues concerning the process of completing customer orders and the recording of information.

Figure 7

Activity Diagram

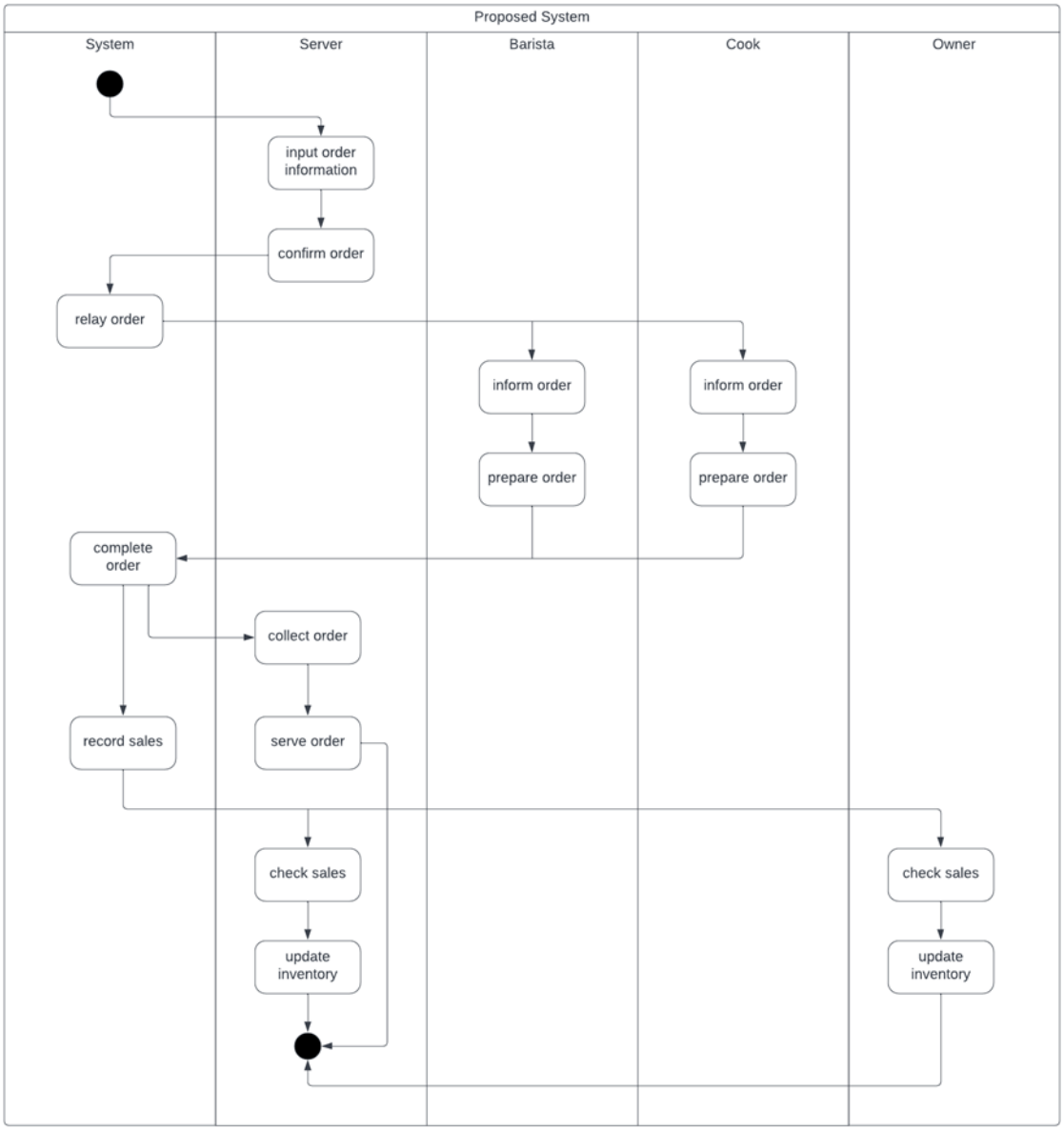


Figure 7 shows the process of the proposed system. It begins with the system boot up where it will load previous data. The server inputs the order information received verbally from the customer and confirms it. Once the order is confirmed it will proceed to the pending order in the Order interface where the barista and the cook will be informed. After the order is done being prepared the barista and the cook can inform the server through the system that the order is ready to be served. The server then serves the order to the customer. After completing the order in the system, the system records it automatically in the sales interface where all sold items are listed by date. The user can also navigate the sales by selecting a time range to only display specific sold items at specific time date range. Lastly, the user can update the inventory to edit the quantity and price of an item, as well as add or remove an item from the menu.

Figure 8

Context Level Data Flow Diagram of the Proposed System

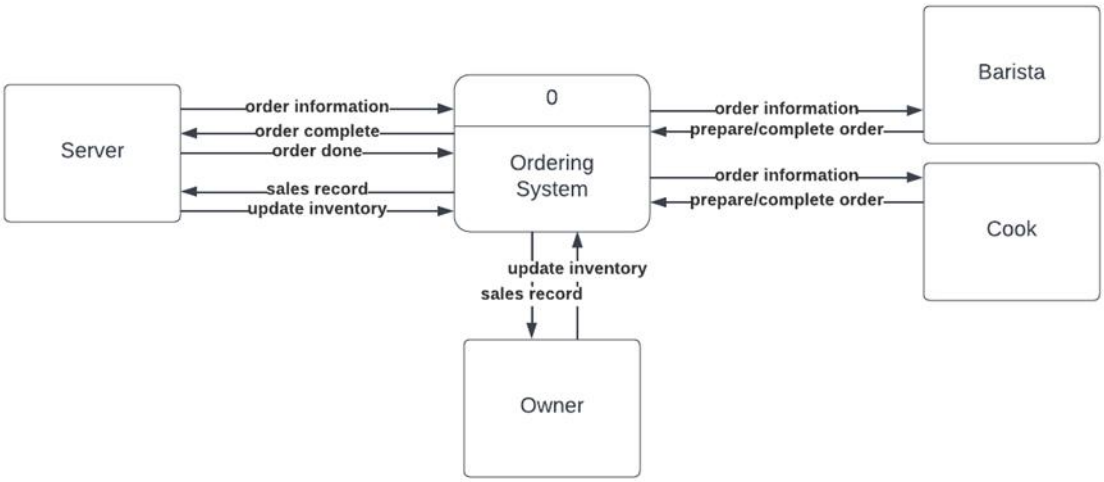


Figure 8 illustrates the data flow of the proposed system. The server, barista, cook, and owner are the external agents in the diagram. The arrows depict the data flow with the system. The server inputs the order information which will be forwarded by the system to the barista and cook. After the order is prepared by the barista and/or cook, they will inform the server through the system that the order is now complete. When the server is done serving the order to the customer, the system will automatically record the order completed to the sales interface. The server and the owner can access the sales record by checking in the system and also update the inventory stock of the system.

Figure 9

Level 0 Data Flow Diagram of the Proposed System

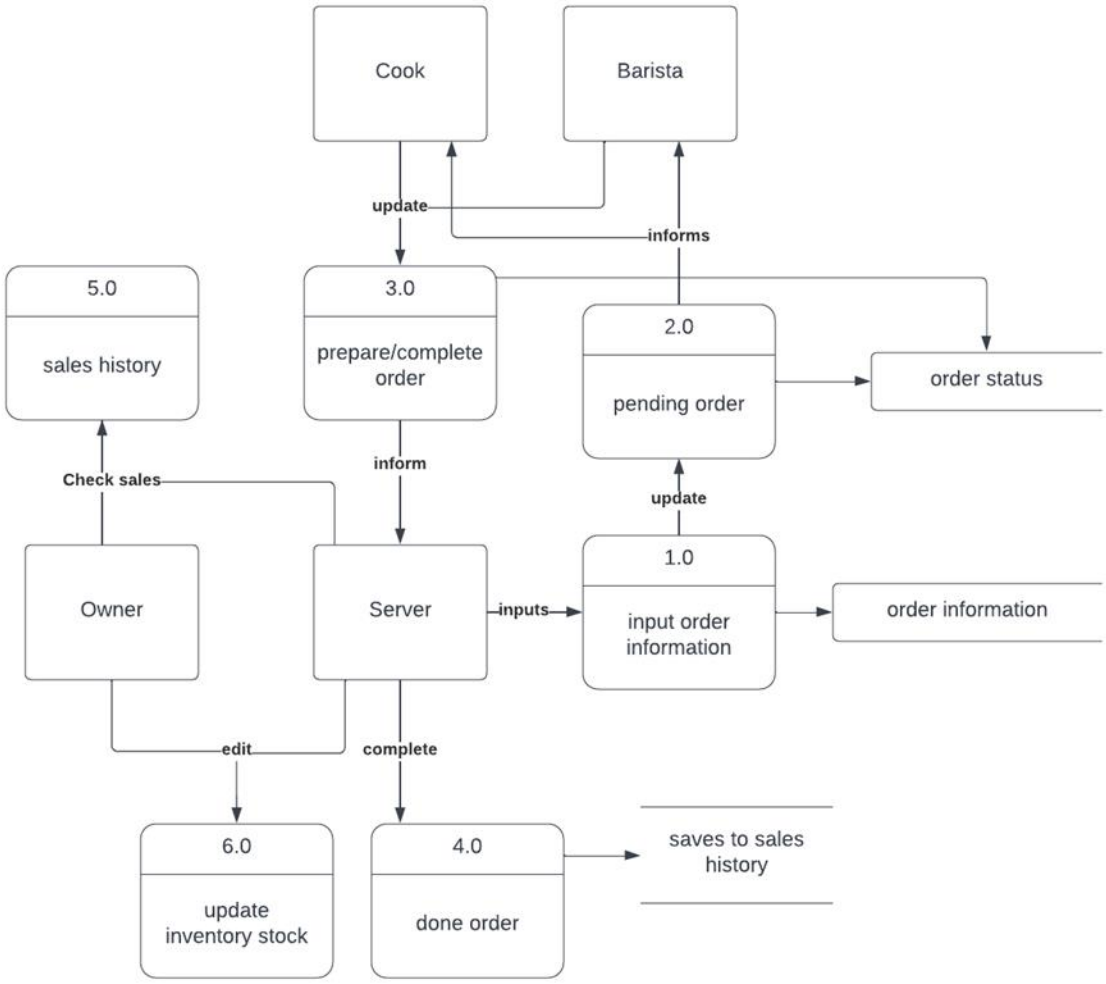


Figure 9 explains the step-by-step process of the proposed system. The first process is the input of order information to the system where it proceeds to the second process, in which the system will inform the barista and the cook of the current pending orders in the system. The third

process is the updating of the order status to prepare status, and to complete status eventually. Once the order is in complete status, the server will be informed of the status and will now pick up the completed order to be served to the customer. After serving It to the customer, the fourth process is when the server can be done with the order and transfer it to the sales history. The fifth process is the checking of sales records in the system by either the server or the owner. The sixth process is the updating of the system's inventory stock.

Entity Relationship Diagrams

This part on each attribute from other entities was related to a proposed system. The connection for each activity was distributed on the entity-relationship.

Figure 11

Entity Relationship Diagram of the Proposed System

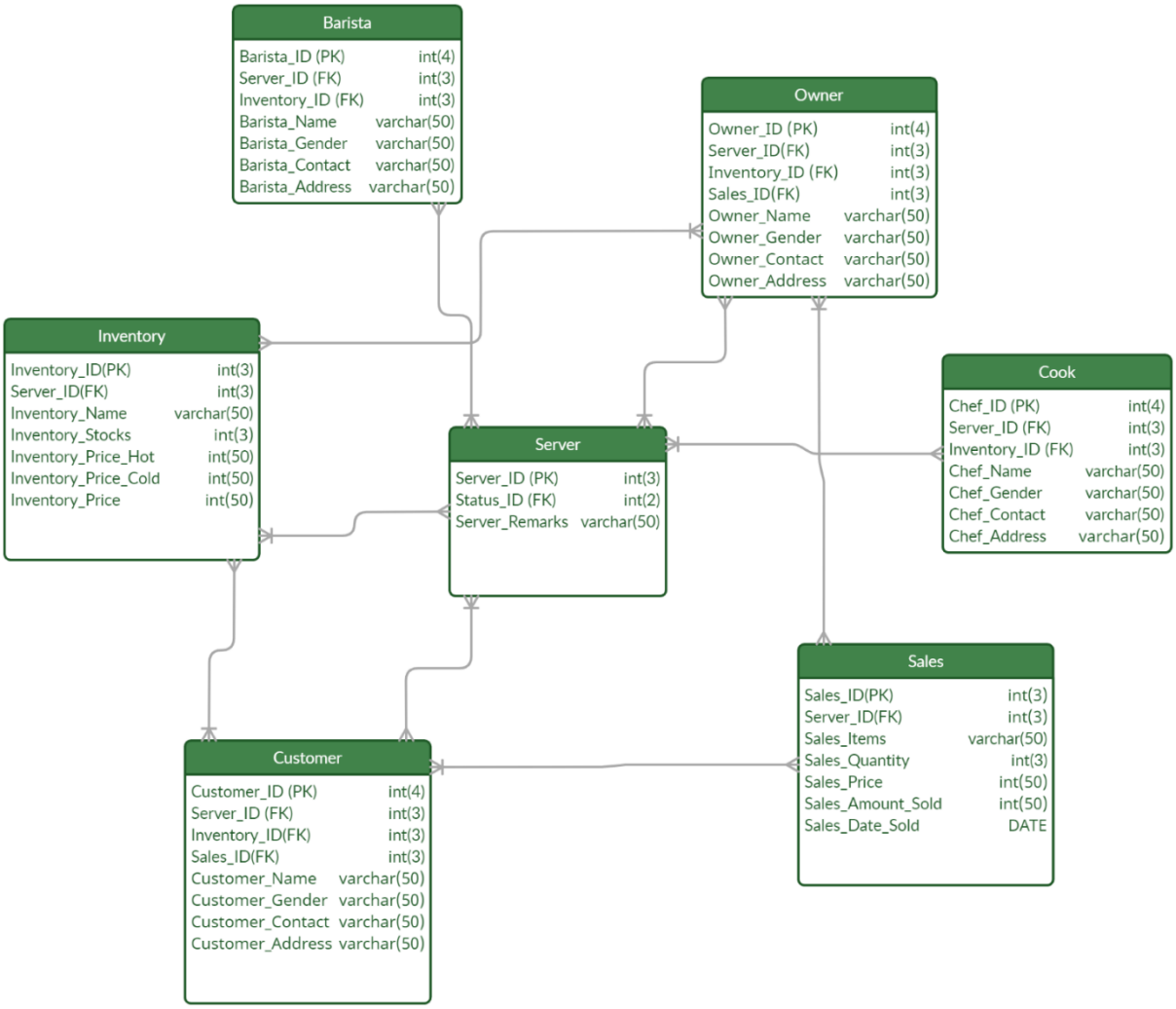


Figure 11 shows the actual entity relationship diagram for the Coco Blend House – EZ Ordering System. In each scenario, the main automation system is managed by each entity that worked together to operate the actual database.

Data Dictionary

I.Data Dictionary for the Data Flow Diagram

PROCESSES

1. Select Order

   Description: A process from the interaction between the customer along with the main server that selects the list of available menus, and then confirms the order information to the system.

   Process #1

   Location: General Processes ()

   Input Flow:

   Order Lists

   Output Flow:

Order Details

2. Status Order

   Description: A process that the main server, once the customer successfully placed an order and checks status for each transaction have the confirmation to proceed.

   Process #2

   Location: General Processes ()

   Input Flow:

Order Details

Output Flow:

Order Confirmation

3. Confirm Orders

   Description: A process where each section is divided into three steps, pending orders as priority, preparing orders to start making products, and completing orders for finished products that were served to the customer.

   Process #3

   Location: General Processes ()

   Input Flow:

   Order Details

   Output Flow:

   Order Confirmation

4. Completed Order

   Description: A process in which the final stage of order transaction is like making products that are served to the customers.

   Process #4

   Location: General Processes ()

   Input Flow:

   Order Details

Output Flow:

Order Confirmation

5. Sales Records

   Description: A process that has stored sales records to check the progress of each placed order transaction made by the customers.

   Process #5

   Location: General Processes ()

   Input Flow:

   Sales Lists

   Output Flow:

   Order Details

6. Update Inventory

   Description: A process where the owner changes each quantity and adds the product list, which they relayed on the menu section.

   Process #6

   Location: General Processes ()

   Input Flow:

   Inventory Details

   Output Flow:

   Inventory Edit and Add Options

SOURCE/SINK/ENTITIES

PROCESSES

1. Owner

Description:

An entity was part of managing the sales/inventory records that interacted with the server.

Alias: Owner

Location: Context Level ()

Input Flows:

Owner_ID

Owner Details

Account Status

Output Flows:

Inventory_ID

Inventory Details

Sales_ID

Sales Details

Server_ID

2. Barista

Description:

An entity was part of the working group for brewing the coffee that served to the customers, after

relayed from the server for order transaction confirmation.

Input Flows:

- Barista_ID
- Barista Details

Account Status

Output Flows:

- Server_ID
- Inventory_ID
- Inventory Details

3. Cook

Description:

An entity was part of the working group for produced food orders that served to the customers, after relayed from the server for order transaction confirmation.

Input Flows:

- Chef_ID
- Chef Details

Account Status

Output Flows:

- Server_ID
- Inventory_ID

Inventory Details

4. Server

Description:

An entity was part of the main system that controlled all the necessary features within the database application.

Input Flows:

Server_ID

Server_Remarks

Output Flows:

Customer_ID

Customer Details

Owner_ID

Owner Details

Barista_ID

Barista Details

Chef_ID

Chef Details

Inventory_ID

Inventory Details

Sales_ID

Sales Details

5. Inventory

An entity was part of the stored warehouse for listing of products available that were found on the menu ordering section page.

Input Flows:

- Inventory_ID
- Inventory Details

Output Flows:

- Customer_ID
- Sales_ID
- Sales Details
- Owner_ID
- Owner Details

6. Sales

An entity was part of the stored warehouse for completed order transaction from the customer with sorting dates.

Input Flows:

- Sales_ID
- Sales Details

Output Flows:

- Customer_ID

Inventory_ID

Inventory Details

Owner_ID

Owner Details

Table 9

Data Dictionary for the Entity Relationship Diagram

Entity	Business Definition
Owner	The owner was part of an entity-relationship diagram. They managed both the inventory and sales records.
Barista	The barista was part of an entity-relationship diagram. They relayed orders from the server, a barista was brewing coffee that separate with the cooking meal orders.
Cook	The cook was part of an entity - relationship diagram. Both cook and barista were relayed together upon the server after the customer order placed has been made.
Server	The server was part of an entity-relationship diagram. As a customer that accesses the application. The server entity acts as a waiter that serves food and beverages to the

	customers after placing an order transaction.
Inventory	Inventory was part of an entity-relationship diagram that stored necessary records for the list of products available relayed on the menu ordering section.
Sales	Sales was part of an entity-relation diagram that stored any completed transaction, customers already placed an order with the desirable dates.

Part II

Project Description

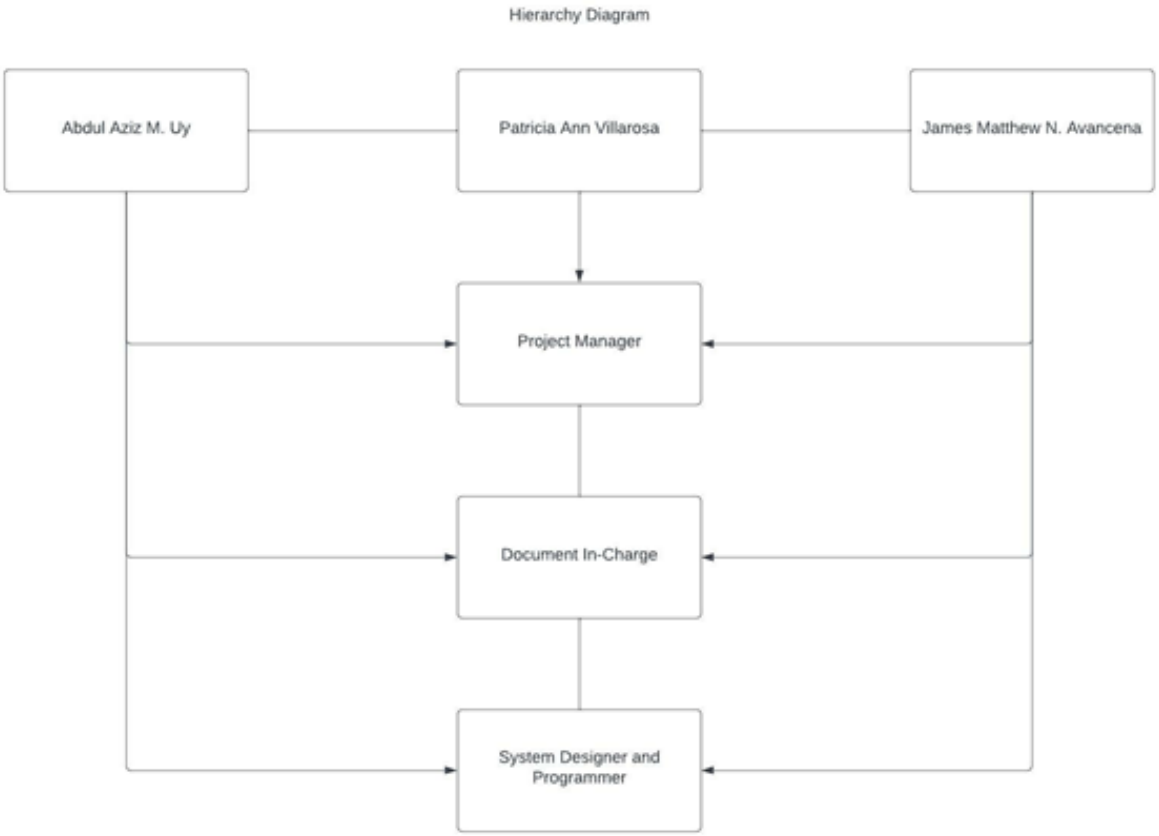
Project Title

The researchers and programmers chose the title called "The EZ Ordering Application System". It has a specific target for the desired project, instead of current manual systems to lessen the transactional time. The database server has been interacting with different entities, such as the owner who manages inventory and sales records, and the customer accessing the website to place orders. For other entities that relate to the database server, the cook and barista produced food and beverage orders for the customers after the order transaction has been placed. Also, the database server has recognized any order transaction from the customer, the customer transaction as the owner could control the web database to change the status, both records and process orders at the same time.

Figure 11

Project Organization

In each assigned role, based on the team member profiles. The three student members were assigned equally into three roles and responsibilities using the hierarchy diagram below.



Project Manager

The project manager of a team is divided equally. Our group members depend on how we organized the parts of documentation research. For every research analysis, the requirements on information were gathered from the selected organization that searched the specific objectives and identified significant solutions to the proposed system.

Document In-Charge

The document in charge of a team is divided equally for responsibility roles. The purpose of overseeing documentation was to manage the analysis of examination artifacts that have been made. In the application of findings, every group member should have assisted the group leader in needing the specific tasks to start the plan as follows.

System Designer and Programmer

Both the system designer and the programmer worked equally. After gathering the important documents, our members were motivated to create a prototype of automated software. Have an opportunity to design the actual program from the webpage, other designs to use fonts and unique elements that are suitable for users. Along with encouraging the real coding, the executable program needed to be run smoothly and properly must be completed the actual parts of a program, without any encountered issues. For the maintenance of an application should be checked regularly to see any missing requirements and especially the features to be added.

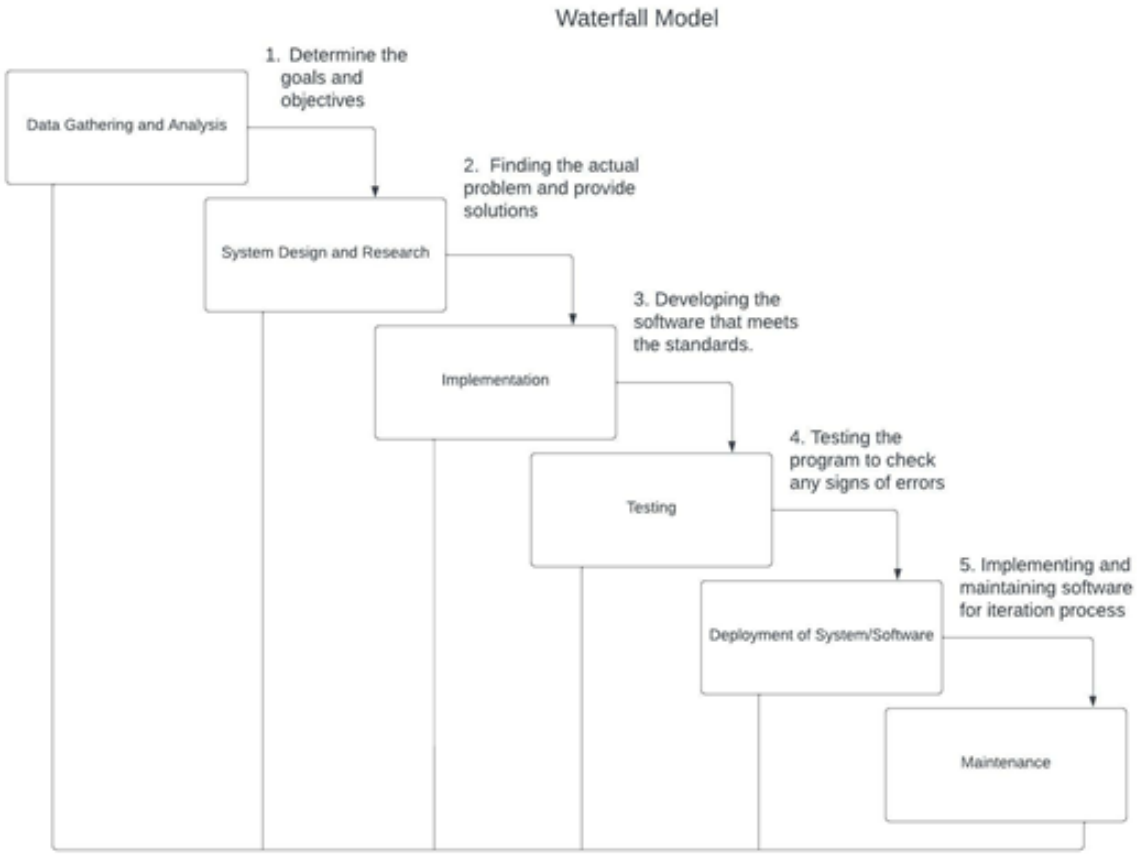
Project Methodology

The decision to make the analysis system method must be successful implementation would use the waterfall model as a procedural cycle. This coordination of each step worked together to follow the technical objectives, like assigned specific work roles, and achieving the development process was undertaken based on the five stages of a model. Each development stage, which served as a guide to be followed among the group members, needs to be remembered accordingly.

Figure 12

Waterfall Model

Data Gathering and Analysis



The first stage was using both gathering and analyzing their data from the chosen organization. For a procedure to give further information from the interviewee any desired collaborative apps on explaining to get the specific problems on how they managed the business. It was part of the examination discourse for gathering the technical analysis that needs improvement to deal with goals and objectives as follows. Including the real scenarios that should proceed with the alternative solutions on a proper organizational control.

System Design and Research

After the data gathering and analysis stage, the start of the investigation on specific problems for proposed systems about the current system and management of an organization that uses. Ideally, team members identified the exact analysis problems that need to be addressed in arrangements for the automated software.

Implementation and Testing

In between stages 3 and 4, another related procedure was still another protocol on an exact problem for the created prototype. This scenario needs to be identified the preference software in addition to features and functionality. Before the implementation of a launch product, the desired tasks must have the actual risk assessment and backup plan as a solution to avoid any unnecessary software failures.

System Software Deployment and Maintenance

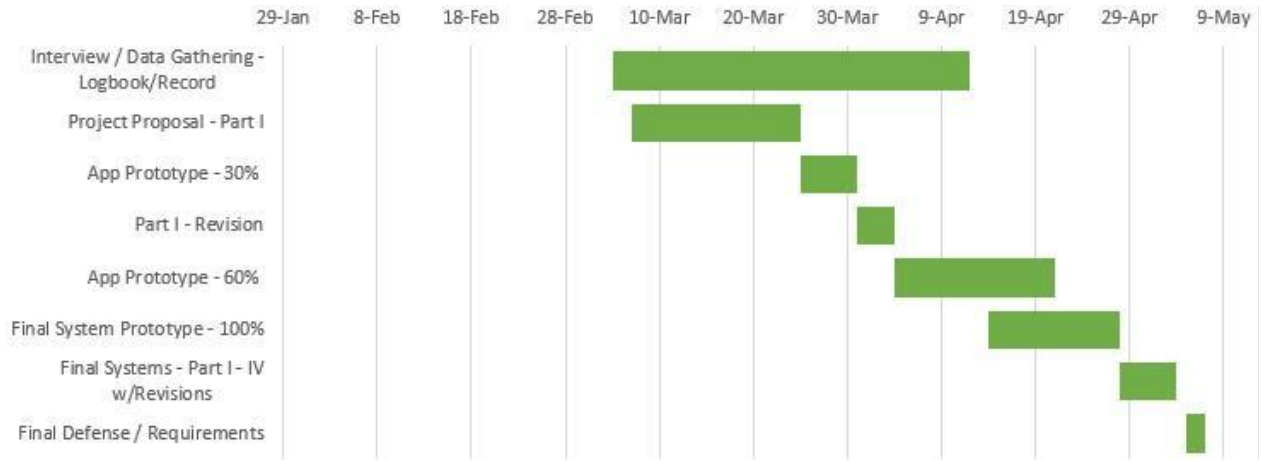
In the last stage, after identifying the exact problems on any signs of errors in the executing application that has uses the plan assessments were successfully fixed these problems on the software. Either the panelist or professors could be checked on each prototype that had already been created and presented as a final defense project on both software applications, including the final documentation. The following code standards and proper documentation have a basis on which a panelist/professor's decision must be accepted or declined that has specific final requirements.

Project Timeline

Each stage shows the exact timeline based on the Gantt Chart. This shows that the divided tasks have specific deadlines that were required to be finished on time. However, there are slight issues with specific tasks, the group decision has planned to have an extension until the end of the semester. Our group members have the responsibility that meets the goals and objectives that should be developed on the prototype project, and each group member who discussed the knowledge of a project understands the current system to solve any business situational problems.

Figure 13

Gantt Chart



Technology

In the creation of this desired project, our group was required to follow the progress through as many stages as are used to present the prototype. For this implemented prototype project, based on the group's decision, MySQL query language as storing the data records, Visual Studio Code on an encoding program that runs on a webpage, and XAMPP use to establish the connection. The designs were gathered from the business establishment with the permission from the owner that they could place within the webpage as the background image, the logo, and the fonts and elements showing the details via the HTML based. The group provided devices to test the samples for each stage of the prototype, a selection of the random people that were required to observe the program for debugging purposes.

Part III

USER ACCEPTANCE AND TRAINING

User Acceptance Testing

The User Acceptance Testing provides information to make sure the group implemented the testing and training to their client. A training was conducted to the client and the client tested the system after the training. The preliminary testing was performed by James Matthew N. Avancena, a member of the group, to inspect whether the created system can be a credible solution and be implemented. The solution was gathered after the testing and performing of the members. The parallel testing was performed by the client after training. It was conducted in Tacurong City, Sultan Kudarat. The client provided criticism and recommendations for the improvement of the system.

Preliminary Testing Results

Functional Requirement

1. Making Order

2. Process Order

3. Sales

4. Inventory

Test Cases

a. Select menu item

b. Edit quantity

c. Add to cart order

d. Confirm order

a. Prepare order

b. Complete order

c. Done order

a. Navigate date range of sales

a. Edit quantity/price

b. Add/Remove product

Each test case will be tested and the result will be noted.

Table 3.1

Preliminary Testing Results

Test case	Tested by	Test date	Expected outcome	Actual outcome	Remarks
1a	James Matthew N. Avancena	May 02, 2022	Be able to select a product in the menu.	A product was selected with no issue.	Successful
1b	James Matthew N. Avancena	May 02, 2022	Be able to edit quantity of the product selected.	The quantity was edited in the taking of order. No problems encountered.	Successful
1c	James Matthew Avancena	May 02, 2022	Be able to add product to cart.	Order was added to cart. No issues faced.	Successful

1d	James Matthew Avancena	May 02, 2022	Be able to confirm the order.	The order was confirmed with no issue.	Successful
2a	James Matthew N. Avancena	May 02, 2022	Be able to move pending order to preparing order	Order transitioned to prepare order section. No problem faced.	Successful
2b	James Matthew N. Avancena	May 02, 2022	Be able to move preparing order to complete order.	Order proceeded to the complete order section. No problems encountered.	Successful
2c	James Matthew N. Avancena	May 02, 2022	Be able to finish order.	The completed order was removed from the orders tab and added to the sales. No issue faced.	Successful

3a	James Matthew N. Avancena	May 02, 2022	Be able to navigate sales by selecting time range	Properly displayed product sales from the selected time range. No problems found.	Successful
4a	James Matthew N. Avancena	May 02, 2022	Be able to edit quantity and price of product stocks.	The quantity and price of a product was modified without issue.	Successful
4b	James Matthew N. Avancena	May 02, 2022	Be able to add and remove a product.	A product was added and removed properly. No problems found.	Successful

Preliminary Testing Results

Table 3.1 shows the preliminary results tested and performed by the group. The user was chosen internally, which was James Avancena, a member of the group, for the preliminary testing of the system. The system functionality was all successful working with each test case performed. The manual guide was shown to the client, the owner of Coco Blendhouse, and has received good feedback that will help improve the system such as adding more functions to the application system.

Training Results

The training was conducted to the users after the UAT.

1. Make Order
2. Process Order
3. Check Sales
4. Do Inventory

Table 3.2

Date	Module	User	Results
May 03, 2022	Make Order	Garlyn E. Garingo – Server	The training was administered successfully
May 03, 2022	Process Order	Garlyn E. Garingo – Server	The training was administered successfully
May 03, 2022	Check Sales	Garlyn E. Garingo – Server	The training was administered successfully

May 03, 2022	Do Inventory	Garlyn E. Garingo – Server	The training was administered successfully

Training Results

Table 3.2 shows the training results which was conducted on May 3, 2022, at the Coco Blendhouse establishment located in Tacurong City, Sultan Kudarat. It includes the date, module, user, and result, where all the modules were administered successfully and were tested by the server, Ms. Garlyn E. Garingo. The first module, which was the making of order, was tested successfully. The second module where the order is relayed and processed was successfully tested. On the third module, she was able to check the sales in a selected time range and was successful. The last module which was the use of the inventory functions was also successful. Ms. Garingo was the only user who participated in the testing.

Table 3.3

Parallel Testing

Test Case #	Tested By	Tested Date	Expected Outcome	Actual Outcome	Remarks
1a	Garlyn E. Garingo – Server	May 03, 2022	Be able to select a product in the menu.	Selected a product from the menu.	Okay

1b	Garlyn E. Garingo - Server	May 03, 2022	Be able to edit quantity of the product selected.	Edited the quantity of selected product.	Okay
1c	Garlyn E. Garingo - Server	May 03, 2022	Be able to add product to cart.	Added the product to the cart.	Okay
1d	Garlyn E. Garingo - Server	May 03, 2022	Be able to confirm the order.	Confirmed the order.	Okay
2a	Garlyn E.	May 03, 2022	Be able to move pending order to	Moved the pending product	Okay

	Garingo – Server		preparing order	to prepare product.	
2b	Garlyn E. Garingo – Server	May 03, 2022	Be able to move preparing order to complete order.	Moved the prepared product to completed product.	Okay
2c	Garlyn E. Garingo – Server	May 03, 2022	Be able to finish order.	Finish the order from the completed products.	Okay
3a	Garlyn E.	May 03, 2022	Be able to navigate	Select specific time	Okay

	Garingo – Server		sales by selecting time range	range to display sales.	
4a	Garlyn E. Garingo – Server	May 03, 2022	Be able to edit quantity and price of product stocks.	Edit the quantity and price of a product.	Okay
4b	Garlyn E. Garingo – Server	May 03, 2022	Be able to add and remove a product.	Added and removed a product to the inventory.	Okay

Parallel Testing

Table 3.3 illustrates the parallel testing results performed by the client. All of the test cases were done by Ms. Garingo. The actual outcomes were all aligned with the expected outcomes and the remarks were successful. While doing the testing, the client shared her feedback that helped us understand better how to improve the system. After the testing, Ms. Garingo and us reviewed the different screens of the system app to look for parts that can be better improved. We took notes of the feedback she gave us and thanked her and the owner for letting us conduct the testing in the establishment.

Part IV

CONCLUSION AND RECOMMENDATIONS

Conclusion

The purpose of this research is to identify the current state and transaction flow of the chosen organization. Through deeper analysis, the researchers and programmers were able to determine the problems and opportunities within the company by addressing the top three major problems identified: (1) In terms of performance, the lack of management system in monitoring the performance of each product. (2) The Information perspective that denotes the inaccurate records written down and calculated; (3) The lacking aspect in efficiency in which the order information takes time to be relayed due to manual method of relaying

information to the kitchen area. This project intends to assist the firm with its present ordering management system from the manual approach of listing orders on a piece of paper and adopt the proposed automated system for overall efficiency and benefit. Since this project intends to assist the firm with its present ordering management system from the manual approach of listing orders on a piece of paper and adopt the proposed automated system for overall efficiency and benefit, the programmers in this research were able to create an automated ordering system with features and functionality that addresses the following problems mentioned above. In conclusion, the general and specific objectives are achieved through the implementation phase and testing the system prototype’s ability to cater to the needs of the organization. The system has 4 major functionalities: a menu selection display that allows the user to choose items; an order section that add orders to cart, compute the total price and generate order number; an order status screen that let the user update and process the orders, an inventory screen that allows the organization to edit quantity, add and remove orders; and lastly, the sales transaction history for monitoring and tracking the total purchases and earnings.

Recommendations

With the feedback received from the client, it was observed that there is still room for improvements in the system.

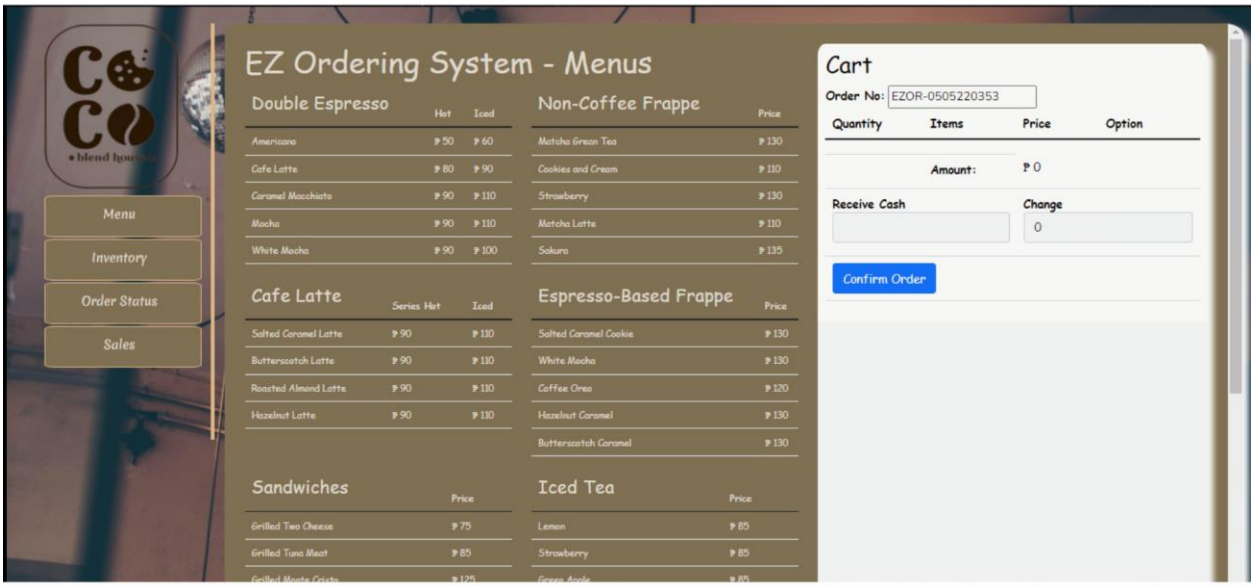
1. Adding photos of popular menu items in the menu interface for better identifying.
2. Make the inventory interface simpler by categorizing and lessening the information displayed.
3. Adding another interface for calculating expenses.

All the recommendations mentioned should be implemented as they are in the scope of the project.

Based on the findings and conclusions of the study, the research project and system only focused on addressing the chosen organization’s problems and opportunities. For future researchers, this will serve as a basis to improve the proposed system and adding more features that will widen the scope and ability to cater the certain issues.

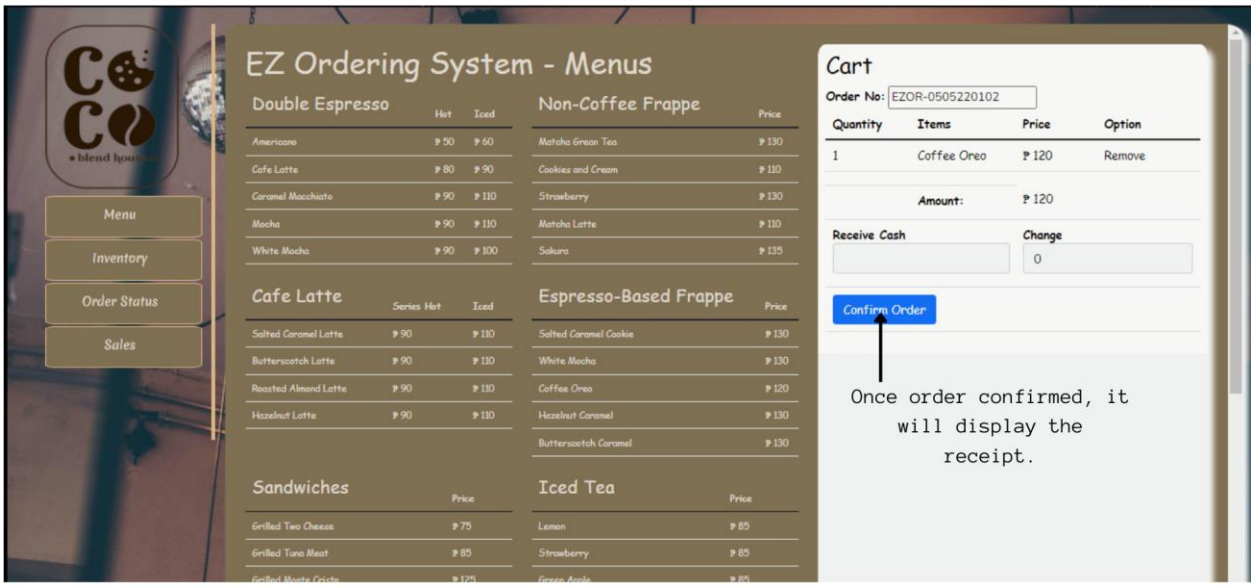
User's Manual - EZ Ordering Application System

This is the menu screen that will let the user choose from the items being displayed.

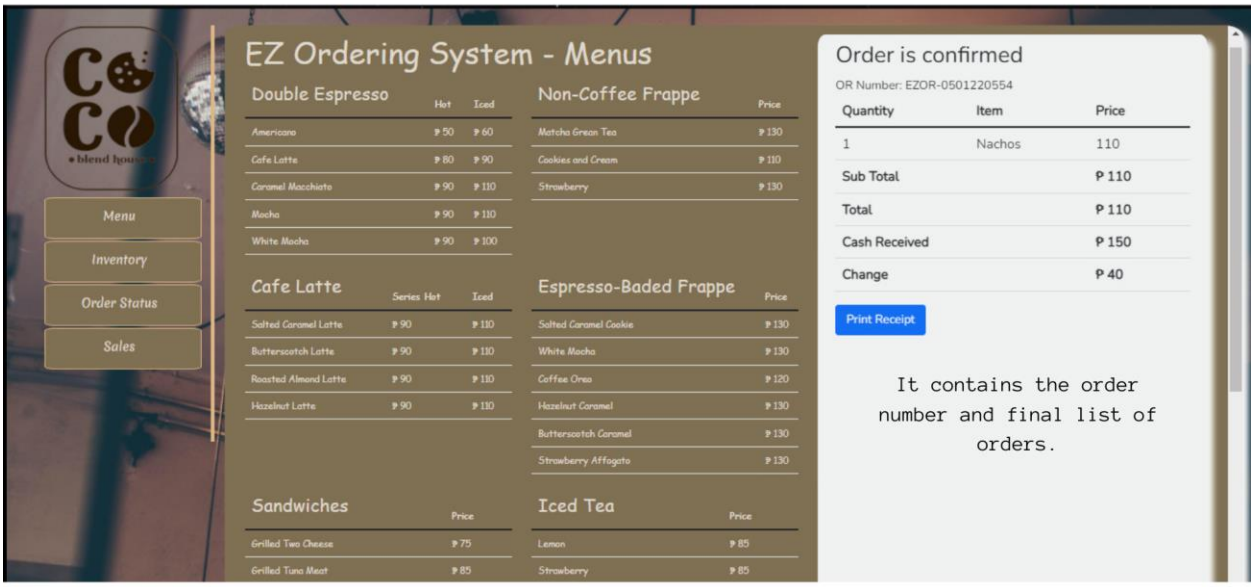


The menus are clickable so once the user clicks an item, it will directly move to the orders screen.

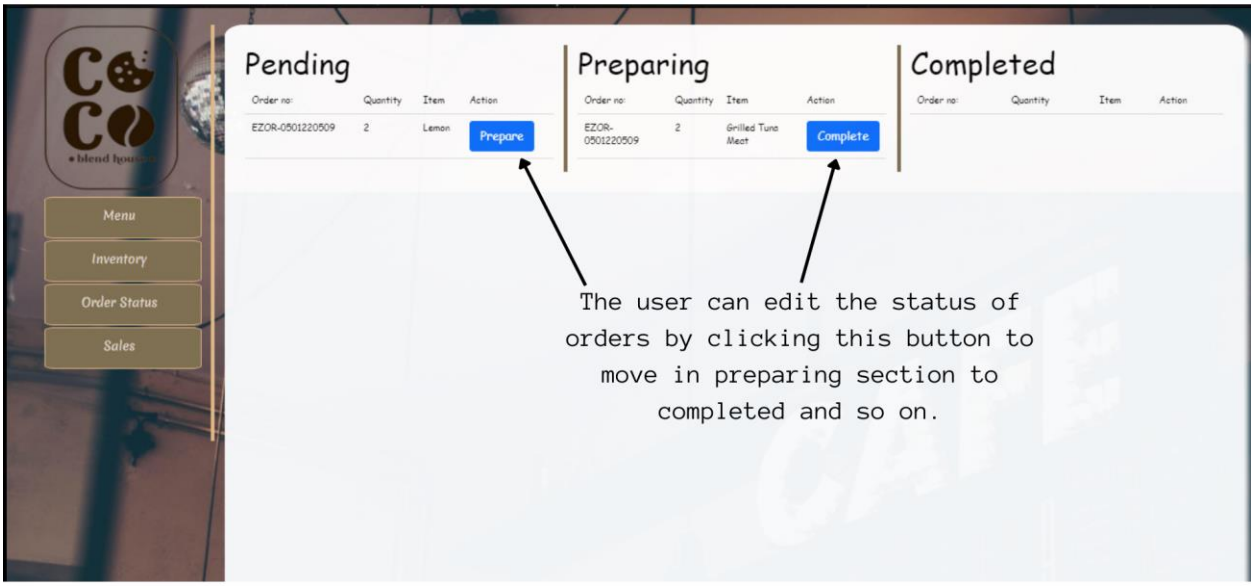
Once the order has been added to cart, the user can now process the order by computing the total and adding the amount of cash received and change.



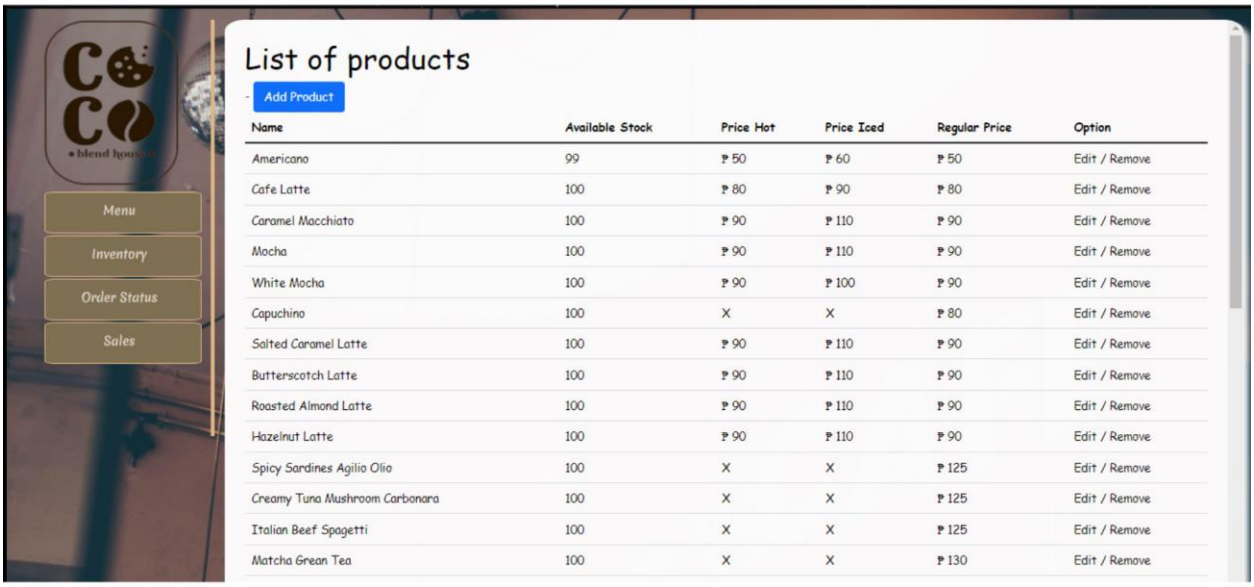
This is the screen after confirming the order.



The order will automatically added to order status screen.

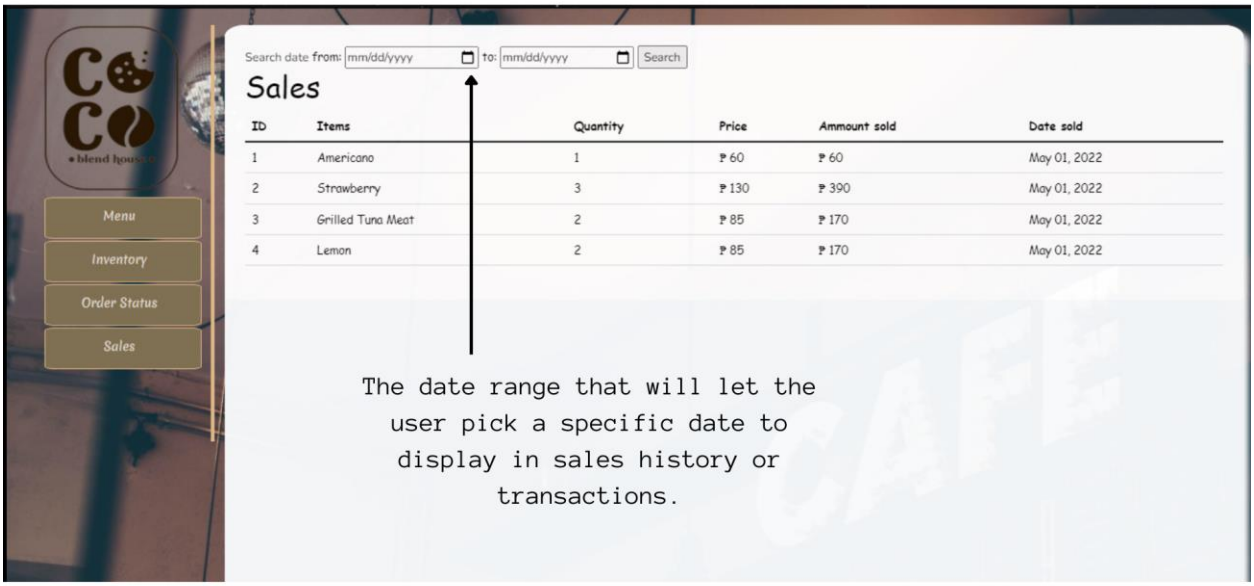


The inventory section that allows the user to add products, edit quantities and remove items.



Once the orders being confirmed, it will automatically deduct to the quantity in the inventory list.

The sales section where the user can track the total quantity being sold per items and the date of the transactions.



APPENDICES

Appendix A

Letter in Conducting a Study

Malayan Colleges Mindanao
A MAPÚA SCHOOL

College of Computer and Information Science
Malayan Colleges Mindanao

Ms. Lioel Rose S. Rafael
Owner, Coco Blend House
Purok 9, Poblacion National Highway
Tacurong City Sultan Kudarat

Dear Sir / Madam:

Greetings!

We, the undersigned, are second year Bachelor of Science Information Systems students of Malayan Colleges Mindanao, A Mapua School and are currently enrolled in CS103P – Systems Analysis and Design.

You have been chosen to be the client company who will be the recipient of the solution software we are going to produce in our study. In connection with this, we would like to humbly ask permission from your good office to allow us to conduct a thorough data gathering and investigation of the company's business operations regarding the [particular transaction such as inventory/payroll/sales/interactive game]. We also would like to ask for your commitment to assist us in this endeavor. This will help the group in creating a high-quality software solution that will help improve the way you do things in your company.

Your favorable response is highly appreciated.

Respectfully Yours,

JAMES MATTHEW N. AVANCENA
PATRICIA VILLAROSA
ABDUL AZIZ M. UY

Noted by:

CHERRY B. LISONDRA, MIT
CS103P Adviser

Conforme: _____
Date: May 06, 2022

Appendix B

Letter in Conducting an Interview

Malayan Colleges Mindanao
A MAPUA SCHOOL

College of Computer and Information Science
Malayan Colleges Mindanao

Ms. Lincel Rose S. Rafael
Owner, Coco Blend House
Purok 9, Poblacion National Highway
Tacurong City Sultan Kudarat

Dear Sir / Madam:

Greetings!

We, the undersigned, are second year Bachelor of Science Information Systems students of Malayan Colleges Mindanao, A Mapua School and are currently enrolled in CS103P – Systems Analysis and Design.

We are conducting a software development project, and this entails us to suggest for hardware components to be used by our chosen company. In connection with our study, we would like to humbly ask from you the price lists of the computers you are selling. This will be used in the Cost Benefit Analysis of our proposed system.

We are hoping for your favorable response on this matter.

Respectfully Yours,

JAMES MATTHEW N. AVANCENA
PATRICIA VILLAROSA
ABDUL AZIZ M. UY

Noted by:

CHERRY B. LISONDRA, MIT
CS103P Adviser

Conforme: _____
Date: May 06, 2022

Malayan Colleges Mindanao
A MAPUA SCHOOL

College of Computer and Information Science
Malayan Colleges Mindanao

Ms. Lincel Rose S. Rafael
Owner, Coco Blend House
Purok 9, Poblacion National Highway
Tacurong City Sultan Kudarat

Dear Sir / Madam:

Greetings!

We, the undersigned, are second year Bachelor of Science Information Systems students of Malayan Colleges Mindanao, A Mapua School and are currently enrolled in CS103P – Systems Analysis and Design.

As part of the requirements of the course, we need an IT Consultant to guide and assist us in our Systems Analysis and Design needs. We believe that you are the person we are looking for and we would like to humbly ask you to be the group's consultant for our proposed study.

We are hoping for your favorable response in this matter.

Respectfully Yours,

JAMES MATTHEW N. AVANCENA
PATRICIA VILLAROSA
ABDUL AZIZ M. UY

Noted by:

CHERRY B. LISONDRA, MIT
CS103P Adviser

Conforme: _____
Date: May 06, 2022

Appendix C

Problem Statement and Factors

A. Problem Statement and Factors

Statement of the Problem

Specific Problem 1

- **Lack of management in monitoring performance of each product.**

  Factor 1: No technology used for addressing this issue.

  Factor 2: Shortage in a key ingredient for the strawberry beverages.

  Factor 3: Delay in resupplying due to out of stock in nearby markets.

Specific Problem 2

- **Inaccurate records written down and calculated.**

  Factor 1: Manual method of recording information.

  Factor 2: Prone to mistakes and damage.

  Factor 3: Prone to loss of the receipt/s.

Specific Problem 3

- **Some order information takes time to be relayed due to manual methods of relaying information to the kitchen area.**

  Factor 1: Distance between the counter area and the cooking area.

  Factor 2: Manual communication is standardized. By traveling the short distance.

  Factor 3: Action is repeated twice for each customer order. To inform of the order information, and to pick up the order completed.

Appendix D

Problem Statement Approval

May 1, 2022

The EZ Ordering Application System is now undergoing its primary testing phase. As part of the process, the developers need to resolve 50% of the problems to monitor the development of the project gradually. As our client, we would like to conduct this testing for you to verify if we achieved the desired resolution of the problems.

Below is the PSA matrix that will serve as evidence that the system has been checked and approved. We appreciate your cooperation.

Problem	**Solution**	**Remarks**	**Status**
Lack of management in monitoring performance of each product.	Adopt an automated system to monitor the performance of each product.	Successful	Complete

Inaccurate records written down and calculated.	Adopt an automated system that will digitize record entries.	Successful	Complete
Some order information takes time to be relayed due to manual methods of relaying information to the kitchen area.	Adopt a system that will automate the process of relaying information to the kitchen area.	Successful	Complete

Appendix E

User Acceptance Testing Results

The preliminary testing was conducted last May 3, 2022, for the person working as the server that has given results. The parallel testing was conducted on the same date and provided the exact satisfactory results. Our group members and training modules were proven accepted by the owner and the server of Coco Blend House about the EZ Ordering Application System. The training modules are divided into sections, such as Product Menu Page, Inventory, Order Status, and Sales Records.

Appendix F

Minutes of the Trainings

The training lasted for approximately 20 minutes. The table shows the training modules, time consumed, and the remarks.

Training Modules	**Time Consumed**	**Remarks**
1. Make order	7 minutes	Okay
2. Process order	5 minutes	Okay
3. Check Sales	3 minutes	Okay
4. Update Inventory	5 minutes	Okay

Appendix G

Letter of Project Acceptance

Malayan Colleges Mindanao
A MAPUA SCHOOL

CCIS College of Computer and Information Science
Malayan Colleges Mindanao

Ms. Lincel Rose S. Rafael
Owner, Coco Blend House
Purok 9, Poblacion National Highway
Tacurong City Sultan Kudarat

Dear Sir/Madam:

Greetings!

As a requirement of our course CS103P, we, the second-year students of Bachelor of Science in Information Systems of Malayan Colleges Mindanao, A Mapua School are required to carry out a study that would produce a [computer-based information system / interactive games] that would help a company improve productivity in their daily operations. We are to choose three (3) companies / clients and carry out a preliminary data gathering to come up with a single company profile that will be used as our official company, which will be the recipient of the aforementioned software solution.

In lieu with this, our group would like to humbly ask permission from your good company to allow us to conduct an interview with one of your personnel and/or staff regarding your business process concerns.

Respectfully Yours,

JAMES MATTHEW N. AVANCENA
PATRICIA VILLAROSA
ABDUL AZIZ M. UY

Noted by:

CHERRY B. LISONDRA, MIT
CS103P Adviser

Conforme: _____
Date: May 06, 2022

Curriculum Vitae

Personal Information:

Name: Abdul Aziz M. Uy

Course & Year: Bachelor of Information Systems, 2nd Year

Birthdate: March 30, 2002

Age: 20

Mobile Number: 0949-570-2242

E-mail Address: aamuy@mcm.edu.ph

Educational Background:

Secondary:

Senior High School:

San Pedro College

Junior High School:

Notre Dame of Tacurong College

Elementary:

Notre Dame of Tacurong College

Personal Information:

Name: Patricia Ann Villarosa

Course & Year: Bachelor of Information Systems, 2nd Year

Birthdate: August 01, 2001

Age: 20

Mobile Number: 0927-950-6445

E-mail Address: annvillarosa08@gmail.com

Educational Background:

Secondary:

Senior High School:

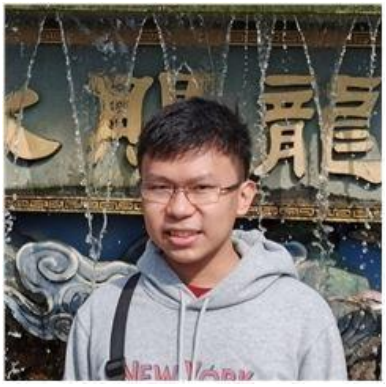
Malayan Colleges Mindanao

Junior High School:

Philippine Nikkei Jin Kai Int'l School

Elementary:

Maranatha Christian Academy



Personal Information:

Name: James Matthew N. Avancena

Course & Year: Bachelor of Information Systems, 2nd Year

Birthdate: October 27, 2000

Age: 21

Mobile Number: 0996-713-8616 / 0991-204-6134

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Educational Background:

Secondary:

Senior High School:

St. Francis Xavier Learning Center

Junior High School:

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Elementary:

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