ELECTRONIC POINT OF SALE SYSTEM OF 777's CONVENIENCE STORE USING BARCODE IN CANTIGUIB, ALBURQUERQUE, BOHOL

College of Technology and Allied Sciences
BOHOL ISLAND STATE UNIVERSITY
Zamora, Bilar, Bohol

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A Thesis
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In Partial Fulfillment
Of the Requirements for the Degree
Computer Science

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APPROVAL SHEET

This thesis entitled **"Electronic Point of Sale System of 777's Convenience Store Using Barcode, Cantiguib, Alburquerque, Bohol"** prepared and submitted by *Dexter A. Mapaño, Julius A. Mapaño, and Mhabel Pearl S. Salisid* in partial fulfillment of the requirements for the degree Bachelor of Science in Computer Science has been examined and recommended for acceptance and approval for oral defense.

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THE RESEARCHERS

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ABSTRACT

The study aimed to develop an Electronic Point of Sale for 777's Convenience Store using Barcode to generate an easy, accurate and fast way of recording and transmitting of data. Currently, the operation of the 777's Convenience Store uses the manual method in the sales and inventory procedures. These encountered problems such as loss of data and records, time consuming transactions of manual nature and monitoring the availability of stocks is not real-time, causing a shortage of stocks and the issue of retrieving or updating records or data. The identified problems and challenges had led the researchers to come up a solution which secures the information to prevent loss or misplacement, ease of access of saving and retrieving of records and timely generation of statistical reports of records. With the needs identified, the researchers come up the solution of developing a system called the Electronic Point of Sale and implement the following module; Log in, Acquisition, Recording, Inventory, Credit, Transaction, Sales and Reports generation. The researchers gather information by conducting a personal interview, observing them during purchasing items, credit, sales and inventory and having a document review of different hard copies. Functionality evaluation was conducted through the system usability testing survey with the target clients. It was done in order to quantify the effectiveness of the developed system. The system usability testing was done by rating according to the adopted system usability questionnaire by Lewis James R. The result of the evaluation was rated 6.5 which indicates that the system had a strongly agree rating indicating the achievement of the individual's expectation on the features. With this it is highly recommended to implement the Electronic Point of Sale of 777's Convenience Store using Barcode.

Chapter 1

THE PROBLEM AND IT'S SCOPE

Rationale

An electronic point of sale system is like a modern cash register. It handles a variety of internal tasks, making life easier for staff and customers alike. Can also do a number of time-consuming tasks to improve and streamline company procedures. Billing, reporting and analytics, inventory control, Customer Relationship Management, and other functions may be handled by a server-based electronic point of sale system (Edmonds, 2021). The inventory is tracked via the EPOS system. It also speeds up transactions and performance, and makes it simple for customers to complete purchases and payment processes. While providing accurate, precise, and complete information to management.

The EPOS system nowadays has many functions as it has been developed and improved by many generations. Features like, the inventory is tracked via real time, it also speeds up transactions and performance, and makes it simple for customers to complete purchases and payment processes. While providing accurate, precise, and complete information to management. The 777's Convenience Store is a medium-sized retail establishment. The store has agrivet, hardware and dry goods supplies.

The management of the store relies on manual monitoring and recording of the sales, inventory procedures and customer credits. The operation of the 777's Convenience Store thus encountered many problems such as the loss of data and

records because they are kept in a record book, the time-consuming nature of manual transactions, the lack of real-time stock availability monitoring that results in a shortage of stocks, and the issue of retrieving or updating records or data.

As a result, the researchers designed an electronic point of sale system with the primary purpose of diminishing the store's current problems. The researchers to come up with a solution which makes it simple to save and retrieve records, produces statistical reports of records in a timely manner, aid real-time stock management, and safeguards the data to avoid loss or misplacement thus, the electronic point of sale system using barcode of 777's Convenience Store was developed.

Literature Background

Based on Article XIV, Section 10 of the Philippines Constitution states that:

> *"Science and technology are essential for national development and progress. The state shall give priority to research and development, intention, innovation, and their utilization, and the science and technology education, training and services. It shall support indigenous appropriate self-reliant scientific and technological capabilities, and their application to the country's productive system and national life"*

According to this article, it is important to tackle about the development of science and technology in training and services in order to provide and enhance their knowledge especially for those in the business world. It also states here that in order to be more productive and can easily adapt the changes and advancement in business, the government must support and can engage individuals from the

latest technology in order for them to be more convenient to work and can benefit for many people.

The first theory is referred on the Principles of Automation by Peter J. Denning and Craig Martell. It is concerned with the findings of efficient computational ways to perform human tasks. The principal tries to emphasize that there are efficient ways to perform human tasks by making use of the advancement of technology (Denning et al., 2007).

Another theory is Codd's Relational Database Management System. According to Codd, a database must obey in order to be a true relational database. These rules can be applied to a database system that is capable of managing is restored data using only its relational capabilities. This is a standard method by which information is organized and retrieved from computers. The theory is based on the idea that the data will be manipulated by the user using interface tools (Codd, E. 1970). The developed system has processes that include the recording of the new acquisition, monitoring inventory, transactions from the customers, and generating reports. It can generate a daily sales report of the Sales Inventory of 777's Convenience Store.

There are the numerous related open-source systems that are available in different organizations and institutions. Among this related software are the following:

1. IT Retail. The system allows customers to choose what type of payments they want with contactless payments, earning points and

customizing rewards. The cost-cutting strategy involves having no servers, no expenditure licenses, fewer price errors, and then security for exposing staff thievery. IT Retail focuses on developing robust grocery POS software on the Microsoft platform, and our solutions work with the entire Microsoft suite of items. Our development platform is a combination of Microsoft Windows, SQL Server, .Net, and several web frameworks. IT Retail's software solutions, can cover a wide range of applications, including easy-to-use, comprehensive Point of Sale and back-office systems that can combine with a corporate hose system (Martin, G. 2005). The difference between this system is that each time the owner, staff and cashier uses the system it automatically saves which account was used during the transaction updating stocks etc.

2. Square. This POS system may be set up to be simple to use for any type of business. A POS system with built-in features for comprehensive inventory management, sales, and staffing that helps retail stores sell in-store and online effortlessly. With Square, it expanded into software and started building integrated, omnichannel solutions – to help sellers sell online, manage inventory, run a busy kitchen, book appointments, engage loyal buyers, and hire and pay staff. And across it all, we've embedded financial services, tools at the point of sale, so merchants can access, a business loan and manage their cash flow all in one place (Deutch, 2022). The POS system in Square does not have a function

that can calculate the daily sales. The developed system does not only has the function but it can also be printed out.

3. Tagrain. In the Philippines, this is the first plug-and-play retail POS system. Small-scale retailers can benefit from an easy-to-use and feature-rich point-of-sale system, designed to run a retail store, no long-term commitments and for uninterrupted selling, there is a 100 % uptime with safe cloud backup. Tagrain was founded in 2017 by a team of retail experts who have been delivering solutions to large-scale retail enterprises over two decades and it is a cloud-based point of sale software for small-scale and growth retailers. Tagrain set the ambition to have a positive impact on the lives of millions of small-scale retailers by increasing their income through operational efficiency (Andrews, P. 2020). The proposed system is unique from tagrain because they have a feature that can backup only using internet while our can also backup but it does not depend whether the computer has internet or not.

4. Loyverse. It is a suite of POS (point-of-sale) mobile applications. The system can accept any payment method, can access reporting and inventory management using a smartphone, tablet, or computer, employees punch in and out, and their total working hours are automatically tallied. To give individualized service, look up a customer's buying history in the system itself with ease. With a single account, It can manage merchandise, workers, and customers across many

locations. Our tools help merchants around the world to manage their sales, inventories, employees, and customers (Ruiz, 2014). Our system has the function to not only watch customers credit history but also the items, date and total amount.

Moreover, there are many companies that have already adopted the sales and inventory system. Systems are also used as a reference in the module and process. The following are a few related systems.

1. Ciontek. This company, in addition to providing desktop PoS systems, also creates an android PoS system with all of the same functionality as a traditional PoS system. Ciontek has been developing and manufacturing the best hardware and firmware technology, from handheld barcode scanner to industrial tablet, and while ultimately focusing on point of service systems such as Smart POS and Comprehensive Payment system. We pride ourselves in achieving various milestones by bringing cutting-edge mobile and smart technology for our customers, and offering one-stop ODM service to various business scales in vertical industries, such as Logistics, Retail, Healthcare, lottery and Commercial (Gustav, 2019). The proposed system contains a plug in and out the barcode scanner which means the EPOS is still useable with or without barcode scanner.

2. Korean Red Ginseng Enterprise Sales and Inventory System. The proponent acquires knowledge about the file processing and report generations through the study. It also gives the proponent ideas to

create the proposed system's reports in computerized sales and inventory system. The system is used to store the details of the inventory, update the inventory based on the sales details, produce receipts for sales, and generate sales and inventory reports. This is one integrated system that contains both the user components. The proponents acquire knowledge of real-time inventory, generates receipts, and security features. The developed system can be accessible by employees, administrators and customers (Shin, 2003). The reports in the proposed EPOS contains or shows the name of the person who is working on the reporting and printing the reports.

The existence of these projects served as the basis of the researchers in the design, features and the requirements for the system adopted on 777's Convenience Store.

THE PROBLEM

Statement of the Problem

The primary goal of this study was to design and develop an electronic point of sale system for 777's convenience store in Cantiguib, Alburquerque, Bohol.

Specifically, the study sought to answer the following questions:

1. What is the current process and operations involved in the sales and inventory of 777's Convenience Store?
2. What are the needs and problems encountered by the management?
3. What is the possible solution to improve the problems encountered?
4. What is the level of system acceptability as recognized by the target users?

The proposed system is to be called Electronic Point of Sale System using Barcode and it will integrate the following processes:

1. Implement an offline server based system that will help the management of the convenience store.
2. Design and implement the following modules:
    a. Inventory,
    b. Log in,
    c. Credit,
    d. Recording,
    e. Sales
    f. Acquisition

3. Implement business intelligence technique for decision-support to the establishment

Scope and Limitations

The development of EPOS which is an offline server-based system that will be focused on the following processes:

1. **Offline Mechanism –** this function makes the system still able to use a server even without having an internet.
2. **Acquisition** – This includes the inquiry process of both customer and administration regarding the availability of items. It also incorporates a simple search facility.
3. **Log In** - this function provides the tools for maintenance, facilities managements for the user and the store, security and other privileges.
4. **Recording** - this module includes recording or updating the old or new data of the customer for easy convenience of the store. This system provides also the updating, deleting ad searching information.
5. **Inventory** - this will have real time stock and inventory management that the users can easily see their stocks remains in their store.
6. **Credit** – this function has two processes; one is to manage data and to be able to give receipts to customers when paying debt.
7. **Sales** – this module will be used to calculate the total amount of item sales within that day.

8. **Reporting** – it responds quickly in accordance for the store to provide total daily sales report, history stock in/out report, list of items report, yearly sales report. Also, to supports the owner for strategic management.

The study was limited only to the standard operations and procedures for the management of 777's Convenience Store in Cantiguib, Alburquerque, Bohol. The users of the system are limited to the owner, staff and cashier.

Significance of the Study

The overall objective of this study is to develop an Electronic Point of Sale System for 777's Convenience Store. This would also benefit the management by making their operations more efficient and much easier.

Owner. The owner is the one who supervises and calculates the total daily sales, manages the records of the stock in/out history and accounts. It will reduce the owner's workload since the system contains easy to retrieve data and automated calculation for the daily and yearly sales.

Staff. The staffs will be the one to process inventory and stock in/out in a store. With the help of the system it will be easier for the staff to retrieve the records, and the work will be minimized.

Cashier. The cashier is responsible for receiving the payment of the customer's orders and give the customer receipt. It is also the one who will process the inquiries of the items in the inventory and credit management. The system will help cashier to minimize their work and less of time to process the customer's

payment. Since the system will provide an easy, accurate and real-time stock availability and reports.

Customer. The customers would greatly benefit from this system as it would become more convenient for them to having fast transactions in the management's process sales and process credit. Giving these advantages would provide customer's loyalty and interest to store.

Researchers. The study would enhance their skills and knowledge in advanced technology by developing a system and becoming more aware of the existence and benefits of new technology.

RESEARCH METHODOLOGY

Development Framework

The technique, tools, and libraries established by other researchers to achieve a certain technical goal or make working in a specific language easier.

On the next page figure 1, it shows the conceptual diagram of the system of Electronic Point of Sale of 777's Convenience Store. It specifies the system's essential tasks, including the job of the owner/staff/cashier. The input-output-process output principles are represented by the study's model. Acquisition, Log In, Recording, Inventory, Sales and Credit are among the inputs provided only by the owner/staff/cashier. The output of featured reports that assists the owner by providing decision support which is beneficial to the management.

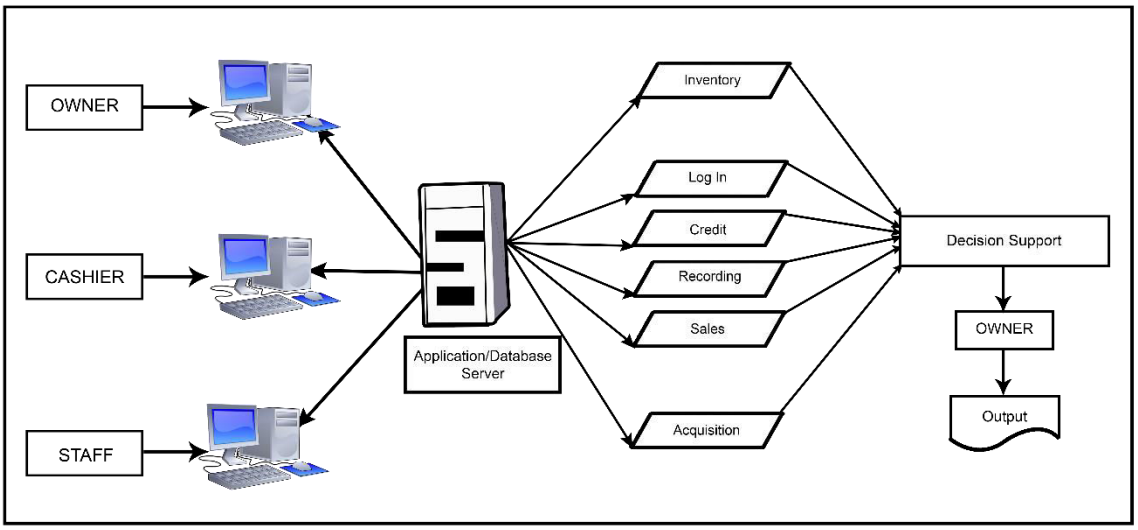


Figure 1: Conceptual Diagram of the Proposed system

Below is figure 2 that shows the block diagram of the proposed Electronic Point of Sale of 777's Convenience Store. It includes the specifications for the system's basic features, which include the entities, functions, inputs, and intended outputs. It also comprises the functions that carry out the system's day to day operations.

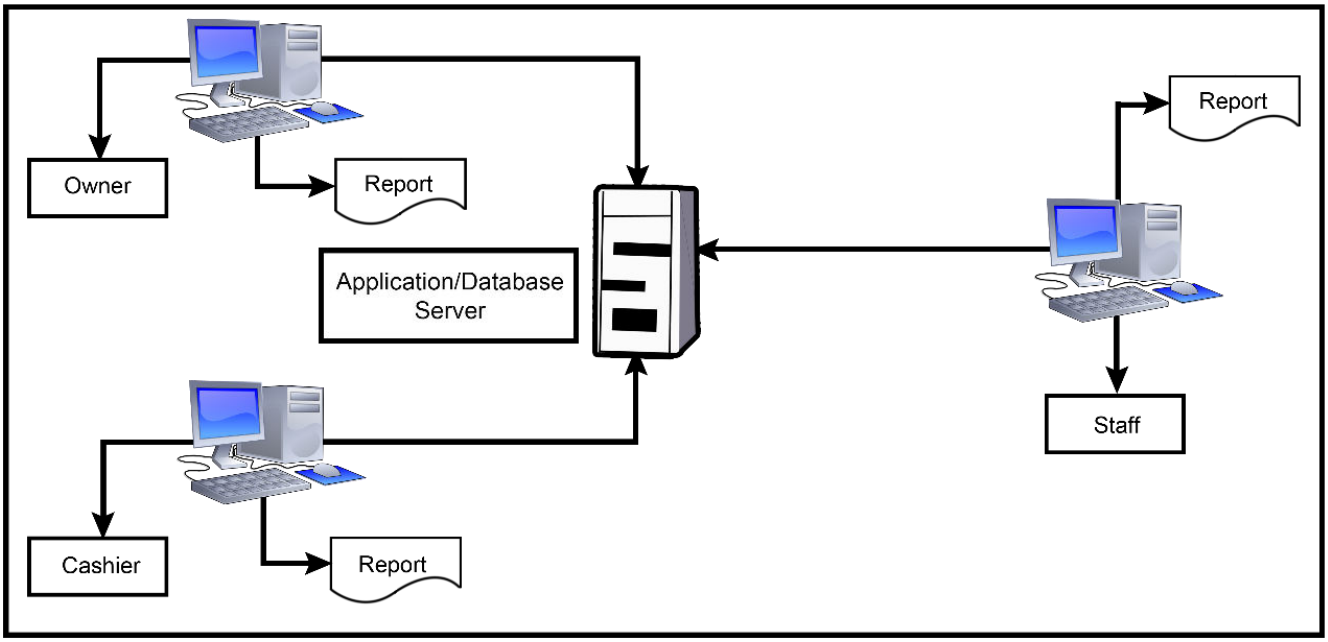


Figure 2: Block Diagram of the Proposed System

Development Model and Approaches

The methodology used was Rapid Application Development (RAD) Martin J. et al., (1990). It is a fast prototype release and iterations are prioritized in this type of software development technique. Rapid Application Development (RAD) has four phases to be followed. During the stage of analysis and quick design the researchers, client and team members collaborate to determine the goals and expectations for the development and the current and potential issues that need to be addressed during the build. The researchers have already looked for any existing system to be the fundamental point of the study, gathered information such as asking questions to respondents of the survey. A document review at the record book and observation of the processes was conducted to collect adequate details in developing the system.

The second stage covers the prototyping cycle. The researchers have built a prototype from the given quick design and the user will evaluate it to recognize the strength and weakness of the system. Users will also identify whether the process can evolve to reflect the changing organization requirements to identify process improvement. Researchers developed the prototype together with additional information provided by the user. A new prototype was evaluated by the user again until the final prototype is developed once the user satisfied.

The third stage takes the testing phase after extensive prototyping and cutting-edge designing. The researchers present the prototype EPOS system to the 777’s Convenience Store staff to ensure everything is working out smoothly

and ensuring to the meet client's expectations and objectives. The researchers provide guide questions for the usability of the system.

The final stage is the implementation, where the finished program goes to launch. The management are allowed to use the prototype EPOS System. Researchers underwent data conversion, final testing, as well as user training. The finalization was made while the researchers and client continue to look for bugs and potential issues to be addressed immediately.

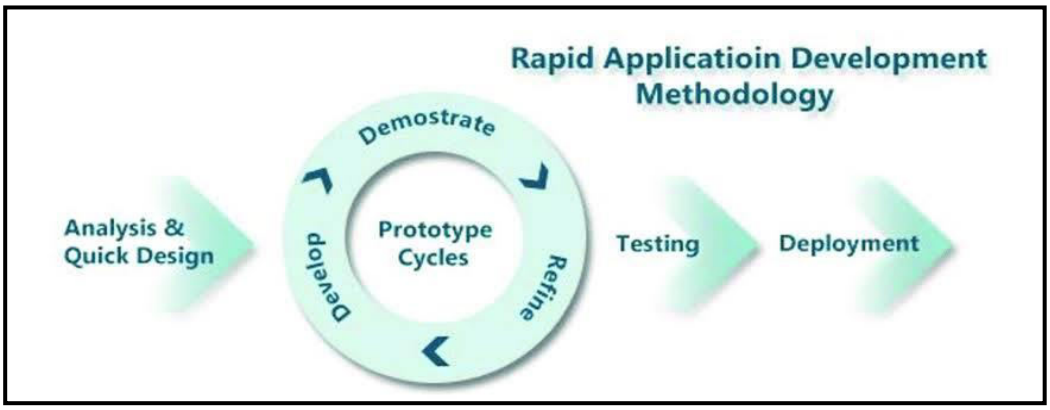


Figure 3: Rapid Application Development (RAD) Diagram

The following tools were used in the development and analysis phase of Electronic Point of Sale System using Barcode of 777's Convenience Store in Cantiguib, Alburquerque, Bohol:

1. **WAMP** - are collections of self-contained programs that run on machines using the Microsoft windows operating system. It helps our developing system to create applications for viewing and data storage.
2. **Visual Basic** - is used to code and develop the Electronic point of Sale system. From Log in Module up to the final module reporting.

3. **MySQL -** it is used for accessing data and to be able to show in the system from the database and to connect various codes from Visual Basic to the WAMP server.
4. **Crystal Report** - used to generate and print reports that were shown in the develop system based on the modules that it implemented.
5. **Abobe Photoshop CS6 -** it is used by the developers to create icons and images that was put in the buttons in the develop system

Environment and Participants

The study was conducted at 777's Convenience Store located at Cantiguib, Alburquerque, Bohol. It consists of 4 person that facilitates in the store. The owner is in charge of overseeing all business activities, including maintaining an item inventory and keeping tabs on daily sales totals. The staff is in charge of answering customer queries and inspecting every item in the store. The cashier is also in responsible of accepting payment from customers for their purchases, noting the credit balance, and relaying receipts. The researchers ask some guide questions such as, what are the operations and process in the convenience store, what are the problems encountered, what are the possible solutions, and what is the level of system acceptability as recognized by the target users.

Data Collection

The researchers asked permission through a letter request from the owner to conduct a study of the convenience store the researchers gather information by conducting a personal interview, observing them during purchasing items, credit,

sales and inventory and having a document review of different hard copies. While it was also ask what are the process in purchasing, sales and inventory, payment, credit and who was responsible for keeping and retrieving the records. Functionality evaluation was conducted through the system usability testing survey with the target clients. It was done in order to quantify the effectiveness of the developed system. The system usability testing was done by rating according to the adopted system usability questionnaire by Lewis James R. There were 6 respondents the following: (1) owner, (2) staffs (1) cashier and (2) IT experts. Table 1 below represents the summary of the respondents in the system usability.

Table 1

Summary of Respondents in the system Usability

Respondents	No. of Respondents
Owner	1
Staff	2
Cashier	1
IT Experts	2
TOTAL	**6**

It assessed whether the users are satisfied with the system functionality. Table 2 below shows the guide used for the interpretation of the results in the system usability.

Table 2

Interpretation Guide of the System Usability

Weight	Range	Description	Interpretation
7	6.4 – 7.0	Strongly Agree	The respondents strongly believe and are confident that the system is very usable.

6	5.5 – 6.3	Agree	The respondents believe and are confident that the system is usable.
5	4.6 – 5.4	Tend to Agree	The respondents tend to agree that the system is usable.
4	3.7 – 4.5	Neither Agree or Disagree	The respondents are neutral in trusting that the system is usable.
3	2.8 – 3.6	Tend to Agree	The respondents lend not to trust that the system is usable.
2	1.9 – 2.7	Disagree	The respondents believe that the system is not usable.
1	1.0 – 1.8	Strongly Disagree	The respondents are strongly confident that the system is not usable.

In order to determine the general acceptability of the system, the average weighted mean or the weighted mean score was computed to evaluate/access the system and web acceptability level using the following formula:

$$\textbf{WMS} = \frac{1f_1 + 2f_2 + 3f_3 + 4f_4 + 5f_5 + 6f_6 + 7f_7}{\textbf{n}}$$

Where:

WMS = Weighted Mean Score

f_1 = frequency of respondents given a rate of 1

f_2 = frequency of respondents given a rate of 2

f_3 = frequency of respondents given a rate of 3

f_4 = frequency of respondents given a rate of 4

f_5 = frequency of respondents given a rate of 5

f_6 = frequency of respondents given a rate of 6

f_7 = frequency of respondents given a rate of 7

n = total number of respondents

$1, 2 \ldots 7$ = constant (rating to the service provided)

OPERATIONAL DEFINITION OF TERMS

For the purpose of clarification, the important terms used in the study have been defined.

777 Convenience Store. Name of the client's store. Used to specify the place where the study was conducted.

Barcode. A technique for displaying data visually in a machine-readable fashion. Used to locate the specified items via system scanning.

Credit. Used to credit the items to customers from the store while recording how much money needs to be paid back.

EPOS(electronic point of sale system)**.** Is the combination of point of sale software and hardware to make a till system. Used as a way for the management to till interface, enabling to speed customers through checkout, process transactions and manage on the system.

Inventory. Used to check the goods and materials that the store keeps in the system for the purpose of resale, production, or use to earn a profit.

Module. Used as a component or part of a program that contains one or more routines. Modules make a programmer's job easy by allowing the programmer to focus on only one area of the functionality of the software application. Modules are typically incorporated into the program (software) through interfaces.

Offline Server. Used set up to work with runtime workflow servers that are not connected to the internet, allowing the system to manage offline processes.

Paid in Cash / Cash Payment. Used as a way to specify what kind of payment in the descriptions of the study.

Receipt. Used as reference on the detailed receipt that the developed system produced.

Stock In/Out. Used for reference as for the study on how the management handles the stocks in the store.

Total Daily Sales. Used as the average daily sales volume, which is determined by dividing the total number of products sold over a period of time by the number of days in that period and recorded in the system.

Transaction. Used as a way of understanding or communication between a buyer and a seller regarding the exchange of commodities, services, or assets in exchange for money through the system.

Chapter 2

PRESENTATION OF FINDINGS, ANALYSIS, AND INTERPRETATION OF DATA

Existing Operation and Processes

The study focused on the processes of management of 777's Convenience Store in Cantiguib, Alburquerque, Bohol. These were the following manual processes that took place in the 777's Convenience Store.

A. Process Inquiry

The customer will ask the staff about the availability and details of the items through the item record book. The owner asks the cashier and staff about the recent transactions of the convenience store and they will relay information from the record book about customer inquiries regarding their credits, inventory management, and reports. When an item was running low on stocks the staff in charge of overlooking the stocks will inquire the other staff that is assign to restock.

B. Process Credit

The cashier has access to the credit record book for new credit data with the credit items and balance. When the customer pays the balance, the cashier issues an receipt and the credit information is updated in the credit record book.

C. Process Sales

Before collecting money, the cashier will add up the products a customer wishes to purchase. The cashier will relay the item and receipt as soon as the customer has full paid the amount. A duplicate receipt is kept in the drawer. The

owner is in charge of tracking of all daily transaction receipt and manually records the amount of daily sales in the total daily sales record book. To prevent cashier or staff theft, reports are viewed by the owner in the daily sales record book.

D. Process Inventory

Based on the current manual inventory process, the staff counts the items one by one. When the items arrived from the supplier, they were written down into the inventory record book. When customer purchases the items, the inventory record book keeps track of everything they have purchased thus far. If the remaining item count matches the list, the record book will be verified and if it does not match the number in the inventory record book, it is considered lost.

E. Process Report

Based on the current manual report of the total daily sales, receipt of the restock items and credit management are the current report in the convenience store. The owner, staff and cashier used all the record book as their management reporting in their meetings and for their desired report for management purposes.

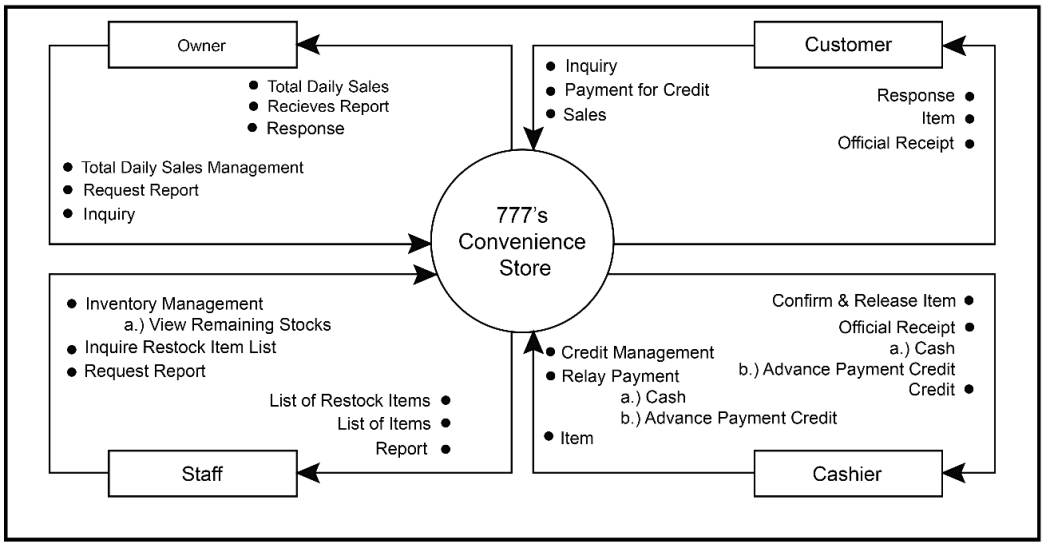


Figure 4. Contextual Diagram

Event Specification

Event List:

1. Process Inquiry
2. Process Credit
3. Process Sales
4. Process Inventory
5. Process Report

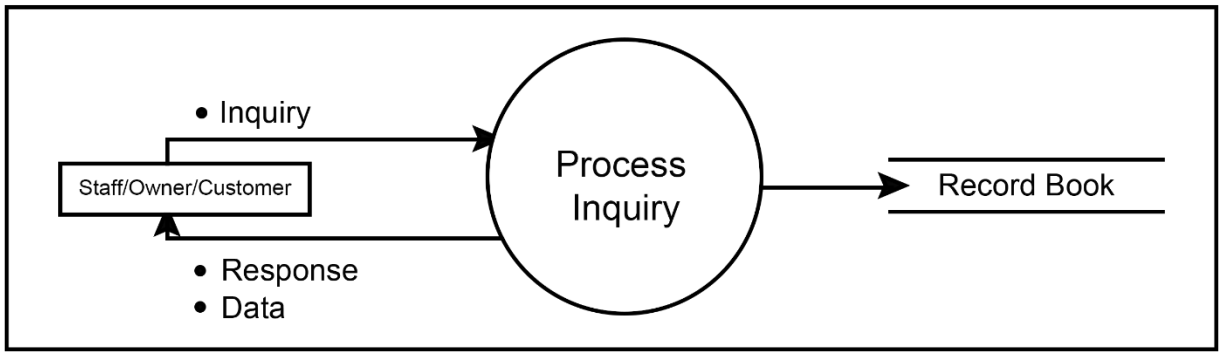


Figure 5. Process Inquiry (Event 1)

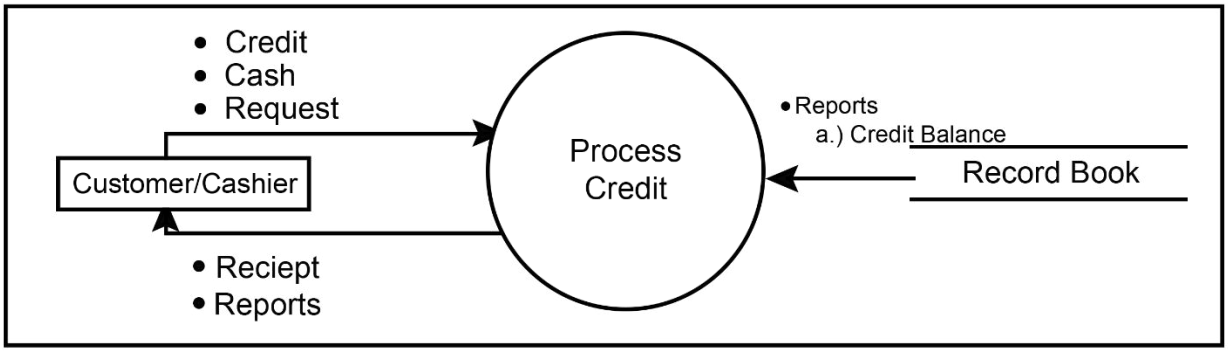


Figure 6. Process Credit (Event 2)

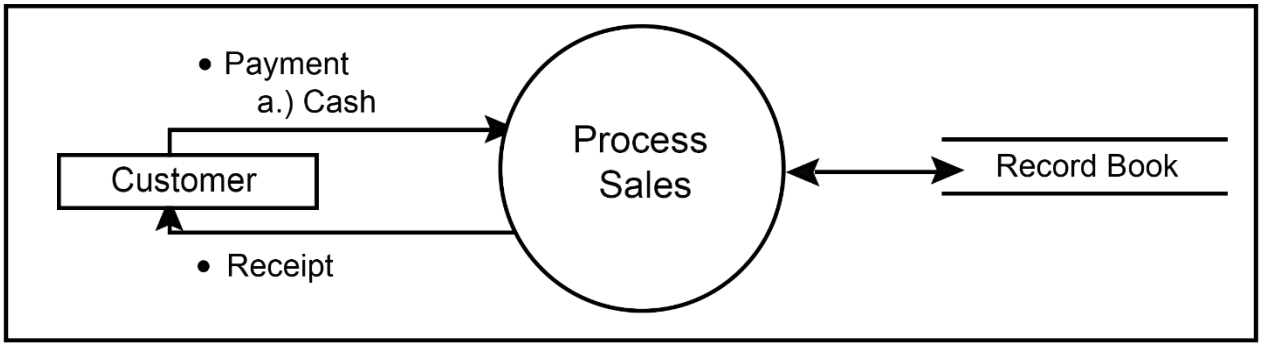


Figure 7. Process Sales (Event 3)

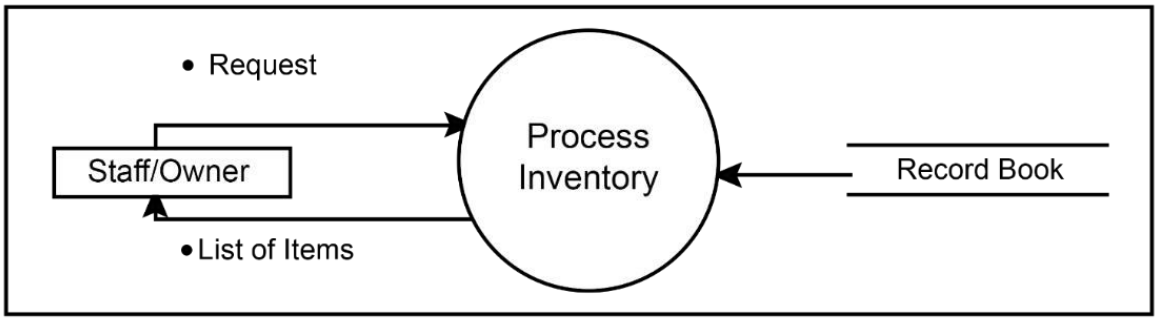


Figure 8. Process Inventory (Event 4)

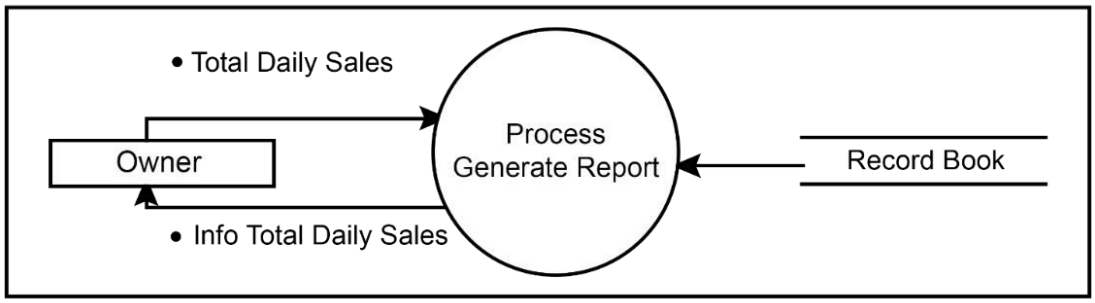


Figure 9. Process Report (Event 5)

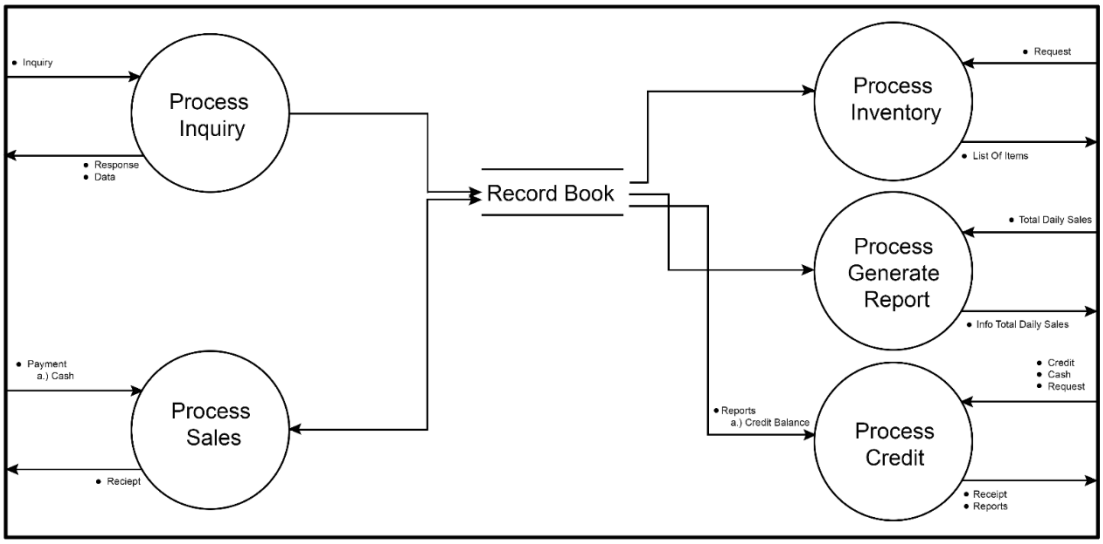


Figure 10. Top-level of the Present System

Needs of the Existing Operation

The researchers identified the following needs in studying the current process of 777's Convenience Store in Cantiguib, Alburquerque, Bohol, to facilitate

and enhance the processing of the system.

The following are the needs of the current system:

1. Fast, efficient, and accurate items recording, credit, stock in/out for minimizing the workload and a secure database for data-keeping of the management.
2. In order to generate reports accurately and thoroughly, it is required to provide an effective, computerized, rapid, and precise monitoring of all transactions and to retrieve records to prevent confusion and error.
3. Instead of using files and folders, the database should be used to properly fill out the documents and files.

Electronic Point of Sale System of 777's Convenience Store in Cantiguib, Alburquerque, Bohol

The researchers gathered all of the data and information about the current system before creating the Electronic Point of Sale System of 777's Convenience Store in Cantiguib, Alburquerque, Bohol.

A. Log In

The login system is the first security module that determines which users are authorized to access the development system's records and files. To gain access to the system, must enter your username and password. The owner will be the one to handle the inventories and daily total sales while managing the log in accounts. The staff is assigned to manage the customer inquiries and records all new stocks delivered in store. And, the cashier manages all the transactions from customers.

B. Inventory

In the system, the staff will handle the management of the stocks both In/Out while it also shows the date, details of the item/s and the assign staff during the time of receiving the stocks.

C. Sales

It consists of a sales features that gives business owners and entrepreneurs greater freedom in tracking and overviewing the sales transactions, setting sales targets, tracking profit reports for the month or year.

D. Reports

The cashier, owner, and staff can generate reports when they are in need of list of item stocks, the list of stock availability, the list of daily remaining stocks, and the daily gross profit report are all included in these reports. During this process, the owner can also make changes to the product information.

E. Credit

The cashier will oversee the credit management while it shows the details, balance and the date of the transaction. During this process, the cashier also manage the customer's payment for their balance and to relay receipt.

F. Recording

The owner calculates first the total daily sales before it is recorded, the staff records the receipt of all restock items while updating the stock and if the customer credit the items the cashier will record their name and the credit amount. These are can be done using the system.

Use Case Diagram

A use Case Diagram is a set of action or event stages that typically define the interaction between a role (referred to as an actor in the Unified Modeling Language) and a system in order to achieve a goal. An effective use case diagram can help your team discuss and represent scenarios in which your system or application interacts people, organizations, or external systems (known as actors).

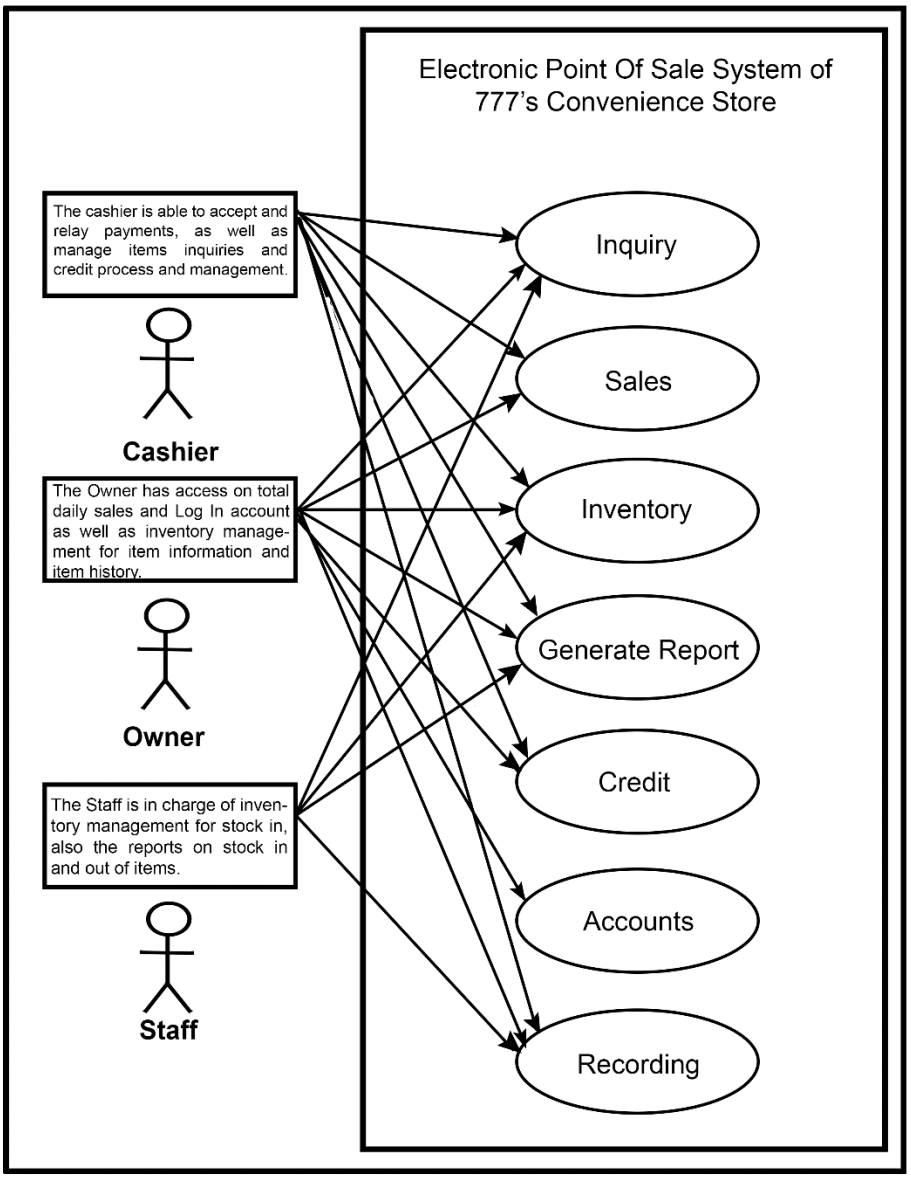


Figure 11. Use Case Diagram. Electronic Point of Sale System of 777's Convenience Store in Cantiguib, Alburquerque, Bohol.

Use Case Narrative

A use Case Narrative is a series of action or event stages that typically define the interaction between a role (called an actor in the Unified Modeling Language) and a system to achieve a goal. It is also a primarily textual representation of a use case that may be enhanced by decision trees or other easily understood notations. The description should be written in the language of the intended users, and thus serves as a crucial communication tool between system developers and the intended target users. In every use case narrative, there are Pre-conditions, Process and Post-conditions.

The Following are the Use Case Narratives:

Use Case 1. Narrative- Process Inquire

(UC1)	**Process Inquire**
Scope Level	Electronic Point of Sale System of 777's Convenience Store
Goal in Context	User Goal Display a module from which one can inquire or search for available items and view its information.
Primary Actors	Cashier, Staff, Owner & Customer
Stakeholders	Cashier: Wants to give the customer item(s) information through the system. Customer: Wants to know the availability of the product and its information. Staff: Wants to inquire the assigned staff about items that are needed to restock. Owner: Wants to inquire about specified information to staff and cashier.
Triggers	Cashier: Adds item information and select item(s) from the module then view its information. Customer: Receives the information that was relay to the Staff or Cashier. Staff: Receives list of item(s) that are needed to be restock. Owner: Receives the specified information from staff, cashier.
Success Guarantee	Electronic Point of Sale: Waits for user Input

Main Success Scenario:

1. Cashier: Adds item information and select item(s) from the module then view its information to relay to the customers.
2. Customer: Receives the information that was relay to the Staff or Cashier.
3. Staff: Receives list of item(s) that are needed to be restock.
4. Owner: Receives the specified information from staff, cashier.

Use Case 2. Narrative – Process Sales

(UC2)	**Process Sale**
Scope Level	Electronic Point of Sale System of 777's Convenience Store
Goal in Context	User Goal To lessen the time of work, to make the transaction fast.
Primary Actors	Cashier
Stakeholders	Cashier: Wants to proceed the transaction to the customer by sale on cash.
Triggers	Cashier: Scans barcode or selects the item(s) to add to the list and calculate the total amount to receive customer's payment.
Success Guarantee	Electronic Point of Sale: Waits for user Input

Main Success Scenario:

1. Cashier: Scans barcode or selects the item(s) to add to the list and calculate the total amount to receive customer's payment or to credit.
2. Electronic Point of Sale: Waits for user input.

Use Case 3. Narrative – Process Inventory

(UC3)	**Process Inventory**
Scope Level	Electronic Point of Sale System of 777's Convenience Store in Cantiguib, Alburquerque, Bohol
Goal in Context	User Goal Presents a menu from which one can manage items inventory.
Primary Actors	Owner, Staff & Cashier
Stakeholders	Owner, Staff & Cashier: Wants to view inventory of the items, items availability, view remaining stocks and history of stock in/out.
Triggers	Owner, Staff & Cashier: Selects the type of view in the module from the system and search for desired information.
Success Guarantee	Electronic Point of Sale: Waits for user input.

Main Success Scenario:

1. Owner, Staff & Cashier: Selects the type of view in the module from the system and search for desired information.
2. Electronic Point of Sale: Waits for user input.

Use Case 4. Narrative – Process Reports

(UC4)	**Process Reports**
Scope Level	Electronic Point of Sale System of 777's Convenience Store in Cantiguib, Alburquerque, Bohol
Goal in Context	User Goal To manage database records and generate reports.
Primary Actors	Owner, Staff, Cashier
Stakeholders	Owner, Staff, Cashier: Wants to manage and receive the items information generate reports.
Triggers	Owner, Staff, Cashier: Successfully manage and receive reports from the system.
Success Guarantee	Electronic Point of Sale: Waits for user Input

Main Success Scenario:

1. Owner, Staff, Cashier: Successfully manage and receive reports from the system.
2. Electronic Point of Sale: Waits for user input

Use Case 5. Narrative – Process Credit

(UC5)	**Process Credit**
Scope Level	Electronic Point of Sale System of 777's Convenience Store
Goal in Context	User Goal To lessen the time of work, to make the credit transaction fast.
Primary Actors	Cashier
Stakeholders	Cashier: Wants to proceed the transaction to the customer by credit.
Triggers	Cashier: Scans barcode or selects the item(s) to add to the list and calculate the total amount to save credit information or to receive customer's advance payment.
Success Guarantee	Electronic Point of Sale: Waits for user Input

Main Success Scenario:

1. Cashier: Scans barcode or selects the item(s) to add to the list and calculate the total amount to save credit information or to receive customer's advance payment.
2. Electronic Point of Sale: Waits for user input.

Use Case 6. Narrative – Process Accounts

(UC6)	Process Accounts
Scope Level	Electronic Point of Sale System of 777's Convenience Store in Cantiguib, Alburquerque, Bohol
Goal in Context	User Goal To provide and manage Log In Accounts. To provide security to avoid thievery. To make the users Log In to the system
Primary Actors	Owner, Staff, Cashier
Stakeholders	Owner: Wants to manage and view the Log in Accounts. Owner, Cashier, Staff: Wants to Log in to the system to use and proceed daily work schedule.
Triggers	Owner: Gives the owner exclusive access to adding and managing cashier & staff accounts. Owner, Cashier, Staff: Inputs correct username and password to log in and successfully use the system.
Success Guarantee	Electronic Point of Sale: Waits for user Input
Main Success Scenario:	
1. Owner: Gives the owner exclusive access to adding and managing cashier & staff accounts. 2. Owner, Cashier, Staff: Inputs correct username and password to log in and successfully use the system. 3. Electronic Point of Sale: Waits for user input	

Program Hierarchy

The diagram on the following page is a simple hierarchy chart that depicts the system management functions and activities. It's a visual representation of a hierarchical system, and it is also known as a structure chart. Roles, levels, and positions are depicted in an illustrated format that shows the relationship between the various elements. The most important or relevant portion of the hierarchical system is usually placed at the top of the chart and below are the branch of the hierarchical system. The remaining components of the hierarchical system cascade down from the top.

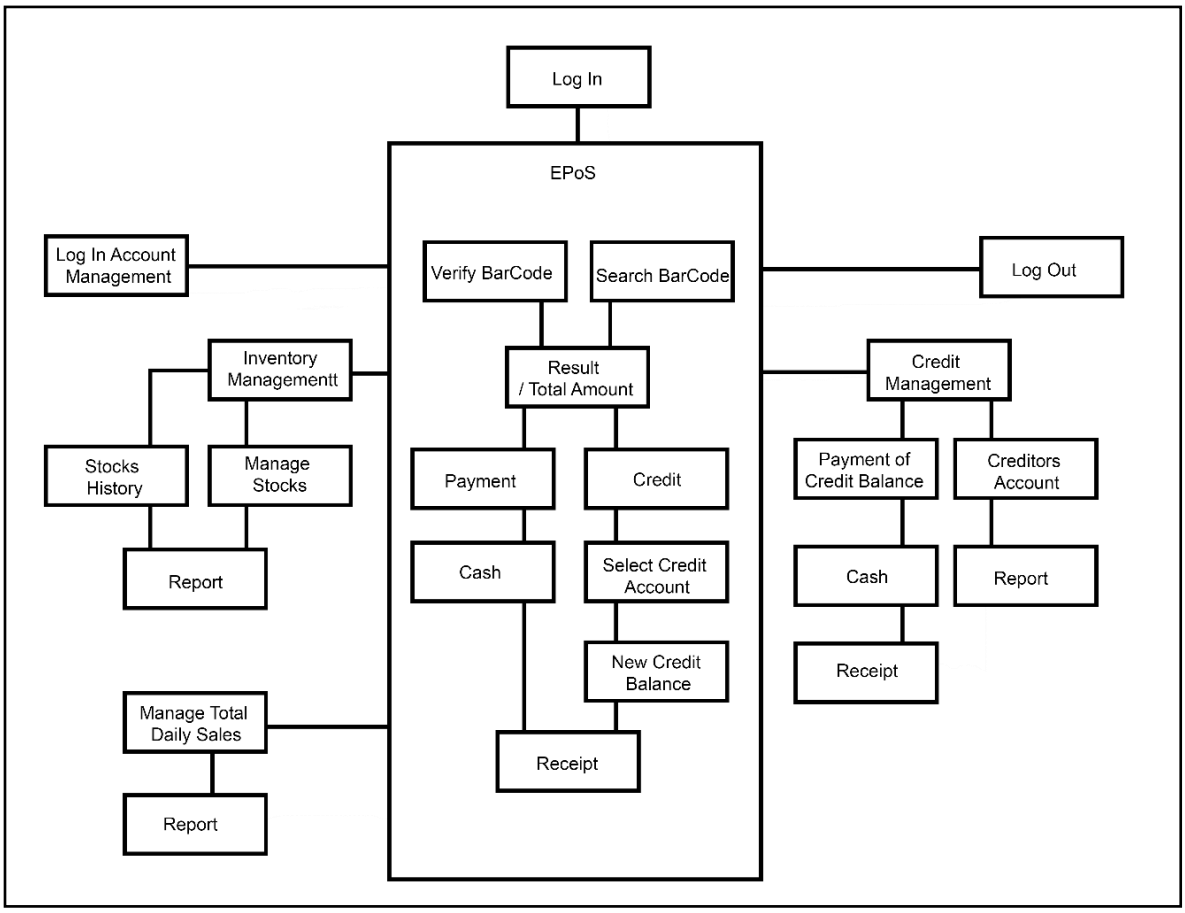


Figure 12. Program Hierarchy

Database Design

Database Design is an essential activity in the development of the system cycle. It is a process of defining the architecture components, modules, interfaces and data systems to satisfy requirements. Systems design could be seen as the application of systems theory in item development. To improve the process of 777's Convenience System in Cantiguib, Alburquerque, Bohol the researchers design a new system, the Intelligent Sales and Inventory System that would be used by the client in each operation. It describes how the recording and monitoring process will be done, such information as well as a process sale transaction. The

purpose of the design was to illustrate the framework of the forms, database, and procedure involved in the database management.

The design would be typically shown by screen appearance, and program hierarchy presented. The design would also serve as the specification for the working relations between all the parts of a system in terms of their actions, functions, and capabilities.

Class Diagram

A class diagram models the static structure of a system. It shows the relationships between classes, objects, attributes, and operations. The UML is a standardized modeling language enabling developers to specify, visualize, construct and document artifacts of a software system. . Thus, UML makes these artifacts scalable, secure and robust in execution. UML is an important aspect involved in object-oriented software development. It uses graphic notation to create visual models of software systems. In the beginning with the need and the core requirements, one should identify the use cases of that domain and the idea.

Then according to the need, one can detail it with activity diagrams and see the object interactions in sequence diagrams and it will follow as a branch to another classes as behavior (Nail Yuse, 2005). The various components in a class diagram can represent the classes that will actually be programmed, the main objects, or the interactions between classes and objects.

Figure on the next page is the class diagram of the proposed system.

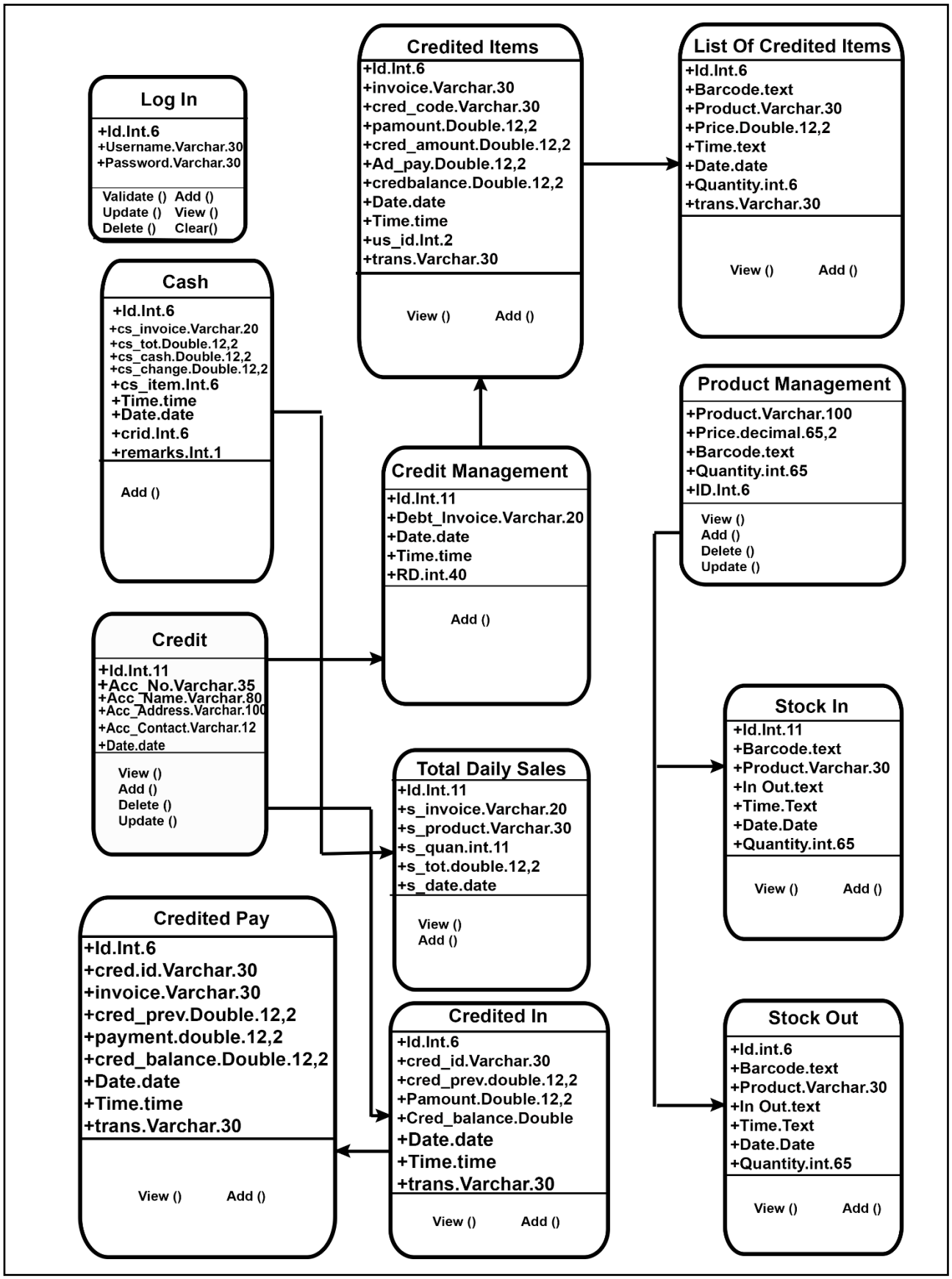


Figure 13. Class Diagram of the Proposed System

Data Structure

The information entered into the system, as well as a collection of procedures that enable inventory, sorting, recombination, and other similar tasks, were stored in the database tables below.

Table 1
Data Structure for System Log In

Field	Field Name	Type	Width	Description
1	Id	Int	6	Primary Key
2	Username	Varchar	30	User type name
3	Password	Varchar	30	User password

Table 2

Database Structure for Cash

Field	Field Name	Type	Width	Description
1	Id	Int	6	Primary Key
2	cs_invoice	Varchar	20	Cash Invoice
3	cs_tot	Double	12,2	Cash Total
4	cs_cash	Double	12,2	Receive Cash
5	cs_change	Double	12,2	Cash Change
6	cs_item	Int	6	Cash Item
7	Time	Time		Time
8	Date	Date		Date
9	Crid	Int	6	Credit
10	Remarks	Int	1	Remarks

Table 3
Data structure for credit

Field	Field Name	Type	Width	Description
1	Id	Int	11	Primary Key
2	Acc_No	Varchar	35	Account Number
3	Acc_Name	Varchar	80	Account Name
4	Acc_Address	Varchar	100	Account Address
5	Acc_Contact	Varchar	12	Account Contact
6	Date	Date		Date

Table 4
Database Structure for Credited Pay

Field	Field Name	Type	Width	Description
1	Id	Int	6	Primary Key
2	cred_id	Varchar	30	Credit ID
3	Invoice	Varchar	30	Invoice
4	cred_prev	Double	12,2	Previous Balance
5	Payment	Double	12,2	Payment
6	cred_balance	Double	12,2	Credit Balance
7	Date	Date		Date
8	Time	Time		Time
9	Trans	Varchar	30	Transaction

Table 5
Database Structure for Credited Items

Field	Field Name	Type	Width	Description
1	Id	Int	6	Primary Key
2	Invoice	Varchar	30	Invoice
3	cred_code	Varchar	30	Credit Code
4	Pamount	Double	12,2	Pay Amount
5	cred_amount	Double	12,2	Credit Amount
6	ad_pay	Double	12,2	Advance Payment
7	credbalance	Double	12,2	Credit Balance
8	Date	Date		Date
9	Time	Time		Time
10	us_id	Int	2	User Id
11	Trans	Varchar	30	Transaction

Table 6
Database Structure for Credit

Field	Field Name	Type	Width	Description
1	Id	Int	11	Primary Key
2	Debt_Invoice	Varchar	20	Debt Invoice
3	Time	Time		Time
4	Date	Date		Date
5	RD	Int	40	RD Number

Table 7
Database Structure for Daily Total Sales

Field	Field Name	Type	Width	Description
1	Id	Int	11	Primary Key
2	s_invoice	varchar	20	Invoice
3	s_product	varchar	30	Product
4	s_quan	Int	11	Quantity
5	s_tot	Double	12,2	Total
6	s_date	Date		Date

Table 8
Database Structure for Credited In

Field	Field Name	Type	Width	Description
1	Id	Int	6	Primary Key
2	cred_id	varchar	30	Credit ID
3	cred_prev	double	12,2	Previous Balance
4	Pamount	double	12,2	Pay Amount
5	red_balance	double		Credit Balance
6	Date	Date		Date
7	Time	Time		Time
8	Trans	varchar	30	Transaction

Table 9
Database Structure for List Credited Items

Field	Field Name	Type	Width	Description
1	Id	Int	6	Primary Key
2	Barcode	Text		Barcode
3	Product	Varchar	30	Product
4	Price	Double	12,2	Price
5	Time	Text		Time
6	Date	Date		Date
7	Quantity	Int	6	Quantity
8	Trans	Varchar	30	Transaction
9	Invoice	Varchar	30	Invoice

Table 10
Database Structure for Product Management

Field	Field Name	Type	Width	Description
1	Product	Varchar	100	Product
2	Price	Decimal	65,2	Price
3	Barcode	Text		Barcode
4	Quantity	Int	65	Quantity
5	ID	Int	6	ID

Table 11
Database Structure for Stock In

Field	Field Name	Type	Width	Description
1	Id	Int	11	Primary Key
2	Barcode	Text		Barcode
3	Product	Varchar	30	Product
4	In_Out	Text		Stock In/Out
5	Time	Text		Time
6	Date	Date		Date
7	Quantity	Int	65	Quantity

Table 12
Database Structure for Stock Out

Field	Field Name	Type	Width	Description
1	Id	Int	11	Primary Key
2	Barcode	Text		Barcode
3	Product	Varchar	30	Product
4	In_Out	Text		Stock In/Out
5	Time	Text		Time
6	Date	Date		Date
7	Quantity	Int	65	Quantity

Technical Requirements

It is very important to choose the right hardware, software, and user which will be used in the operation. In order for the system to function properly, the components must be correctly identified. The system must be applied to ensure that is applicable and effective.

The physical aspect of computer system is the hardware component. The CPU, HDD, and Random-Access Memory (RAM) are the components that are working to process data quickly and accurately while providing storage space.

Software comprises the entire set of programs, procedures and routines associated with the operation of a computer system. The users would find this to be effective, understandable and obtainable depending on the software's availability.

The user who would operate the computer system is referred to as Peopleware. Users should be able to operate the system in order to decide the progress and development as well as this will let them decide whether or not to continue with the computerizations.

The following specifications were required for the implementation of the 777's Convenience Store Electric Point of Sale System using Barcode Scanner in Cantiguib, Alburquerque Bohol.

Minimum Hardware Specification

This covers the minimum hardware specification needed by the system to function as intended and expected. The considerations of these specifications were based on what is available in the market and on the features of most computer package system office.

Component	Specification
Microprocessor	Intel(R) Celeron(R) CPU N3160 @ 1.60GHz
Hard Disk Drive	464 Gigabytes
Random Access Memory	4 Gigabytes

Minimum Software Specification

The Electronic Point of Sale System of 777's Convenience Store in Cantiguib, Alburquerque, Bohol requires various software to function properly. This software was enumerated below with its corresponding specification. The specifications as provided were based on the specifications of the computer units utilize during the development of the system.

Item	Specification
Operating System	Runs in Windows 10

Economic Performance

The economic performance of the Electronic Point of Sale of 777's Convenience Store in Cantiguib, Alburquerque, Bohol was evaluated in terms of the initial investment. The initial investment is the amount required by the client prior to the commencement of the operation and implementation of the system.

In the presentation of the economic performance evaluation, the length of time it takes for the new system to generate the cost savings to cover its development and expenses is determined. Thus, it would give them the idea whether or not to continue with the computerizations.

Table 16
Initial Investment and Annual Operating Cost

Items	Quantity	Unit	Unit Price	Total Amount
1.Hardware				
Laptop	1		P17,000.00	P17,000.00
Printer	1		P7,500.00	P7,500.00
Subtotal Annual Operating Cost				P24,500.00

2.Software				
Software			P15,000.00	P15,000.00
Software Development			P3,000.00	P3,000.00
System Installation			P1,000.00	P1,000.00
Subtotal Initial Investment Cost				P19,000.00
Total Initial Investment Cost				P43,500.00
B.Annual Operating Cost				
Office Supplies				
Bondpaper	2	Reams	P200.00	P400.00
Folder	21	Pieces	P7.00	P42.00
Fastener	21	Pieces	P7.00	P42.00
Subtotal Initial Investment Cost				P484.00
C.Utilities				
Electricity	12	Months	P2,200.00	P27,000.00
Wifi	12	Months	P1,300.00	P15,000.00
Subtotal Initial Investment Cost				P42,000.00
D.General Devices				
System Maintenance	4	Quarters	P2,500.00	P10,000.00
Subtotal Initial Investment Cost				P10,000.00
Total Initial Investment Cost				P52,489.00
GRAND TOTAL				P96,473.00

Functional Requirements

A functional system defines the function of a software system or its component. A function is described as a set of inputs, behavior, and outputs. Functional requirements may be calculations, technical details, data manipulation and processing, and other specific functionality that define what a system is supposed to accomplish. The functional system being formulated, makes use of a Sale & Inventory System in obtaining the requirements. A working prototype was developed to strategically capture statements through constant communication with the owner, staff and cashier of the 777's Convenience Store. The

functionalities mentioned are based on the existing standard statement of Electronic Point of Sale System of 777's Convenience Store in Cantiguib, Alburquerque, Bohol with the approval and coordination from the owner, as follows:

Acquisition:

FREQ 1: The system should allow the customer, admin, and cashier to inquire for available items.

FREQ 2: The system should allow the customer, admin, and cashier to search for items.

Credit:

FREQ 3: The system must allow the cashier to register the credited amount of the customer.

FREQ 4: The system must allow the cashier to view list of creditors.

Sales

FREQ 5: The system must allow the cashier to calculate and collect fees from the customer.

FREQ 6: The system must allow the cashier to provide a receipt for the customer.

FREQ 7: The system must record each transaction in the database.

Inventory

FREQ 8: The system must allow the staff to search for available items.

FREQ 9: The system must allow the owner/staff to do the inventories and record all the items stock in/out in the store.

Log in Function

FREQ 10: Access to the system must be password protected.

FREQ 11: Only the owner can update and access the log in accounts.

Reporting

FREQ 12: The system should provide the statistical reports for the decision support of the owner, staff, cashier.

FREQ 13: The system should provide daily sales report for owner Decision.

Recording

FREQ 14: The system should provide a fast recording for the owner, staff, cashier.

FREQ 15: The system should provide secured recording for data-keeping.

Non-Functional Requirements

A non-functional statement is a statement that specific criteria that can be used to judge the operation of the system, rather than specific behaviors. This should be contrasted with functional requirement that define specific behavior or function.

1. The system must have protection from unauthorized users by using a username and password.
2. The system should operate on available technology like Windows provided by the establishment.
3. The system must be accessible at all times.
4. The system should run with the hardware requirements.

Test Cases

Test cases define how to test a system, software or an application. It's also a set of conditions or variables under which a tester will determine whether an application or software system is working correctly or not, a detailed procedure that fully tests a feature or an aspect of a feature.

These are the test case scenarios conducted during the acceptance testing. The test plan is to let the users use the system and follow the instructions in each test case to test the developed system. The system should perform the expected result in each test case in order to be considered successful.

The following are the details of each test case;

User account login:

Test Case 1:

Module: Log in

Severity: 1

Instructions:

1. Input username and password in the text boxes.
2. On the login form, click the option “Login” button.
3. An incorrect username and the password a message will appear.

Expected Result:

1. Users can access all the modules of the system.
2. Close/Exit: Click the “X” button to close the module.

Test Case 2.

Module: Log in Accounts for Adding command.

Severity: 1

Instructions:

1. On the main menu, click “Administration Account” Then,
2. Input new account username and password information.
3. Click the “Add” button.

Expected Result:

1. The new account username and password should be successfully saved.
2. Clean-up: Click the “X” button to close the module.

Test Case 1:

Module: Point of Sale

Severity: 1

Instructions:

1. The item quantity is more than one. Input first the quantity of the Item before using Barcode Scanner.

2. Press F1 key Button if the barcode wasn't scanned successfully.
3. Users will enter the code manually and then press "Enter". After, press "F1" to close the form.
4. Press the Delete Button if Users want to remove the selected item.

Expected Result:

1. The item(s) will show and automatically inputted in List View.
2. The selected item(s) will remove at the list

Test Case 2:

Module: Point of Sale for "Transaction of Cash"

Severity: 1

Instructions:

1. Click the Pay Button if cash was entered
2. Confirmation: "Transaction will proceed".

Expected Result:

1. Change is shown automatically if available

2. Official receipt was given to the customer.

Test Case 3:

Module: Point of Sale for "Transaction of Credit"

Severity: 1

Instructions:

1. Click the Credit Button if the customer will credit the items(s).
2. Users will choose the creditor(s) account.
3. Button “Perform Credits” is press whether advance payment has value or not.

Expected Result:

1. New Credit balance will be added to the creditor’s account.
2. Official receipt was given to the customer.

Products Management:

Test Case 1.

Module: Item(s) Inventory Management for “Adding” command.

Severity: 1

Instructions:

1. On the main menu, click “Inventory Management” Then,
2. Input new detailed item(s) information.
3. Click the “Add” button.

Expected Result:

1. The item(s) should be successfully saved.

2. The newly added item(s) information should be displayed automatically.

3. Clean-up: Click the “X” button to close the module.

Test Case 2.

Module: item(s) Inventory Management for “Updating” command.

Severity: 1

Instructions:

1. Click the item in the data grid view.

2. Change the detailed item(s) information.

3. Click “Update” button

Expected Result:

1. The product should be successfully updated.

2. The newly added product information should be displayed automatically.

Test Case 3.

Module: Item(s) Inventory Management for “Deleting” command.

Severity: 1

Instructions:

1. On the main menu, click “Inventory Management” Then,

2. Click the item(s) in the data grid view.

3. Click the “Delete” button.

Expected Result:

1. The item(s) should be successfully deleted.
2. The item(s) information should be deleted automatically.
3. Clean-up: Click the “X” button to close the module.

Test Case 4.

Module: Item(s) Inventory Management for “Clear” command.

Severity: 1

Instructions:

1. In adding and updating, Click clear button.

Expected Result:

1. All entities will be cleared.

Test Case 5:

Module: Item(s) Inventory Management for “Search” command.

Severity: 1

Instructions:

1. On the main menu, click “Products,” Then,

2. Type the corresponding first letter of the item(s) name or the Barcode in the search textbox.

Expected Result:

1. Item(s) information should be successfully displayed.
2. Clean-up: Click the “X” button to close the module.

History:

Test Case 1.

Module: History for viewing command based on date.

Severity: 1

Instructions:

1. On the inventory management menu, Click “View History” button.
2. Click between “Stock in or Stock out” button.
3. Choose date “From” and “To”.
4. Click “View History” to view products.

Expected Result:

1. Item(s) information should be successfully displayed according to date.
2. Clean-up: Click the “X” button to close the module.

Test Case 2:

Module: History for search command.

Severity: 1

Instructions:

1. On the main menu, click “Products,” Then,
2. Type the corresponding first letter of the item(s) name or the Barcode in the search textbox.

Expected Result:

1. Item(s) information should be successfully displayed.
2. Clean-up: Click the “X” button to close the module.

List of Creditors

Test Case 1:

Module: List of creditors for search command

Severity: 1

Instructions:

1. On the main menu, click “View Creditor,” Then,
2. Type the corresponding first letter of the item(s) name or the Barcode in the search textbox.

Expected Result:

1. Item(s) information should be successfully displayed.

2. Clean-up: Click the “X” button to close the module.

Test Case 2:

Module: List of creditors for save command

Severity: 1

Instructions:

1. On the main menu, click “View Creditor” Then,
2. Right click on the data grid view then press “new”
3. Input new detailed item(s) information.
4. Click the “Save” button.

Expected Result:

1. The creditors account should be successfully saved
2. The newly added creditors account should be displayed.
3. Clean-up: Click the “close” button to close the module.

Test Case 3:

Module: List of creditors for update command.

Severity: 1

Instructions:

1. Click the creditors account in the data grid view.

2. Change the detailed creditor(s) information.

3. Click “Update” button

Expected Result:

1. The creditor(s) information should be successfully updated.

2. The newly added creditor(s) information should be displayed automatically.

Test Case 4:

Module: List of creditors for payment command

Severity: 1

Instructions:

1. Click the Payment Button if cash was entered
2. Confirmation: “Proceed Transaction”

Expected Result:

1. Change is shown automatically if available

2. Official receipt was given to the customer.

Creditor(s) Details

Test Case 1:

Module: Creditor Details for view command.

Severity: 1

Instructions:

1. On the List of Creditor(s) menu, right click on the creditor account. Then select view details.

Expected Result:

1. The creditor(s) information should be successfully displayed.

2. Clean-up: Click the “X” button to close the module.

Test Case 2:

Module: Creditor Details for payment and purchase invoice command.

Severity: 1

Instructions:

1. On the List of Creditor(s) menu, right click on the creditor account Then select view details.

2. Click between “Total payment invoice or Total purchase invoice” button.

Expected Result:

1. The creditor(s) information should be successfully displayed.

2. Clean-up: Click the “X” button to close the module.

Test Case 3:

Module: Total purchase invoice details command base on date.

Severity: 1

Instructions:

1. On the selected total purchase button, right click on the date Then select view details.

Expected Result:

1. The credited item(s) should be successfully displayed.

2. Clean-up: Click the “X” button to close the module.

Test Case 4:

Module: Total purchase invoice details for “search” command

Severity: 1

Instructions:

1. Type the corresponding first letter of the item name or the Barcode in the search textbox.

Expected Result:

1. Credited item(s) information should be successfully displayed.

2. Clean-up: Click the “X” button to close the module.

Total Daily Sales:

Test Case 1:

Module: Total Daily Sales view command.

Severity: 1

Instructions:

1. On the main menu, click “Total Daily Sales,” Then,

Expected Result:

2. The item(s) information should be successfully displayed.

Test Case 2:

Module: Total Daily Sales for “Print Report” command.

Severity: 1

Instructions:

1. On the total daily sales, click “Print Report,” Then,

Expected Result:

1. Official receipt was given to the customer.

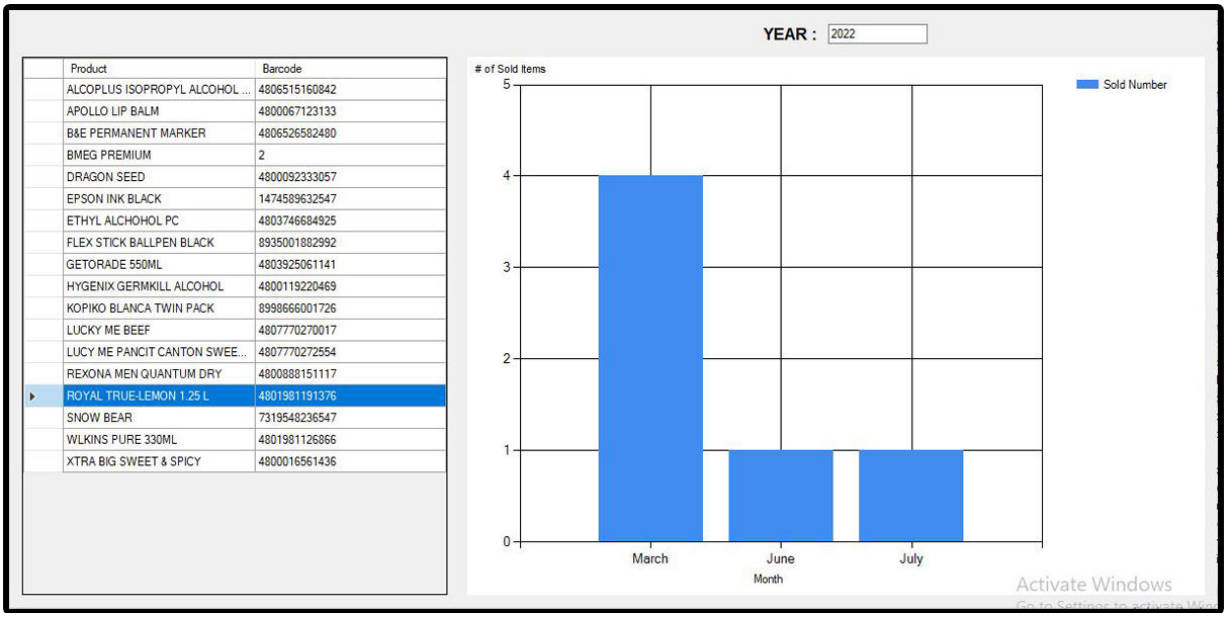
2. Clean-up: Click the “X” button to close the module.

Business Intelligence

Business Intelligence means the ability of an organization to collect, maintain and organize knowledge. It aims to support better business techniques and decision-making with solutions that take Business Intelligence (BI) to a whole new level and get the right information. All the reports below are dynamic and will

update in real if there are any transactions to be done by the users. This ensures accuracy and consistency if the data in the report (Cody et.al, 2002).

The preview 1 below shows the yearly sales graph

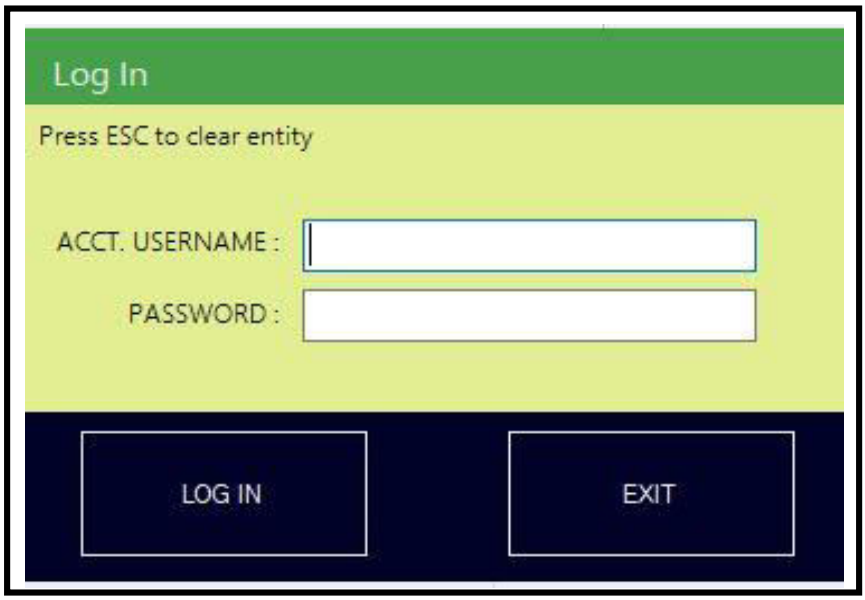


Preview 1: Yearly Sales Graph

Screen Layout

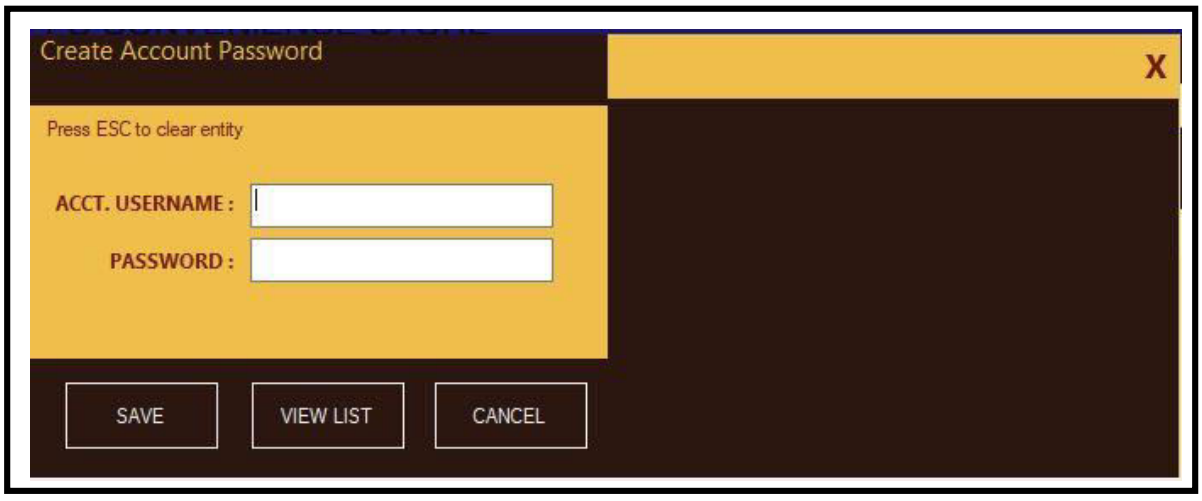
The screen layout is one of the many attributes of the system's user-friendliness. It should be designed in such a way the browsers can navigate the system quickly and easily, and it should provide clear recognition of the task the users need to perform.

The Preview 1 below shows the Log In Form



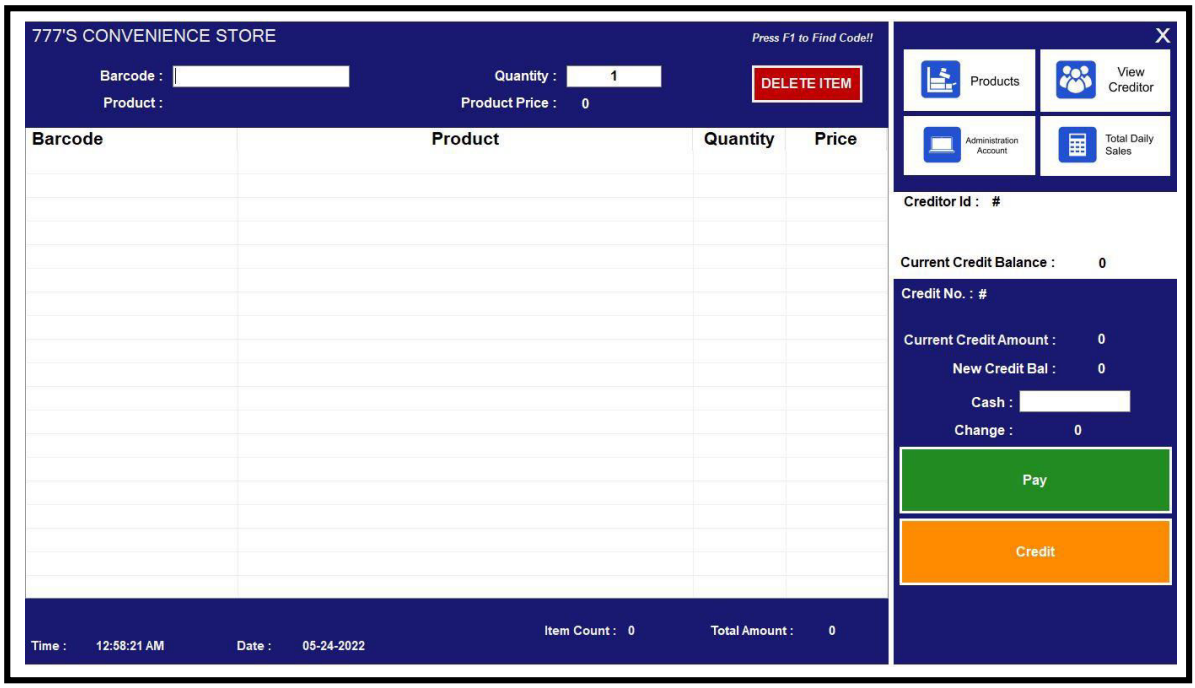
Preview 1: Log In

The Preview 2 below shows the Create Account Password Form



Preview 2: Create Username Account

The Preview 3 below shows the Point of Sale form



Preview 3: Point of Sale

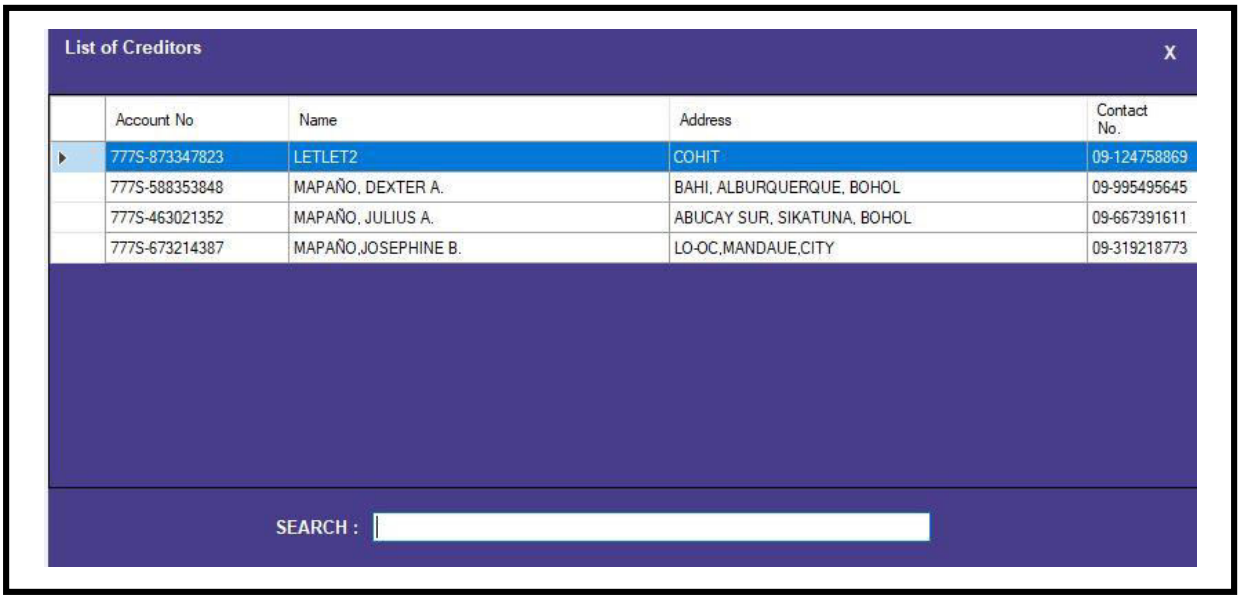
The Preview 4 below shows the Inventory Management

Preview 4: Inventory Management

The Preview 5 below shows the Total Daily Sales form

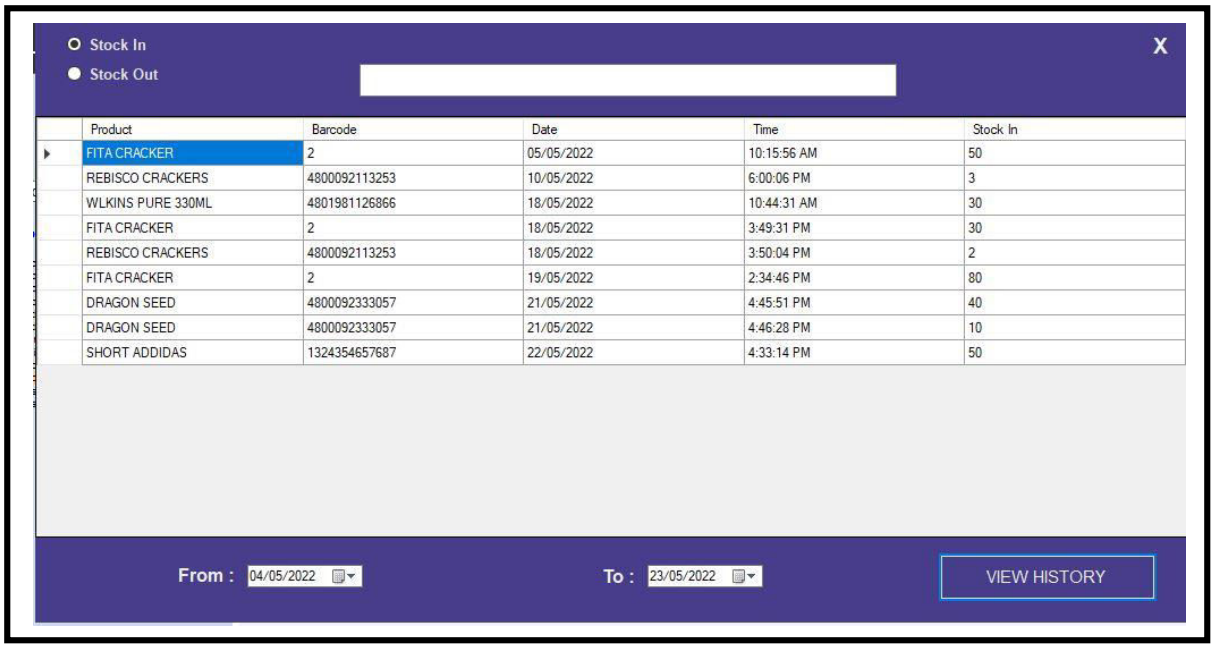
Preview 5: Total Daily Sales

The Preview 6 below shows the List Creditors form



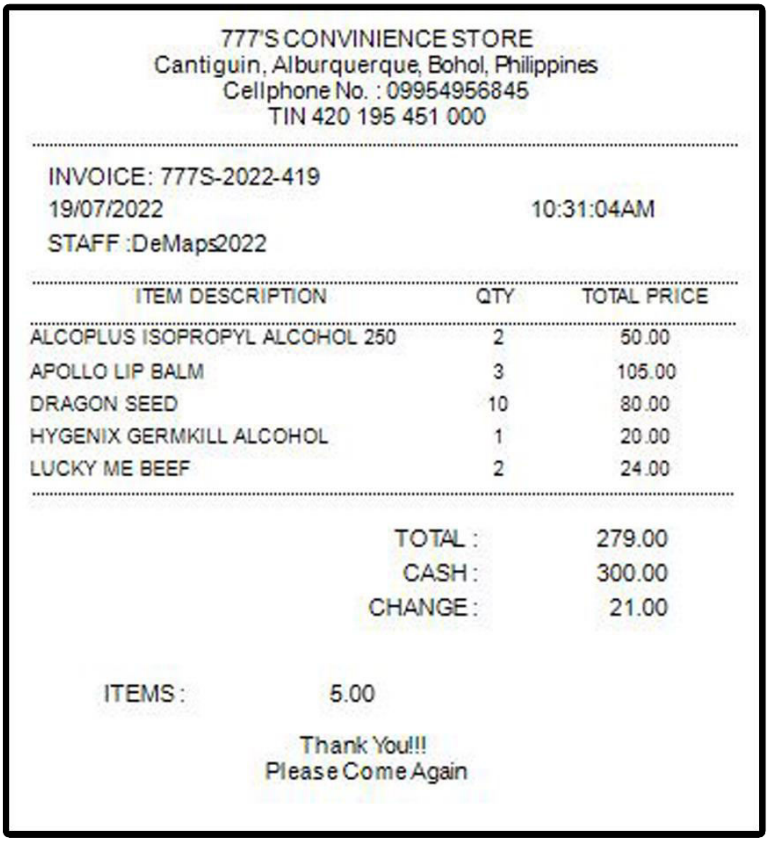
Preview 6: List Creditors

The preview 7 below shows view history in stock In/Out Form



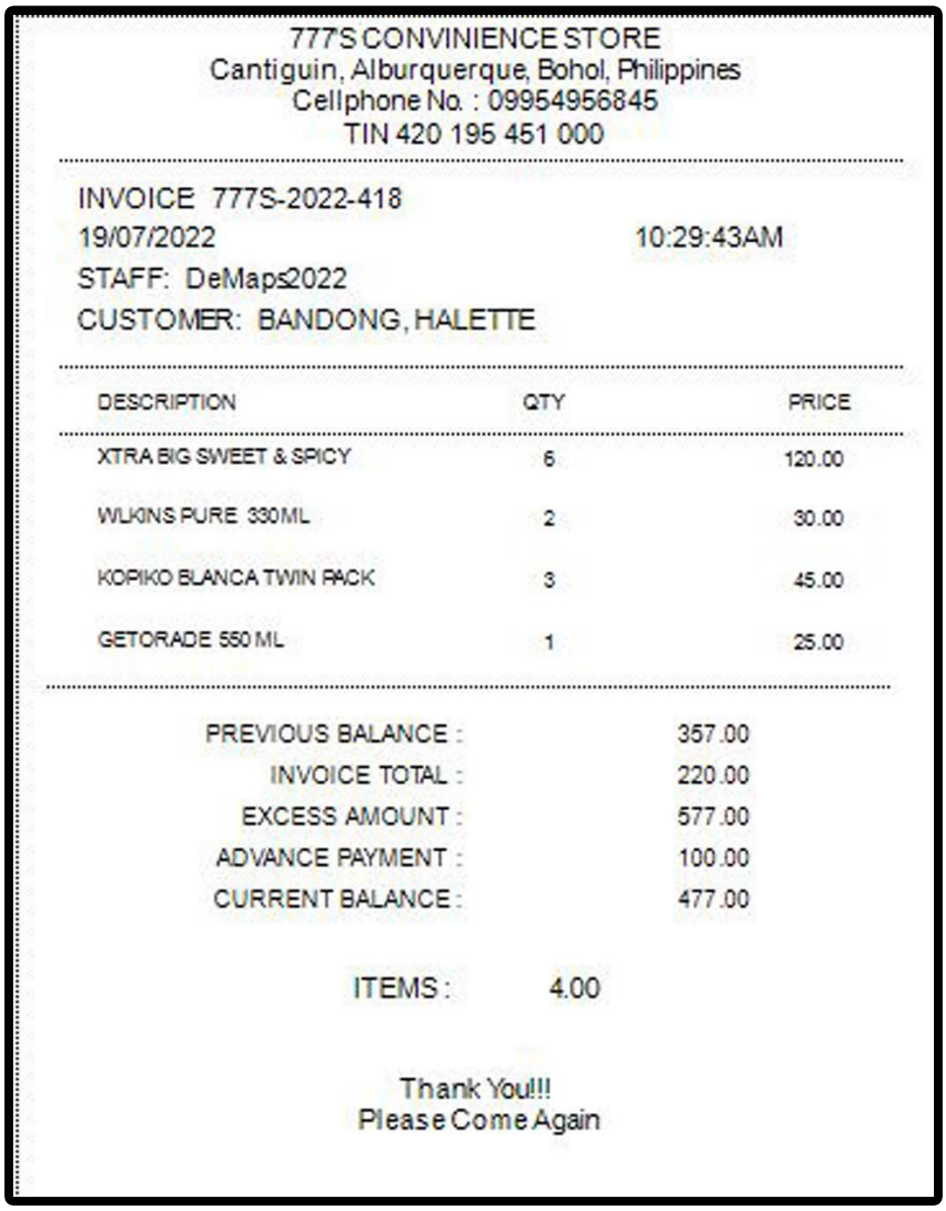
Preview 7: History Stock In/Out

The Preview 8 below shows the Cash Pay that is ready to print in tabular format.



Preview 8: Receipt in Cash Payment

The on the preview 9 below shows the With Advance Payment with credit that is ready to print in tabular format.



777S CONVINIENCE STORE
Cantiguin, Alburquerque, Bohol, Philippines
Cellphone No. : 09954956845
TIN 420 195 451 000

INVOICE 777S-2022-418
19/07/2022 10:29:43AM
STAFF: DeMaps2022
CUSTOMER: BANDONG, HALETTE

DESCRIPTION	QTY	PRICE
XTRA BIG SWEET & SPICY	6	120.00
WILKINS PURE 330ML	2	30.00
KOPIKO BLANCA TWIN PACK	3	45.00
GETORADE 550 ML	1	25.00

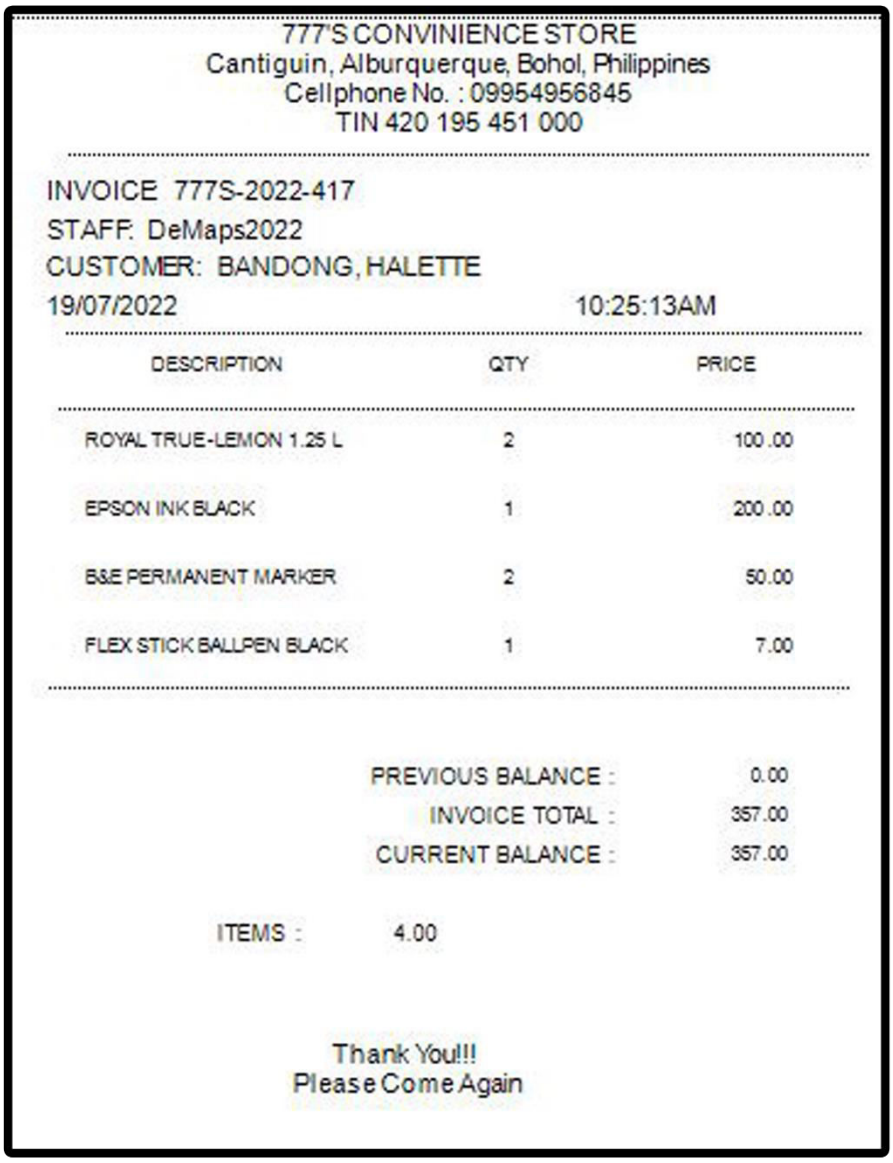
PREVIOUS BALANCE :	357.00
INVOICE TOTAL :	220.00
EXCESS AMOUNT :	577.00
ADVANCE PAYMENT :	100.00
CURRENT BALANCE :	477.00

ITEMS : 4.00

Thank You!!!
Please Come Again

Preview 9: Receipt in Credited Items (Advance Payment)

In the preview 10 below shows the Without Advance Payment in credit that is ready to print in tabular format.



777'S CONVINIENCE STORE
Cantiguin, Alburquerque, Bohol, Philippines
Cellphone No. : 09954956845
TIN 420 195 451 000

INVOICE 777S-2022-417
STAFF: DeMaps2022
CUSTOMER: BANDONG, HALETTE
19/07/2022 10:25:13AM

DESCRIPTION	QTY	PRICE
ROYAL TRUE-LEMON 1.25 L	2	100.00
EPSON INK BLACK	1	200.00
B&E PERMANENT MARKER	2	50.00
FLEX STICK BALLPEN BLACK	1	7.00

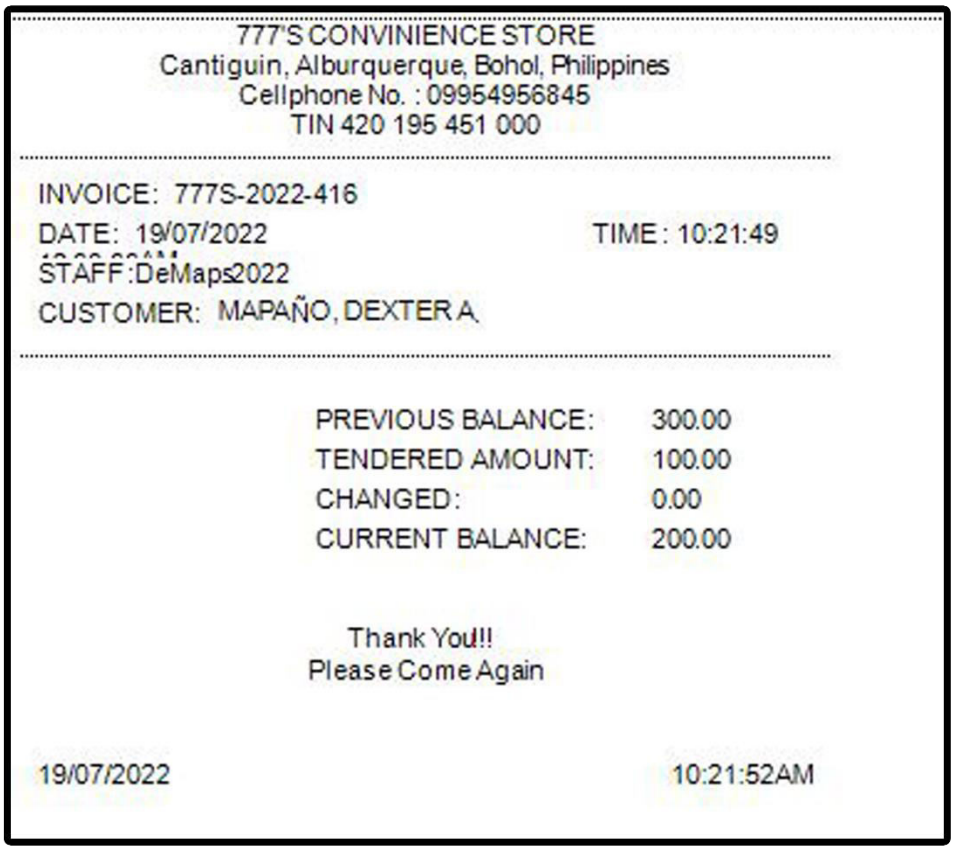
PREVIOUS BALANCE : 0.00
INVOICE TOTAL : 357.00
CURRENT BALANCE : 357.00

ITEMS : 4.00

Thank You!!!
Please Come Again

Preview 10: Receipt in Credited Items (Without Advance Payment)

The preview 11 below shows the Payment Direct Credit that is ready to print in tabular format.



777'S CONVINIENCE STORE
Cantiguin, Alburquerque, Bohol, Philippines
Cellphone No. : 09954956845
TIN 420 195 451 000

INVOICE: 777S-2022-416
DATE: 19/07/2022 TIME : 10:21:49
STAFF:DeMaps2022
CUSTOMER: MAPAÑO, DEXTER A.

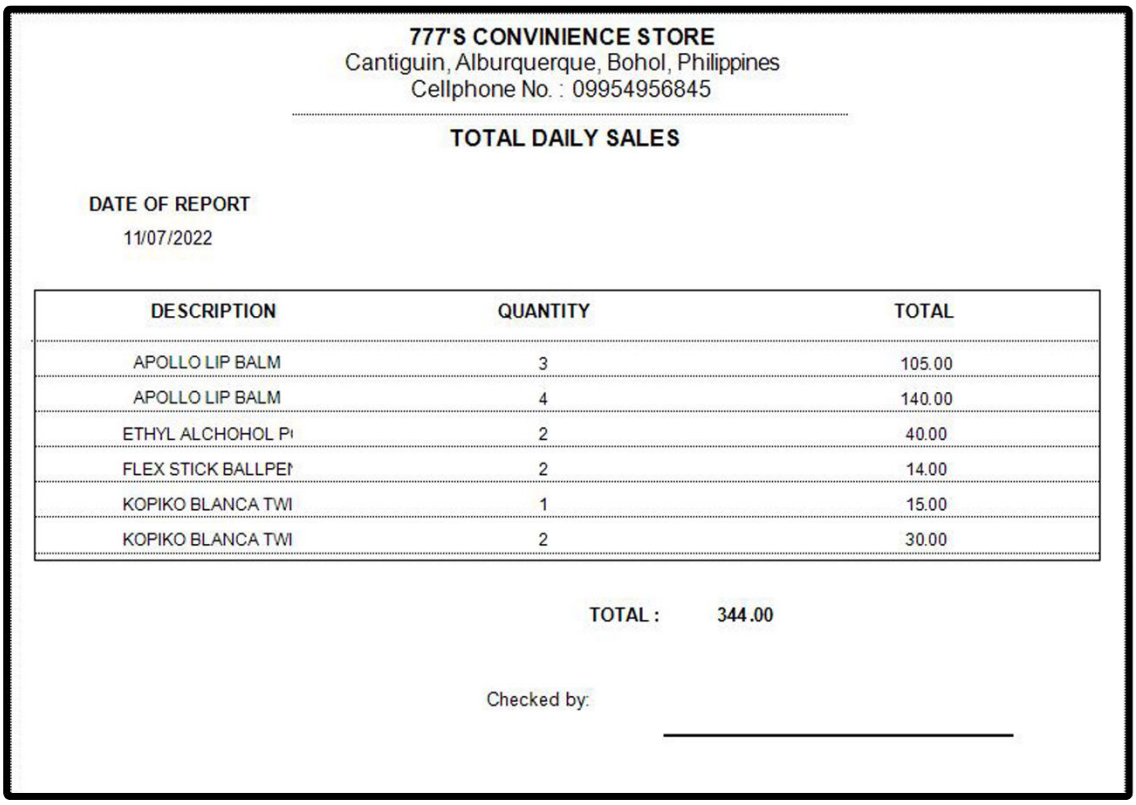
PREVIOUS BALANCE:	300.00
TENDERED AMOUNT:	100.00
CHANGED:	0.00
CURRENT BALANCE:	200.00

Thank You!!
Please Come Again

19/07/2022 10:21:52AM

Preview 11: Payment Direct Credit is ready to print in tabular form

The preview 12 below shows the Daily Total Sales that is ready to print in tabular format.



777'S CONVINIENCE STORE
Cantiguin, Alburquerque, Bohol, Philippines
Cellphone No. : 09954956845

TOTAL DAILY SALES

DATE OF REPORT
11/07/2022

DESCRIPTION	QUANTITY	TOTAL
APOLLO LIP BALM	3	105.00
APOLLO LIP BALM	4	140.00
ETHYL ALCHOHOL P	2	40.00
FLEX STICK BALLPEI	2	14.00
KOPIKO BLANCA TWI	1	15.00
KOPIKO BLANCA TWI	2	30.00

TOTAL : 344.00

Checked by:

Preview 12: Daily Total Sales is ready to print in tabular form

Testing and Evaluation

Testing and evaluation was performed to determine the functionality of the system, particularly in the provision of the expected output, time/period of information processing, the volume of information handled, and the proper response of user inputs. This is also the process of judging the performance of the system in general. In this study, system usability was evaluated to determine its technical performance as perceived by the targets.

System Usability

To assess the acceptability of the developed system, a survey of the system

usability was performed. The test was done last May 21, 2022 at around 1:00pm to 4:30 in the afternoon. It took 3.5 hours to demonstrate and do a hands-on activity on the system usability. The system operation and features were presented to the target users, the Owner, Staff, Cashier and Customer at Cantiguib, Alburquerque, Bohol. A system demonstration was conducted to the respondents for them to familiarize the system features. The respondents were allowed to do a hands-on activity.

Shown in the table below is the system usability result. The tabulated results were computed through their weighted mean. The table on the next page shows the weighted mean and interpretation of each statement. The average weighted mean of the system usability questionnaire was 6.5, with the interpretation “Strongly Agree”. Six (6) respondents were identified as group of people who answer the system usability questionnaire. These results also the suggest that the system provides satisfaction among the respondents. Likewise, it reveals also that the system was highly simple and easy to use, effective, efficient, easy to understand, and clear. Furthermore, this also implies that the majority of the respondents strongly agree with the capabilities, functions, and the ease of use of the developed system.

Table 17

System Usability Assessment Result

Criteria for System Usability	Weighted Mean	Rating
1. Overall, I am satisfied it how easy it is to the system.	6.5	Strongly Agree
2. It was simple to use this system.	7	Strongly Agree

3. It can effectively complete my work using this system.	6.25	Strongly Agree
4. I am able to complete my work quickly using this system.	6.25	Strongly Agree
5. I am able to effectively complete my work using this system.	6.75	Strongly Agree
6. I feel comfortable using this system.	7	Strongly Agree
7. It was easy to learn to use this system.	6.25	Strongly Agree
8. I believe I became productive using this system.	6	Agree
9. The system gives error messages that clearly tell me how to fix the problem.	6.75	Strongly Agree
10. Whenever I make a mistake using the system, I using the system, I recover easily and quickly.	6.75	Strongly Agree
11. The information (such as online help, on screen messages, and other documentation) provided with this system is clear.	6.5	Strongly Agree
12. It is easy to find the information I needed.	6.5	Strongly Agree
13. The information provided for the system is easy to understand.	6.5	Strongly Agree
14. The information is effective in helping me complete the tasks and scenarios.	6.75	Strongly Agree
15. The organization of information on the system screens is clear	6.75	Strongly Agree
16. The interface of this system is pleasant	6.25	Strongly Agree
17. I like using the interface of this system	7	Strongly Agree
18. This system has all the functions and capabilities	7	Strongly Agree
19. Overall, I am satisfied with this system	6.25	Strongly Agree
AVERAGE WEIGHTED MEAN	6.5	Strongly Agree

Chapter 3

SUMMARY OF FINDINGS CONCLUSIONS, AND RECOMMENDATIONS

Summary of Findings

Based on the existing challenges of the Process of 777's Convenience Store in Cantiguib, Alburquerque, Bohol, the researchers proposed an Electronic Point of Sale using Barcode. The manual method provides a certain problem encountered such as the loss of data and records because they are kept in a record book, the time-consuming nature of manual transactions, the lack of real-time stock availability monitoring that results in a shortage of stocks, and the issue of retrieving or updating records or data. The needs and problems encountered had led the researchers to come up a with a solution which secures the information to prevent loss or misplacement, ease of access of saving and retrieving of records and timely generation of statistical reports of records.

The researchers had conducted a personal interview with the respondent involved in the operation of electronic point of sale of the present system. Aside from a personal interview, actual observation and document review have been done to give the researcher an additional perspective and better understanding of the system procedure. The survey was also taken in order to find out if the requirements have been met using the proposed system.

Based on the information gathered with the process system of 777's Convenience, the researchers came up with the following modules: Log in, Acquisition, Recording, Inventory, Credit, Transaction, Daily Total Sales and

Reports generation. The developed system was evaluated in terms of system usability. Based on the result of the evaluation, the users or the respondents had 6.5 rating a strongly agree to the system. They were indicating the achievements of individual expectations, particularly on the features such as ease of use, visual clarity, language and as applicable, as general.

The researchers spent a couple of hours to demonstrate the system's features in detail like managing stocks and viewing customer's purchases and generating reports on the point of sale and inventory system. The respondents were given the opportunity to try and use the system to test its usability. After using the system, the system usability questionnaire was rated according to system usability standard.

Conclusions

Using the data gathered regarding the performance of the electronic point-of-sale system for 777's convenience store in Cantiguib, Alburquerque, Bohol, the researchers conclude that the uses of manual processes, which could led to related issues that can be solved by computerization. It is possible and attainable to evaluate the current operation, especially the current process, for computerization.

Based on the evaluation, 777's convenience store in Cantiguib, Alburquerque, Bohol, needs to install an electronic point-of-sale system. The clients requirements were satisfied by the developed system's features and

usability. Adoption of the developed system is also reasonable and justifiable when taking into account the evaluation of economic performance.

Recommendations

Based on the observations during implementation mentioned conclusions, the researchers have recommended the following for efficient record management, smooth system adoption and operation and for future development.

1. The 777's Convenience Store must adopt the system to improve the point of sale and records management and to identify possible system bugs and errors.
2. Training and orientation seminars must be conducted for the primary or target users to familiarize and be oriented with features and operation of the new system.
3. Regular system maintenance must be performed to ensure the security of records and the reliability of the system.

REFERENCES

Andrews, P. (2020). Tagrain. Retrieved on December 1, 2021, from https://tagrain.com/ph/

Article XIV, Section 10 of the Philippines Constitution. Retrieve on July 22, 2022, from https://www.officialgazette.gov.ph/constitutions/the-1987constitution-of-the-republic-of-the-philippines/the-1987-constitution-of-the-republic-of-the-philippines-article-xiv

Class Diagram. Retrieved on December 2, 2021, from https://techopedia.com/definition/3243/unified-modeling-language-uml).

Codd, E. (1970). Relational Database Management System. Retrieved on June 10, 2022, from https://www.ibm.com/ibm/history/ibm100/us/en/icons

Crystal Viewer. Crystal Report Viewer. Retrieved on April 6, 2022, from http://www.businessobject.com/forms/crystalreportviewer

Denning, P. et. al (2007). Principles of Automation. Retrieved on June 10, 2022, from http://denninginstitute.com/pid/GP/summarizes/gpautomation.pdf

Edmonds, A. (2021). EPOS. Retrieved on June 10, 2022, from https://uk.clover.com/ point-of-sale-pos/epos-electronic-point-of-sale

Eton Digital (2012). Rapid Application Development (RAD). from http://www.etondigital.com/devices/rapid-application-Development

Gustave, L. (2019). Ciontek Company. Retrieved on December 1, 2021, from https://www.ciontek.com/

Deutch, K. (2009). Square. Retrieved on December 1, 2021, from https://squareup.com/us/en/point-of-sale

Lewis, JR (1995). IBM Computer Usability Satisfaction Questionnaires. Retrieved on April 6, 2022, from http://ist.mit.edu/services/consulting/usability/guideines.

Martin, G. (2005). IT Retail Market. Retrieved on December 1, 2021, from https://itretail.com/retail-market/

Nail, Y. (2012). Class Diagram. Retrieved on July 20, 2022, from https://www.quora.com/What-is-a-class-diagram-for-a-website-project

Ruiz, T. (2014). Loyverse. Retrieved on December 1, 2021, from https://loyverse.com/

Shin, Y. (2003). Korea Red Ginseng Enterprise. Retrieved on April 6, 2022, from http ://www.ilumina.biz/product_p/gin-st.html

APPENDICES

Letter of Intent

Republic of the Philippines
Bohol Island State University
Bilar Campus
Zamora, Bilar, Bohol

March 25, 2022

SUSANA M. DEL ROSARIO
777's Convenience Store Proprietor
Cantiguib, Alburquerque, Bohol

Ma'am:

Good day!

We, the Senior Students of Bachelor of Science in Computer Science of Bohol Island State University – Bilar Campus, are to conduct a system development project (thesis) as requirement for graduation.

In this regard, we would like to ask your good office to grant us permission to conduct a system study (thesis) based on the Electronic Point of Sale System (Epos of 777's Convenience Store as basis for our proposed automation.

We assure you that we shall honor secrecy and privacy to all data and information we shall be handling as we go along with our study. Your approval will be a great help to the success of our study.

We anticipate your favorable response regarding this matter.

Thank you very much and more power!

Respectfully yours,

DEXTER A. MAPAÑO

MHABEL PEARL M. SALISID

JULIUS A. MAPAÑO
Researchers

Noted:

SHEILA G. TABUNO, MSTCS
Subject Instructor

JOEL A. PIOLLO, MATCS
Thesis Adviser

Recommended by:

SHEILA G. TABUNO, MSTCS
Chairperson, DCoS

Endorsed by:

ARLEN B. GUDMALIN, PhD
Dean, CTAS

Approved by:
SUSANA M. DEL ROSARIO
777's Convenience Store Proprietor

Letter of Approval of the Proposed System

Mrs. Susana M. Del Rosario May 24, 2022

Owner

777's Convenience Store

Cantiguib, Alburquerque, Bohol

Ma'am:

Greetings!

We, the Junior Students of Bachelor of Science in Computer Science of Bohol Island State University, are to conduct a system development project (thesis) as a requirement graduation.

In this connection, we would like to ask in your good office to accommodate us for a short office visit, at any time of your convenience, in order to personally ask permission to conduct a systematic study of your online ordering business.

We assure you that we shall honor secrecy and privacy of all data and information we shall be handled as we go along with our study. Our data collection method shall include interviews, observation and document review. Your approval will be a great help to the success of our study.

We anticipate your favorable response.

Thank you very much and more power!

Very truly yours,

SGD. DEXTER MAPAÑO

SGD. JULIUS MAPAÑO

SGD. MHABEL PEARL SALISID

BS in Computer Science Students

Noted by:

SGD. JOEL PIOLLO

Thesis Adviser

Recommend by:

SGD. SHEILA G. TABUNO

Chairperson, DCOS

Letter of Implementation

Republic of the Philippines
Bohol Island State University
Bilar Campus
Zamora, Bilar, Bohol

May 25, 2022

SUSANA M. DEL ROSARIO
777's Convenience Store Proprietor
Cantiguib, Alburquerque, Bohol
Ma'am:

Good day!

It is our pleasure to inform you that the system "ELECTRONIC POINT OF SALE SYSTEM OF 777's CONVENIENCE STORE USING BARCODE IN CANTIGUIB, ALBURQUERQUE, BOHOL " is now in its final phase. With this, we would like to conduct benchmarking activities as part of the implementation.

It will be conducted on May 21, 2022 at exactly 1:00 PM to 4:00 PM at 777's Convenience Store Cantiguib, Alburquerque, Bohol. This activity will allow you to assess our developed system and give feedback, as well.

But this time, we would like to express our gratitude for allowing us to conduct our thesis study. We are hoping for future collaborations with you, our dear client.

May the good Lord continually bless you and your business.

Thank you very much and more power!

Respectfully yours,

DEXTER A. MAPAÑO

MHABEL PEARL M. SALISID

JULIUS A. MAPAÑO
Researchers

Noted:

SHEILA G. TABUNO, MSTCS
Subject Instructor

JOEL A. PIOLLO, MATCS
Thesis Adviser

Recommended by:

SHEILA G. TABUNO, MSTCS
Chairperson, DCoS

Endorsed by:

ARLEN B. GUDMALIN, PhD
Dean, CTAS

Approved by:
SUSANA M. DEL ROSARIO
777's Convenience Store Proprietor

Appendix A

Guide Questions for Interview

The Owner

1. What are the services and items offered?
2. Who is the supplier?
3. Is there an additional fee in delivering orders?
4. Are you willing to accept new technology such as computerization of the system?
5. What are the recent procedures made in the EPOS of 777's Convenience Store?
6. How much percentage will be added to the items to gain profit?
7. How many employees are there?

The Cashier

1. Is there a discount on purchasing wholesale and retail?
2. How many percent can you give on your suki card user?

The Staff

1. How many staff are there?
2. What are the problems encountered by the personnel during sales and inventory?
3. What is the process of generating inventory reports?
4. How they monitor their stocks?

APPENDIX B

System Usability Questionnaire

Instructions:

- Please rate the usability questionnaire
- Try to respond to all the items
- For items that are not applicable, use N/A
- Make sure these fields are filled in

Rating Scale

7 - Strongly Agree

6 – Agree

5 – Tend to Agree

4 – Neither Agree or Disagree

3 – Tend to disagree

2 – Disagree

1 – Strongly Disagree

Criteria for System Usability	Weighted Mean	Rating
1. Overall, I am satisfied it how easy it is to the system 2. It was simple to use this system 3. It can effectively complete my work using this system 4. I am able to complete my work quickly using this system 5. I am able to effectively complete my work using this system 6. I feel comfortable using this system 7. It was easy to learn to use this system 8. I believe I became productive using this system 9. The system gives error messages that clearly tell me how to fix problem 10. Whenever I make mistake using the system, I recover easily and quickly. 11. The information (such as online help, on-screen messages, and other documentation) provided with this system is clear 12. It is easy to find the information I needed 13. The information provided for the system is easy to understand 14. The information is effective in helping me complete the tasks and scenarios 15. The organization of information on the system screens is clear 16. The interface of this system is pleasant 17. I like using the interface of this system 18. This system has all the functions and capabilities I expect it to have 19. Overall, I am satisfied with this system Please list three things you liked most about this system software 1. 2. 3.		

Please list three things you liked least about this system software 1. 2. 3.		

Based on Lewis J.R (1995) IBM Computer Usability Satisfaction Questionnaires: Psychometric Evaluation & Instructions for Use

APPENDIX C

User's Manual

Accessing the system

Log In

Steps:

1. On the login form input username and password in the textboxes.
2. Then click the option "Login" button.
3. "LogIn Success"

Adding new item

Steps:

1. On the main menu, Enter Barcode or Scan the barcode scanner
2. Click Enter!

Deleting Item(s)

Steps:

1. Click the Delete Icon button above the form
2. “Remove Item?”: Click “Yes”
3. Click “Delete icon” button
4. “Are you sure you want to delete this customer? Click “YES/NO” button to confirm.
5. Confirmation: “Customer Deleted, Click “OK”.

Purchasing Item(s)

Pay

Steps:

1. Enter Cash on the right side
2. Click the Pay button
3. “Transaction will proceed?”: Click “Yes”.
4. “Proceeding Transaction!!”: Click “Ok”.

Credit

Steps:

1. Click the Credit button on the right side
2. Click “Search” textbox

3. Choose the creditor(s) name and right click to choose new, edit and payment.

List of Creditors on Detail

Steps:

1. Click the Credit button on the right side
2. Right Click the name of creditor(s)
3. Click the “Detail”
4. Click the “Total payment or purchase invoice” button

Change the creditors

Steps:

2. Click the “Change the Creditor” button
3. Choose the creditor(s) name and right click to choose new, edit and payment.

Find Item(s)

Steps:

1. “Press F1 to Find Code”
2. Press ‘ENTER” after entering CODE!”
3. Then press Enter.

Item(s)

Item(s) Search

Steps:

1. On the main menu, click “Products” Then,
2. Type the corresponding first letter of the products name or the barcode in the search textbox.
3. Confirmation: Press “Enter”

Item(s) Updating Information

Steps:

1. On the main menu, click “Product” Then
2. Type the corresponding first letter of the products name or the barcode in the search textbox.
3. Click the product to edit information
4. Edit the information to be updated.
5. “Update Product?”: Click “Yes”

Item(s) Deleting Information

Steps:

1. On the main menu, click “Product” Then,
2. Type the corresponding first letter of the products name or the barcode in the search textbox.
3. Click the item to delete.
4. “Product info Deleted!!”: Click Yes

Item(s) Clearing Information

Steps:

1. On the main menu, click “Product” Then,
2. Type the corresponding first letter of the products name or the barcode in the search textbox.
3. Click “Clear” Button

Administration Account

Create New Account Password

Steps:

1. On the main menu, click “Administration Account” Then,
2. Type your new account password
3. Press “SAVE” button.
4. Confirmation: “Save the Record” Click “YES”

View New Account Password

Steps:

1. Click “View List” Button
2. Click Search textbox to search new account

Total Daily Sales

Steps:

1. On the main menu, click “Total Daily Sales” Then,
2. Click “Print Report”
3. Click “X” above the form

APPENDIX D

Source Code

Log In Form

```
Private Sub Button1_Click(sender As Object, e As EventArgs) Handles Button1.Click
'Dim condb As New MySqlConnection("server=localhost;database=epos;User=root;password=;")
Dim cmd As MySqlCommand = New MySqlCommand("select * from pass where Username='" +
TextBox1.Text + "' and Password='" + TextBox2.Text + "'", condb)
Dim sda As MySqlDataAdapter = New MySqlDataAdapter(cmd)
Dim dt As DataTable = New DataTable()
sda.Fill(dt)
If TextBox1.Text = "PasS" And TextBox2.Text = "WorD" Then
MessageBox.Show("Login Success", "Information", MessageBoxButtons.OK,
MessageBoxIcon.Information)
Main.tid.Text = "7"
Main.Show()
Else
If (dt.Rows.Count > 0) Then
MessageBox.Show("Login Success", "Information", MessageBoxButtons.OK,
MessageBoxIcon.Information)
Main.tid.Text = dgview.SelectedCells(0).Value
Main.Show()
Else
MessageBox.Show("Incorrect Password or Username", "Information", MessageBoxButtons.OK,
MessageBoxIcon.Information)
End If
End If
End Sub
```

Point of Sale Form

Pay Button

```
Sub perform()
If tcash.Text = Nothing Then
MsgBox("Invalid Command!!!", MsgBoxStyle.Information, "System Checked")
Button3.Enabled = True
Return
End If
If lblsum.Text <= 0 Then
MsgBox("Invalid Command!!!", MsgBoxStyle.Information, "System Checked")
tcash.Text = Nothing
lchange.Text = Nothing
Button3.Enabled = True
Return
End If
If CDbl(tcash.Text) < CDbl(lblsum.Text) Then
MsgBox("Rendered Amount is not enough!", MsgBoxStyle.Information, "System
Checked")
tcash.Text = Nothing
Button3.Enabled = True
Return
End If
```

```
If MessageBox.Show("Transaction will proceed?", "System Checked",
MessageBoxButtons.YesNo, MessageBoxIcon.Question) = Windows.Forms.DialogResult.Yes
Then
instime()
lrem()
uptime()
domination()
Call ex()
Call sales()
Call upstock()
Call upran()
Call stock()
Call graph()
Call svin1()
curprdt()
allReport.receipt()
allReport.Show()
clrcred()
lookprdt()
Else
Button3.Enabled = True
End If
End Sub
```

Barcode Scanner Code

```
Private Sub txtquan_KeyUp(sender As Object, e As KeyEventArgs) Handles
txtquan.KeyUp
If e.KeyCode = Keys.Enter Then
cdmain.Select()
End If
End Sub
Sub Lookup()
If cdmain.Text = Nothing Then
cdname.Text = Nothing
cdprice.Text = Nothing
Return
Else
Dim ls As String = "select Product, Price, Quantity, Barcode from
product_management where Barcode='" & cdmain.Text & "'"
Dim c As New MySqlCommand(ls, condb)
condb.Open()
Dim d As MySqlDataReader = c.ExecuteReader
If d.HasRows Then
While d.Read
cdname.Text = d(0).ToString
cdprice.Text = d(1).ToString
lbcur.Text = d(2).ToString
End While
End If
condb.Close()
End If
End Sub
```

Credit Button

```
Sub processCredit()
Button2.Enabled = False
If Button3.Text = "Credit" Then
DebtCreditor.cred_activate = True
DebtCreditor.Show()
DebtCreditor.ContextMenuStrip1.Enabled = False
Else
If Not CDbl(ea.Text) < 0 Or Not CDbl(ea.Text) = 0 And tcash.Text Is Nothing Then
linvoice.Text = "#"
rdom()
proceedTrans2()
End If
End If
```

Without Advance Payment

```
If Val(tcash.Text) = "0" Then
If linvoice.Text = "#" Then
If MessageBox.Show("Transaction Will Proceed?", "System Checked",
MessageBoxButtons.YesNo, MessageBoxIcon.Question) = Windows.Forms.DialogResult.Yes
Then
Call stock()
instime()
lrem()
uptime()

stat = 5
Call domination()
Call salesCredit3()
Call sales3()
Call graph()
Call upstock()
Call upran()
allReport.receipt5()
allReport.Show()
End If
clrcred()
Else
allReport.receipt5()
allReport.Show()
End If
Else
```

With Advance Payment

```
If linvoice.Text = "#" Then
If MessageBox.Show("Transactioned will proceed?", "System Checked",
MessageBoxButtons.YesNo, MessageBoxIcon.Question) = Windows.Forms.DialogResult.Yes
Then
Call stock()
instime()
lrem()
uptime()
Call ex1()
```

```
Call svin()
stat = 4
Call domination()
Call salesCredit2()
Call sales3()
Call graph()
Call upstock()
Call upran()
allReport.receipt7()
allReport.Show()
End If
stock()
clrcred()
Else
allReport.receipt7()
allReport.Show()
End If
End If
```

Inventory Management Form

Search Item

```
Sub loadstock()
If condb.State = ConnectionState.Closed Then
condb.Open()
End If
sql = "select Product, Price, Barcode, Quantity from product_management where
Product like '%" + txtsrch.Text + "%'"
cmd = New MySqlCommand(sql, condb)
Dim da As New MySqlDataAdapter
Dim dt As New DataTable
da.SelectCommand = cmd
dt.Clear()
da.Fill(dt)
DataGridView1.DataSource = dt
Dim arial_style As New DataGridViewCellStyle
arial_style.Font = New Font("Arial", 16, FontStyle.Bold)
For Each row As DataGridViewRow In DataGridView1.Rows
For i = 0 To DataGridView1.Columns.Count - 1
row.Cells(i).Style = arial_style
Next
Next
DataGridView1.Columns(0).HeaderText = "Product"
DataGridView1.Columns(1).HeaderText = "Price"
DataGridView1.Columns(2).HeaderText = "Barcode"
DataGridView1.Columns(3).HeaderText = "Quantity"
DataGridView1.ClearSelection()
condb.Close()
End Sub
```

Add & Update Button

```
Sub updtprdt()
MessageBox.Show("Update Product?", "System Checked", MessageBoxButtons.YesNo,
MessageBoxIcon.Question) = Windows.Forms.DialogResult.Yes Then
```

```
Dim sql As String = "Update product_management set Product='" & txtprdtname.Text &
"',Price='" & txtprdtprice.Text & "',Quantity=Quantity +'" & txtprdtquantity.Text
& "' where Barcode='" & txtprdtcode.Text & "'"
Dim cmd As New MySqlCommand(sql, condb)
condb.Open()
cmd.ExecuteNonQuery()
condb.Close()
loadstock()
txtsrch.Clear()
txtprdtquantity.Clear()
clr()
End If
End Sub
If MessageBox.Show("Update Product?", "System Checked", MessageBoxButtons.YesNo,
MessageBoxIcon.Question) = Windows.Forms.DialogResult.Yes Then
Dim sql As String = "Update product_management set Product='" & txtprdtname.Text &
"',Price='" & txtprdtprice.Text & "',Quantity=Quantity +'" & txtprdtquantity.Text
& "' where Barcode='" & txtprdtcode.Text & "'"
Dim cmd As New MySqlCommand(sql, condb)
condb.Open()
cmd.ExecuteNonQuery()
condb.Close()
loadstock()
stock1()
txtsrch.Clear()
clr()
End If
End Sub

Public Sub addProduct()
Try
sql = "INSERT INTO product_management (Product,Price,Barcode,Quantity) VALUES
(@m1,@m2,@m3,@m4)"
cmd = New MySqlCommand(sql, condb)
condb.Open()
cmd.Parameters.AddWithValue("@m1", txtprdtname.Text)
cmd.Parameters.AddWithValue("@m2", txtprdtprice.Text)
cmd.Parameters.AddWithValue("@m3", txtprdtcode.Text)
cmd.Parameters.AddWithValue("@m4", txtprdtquantity.Text)
dr = cmd.ExecuteReader
MsgBox("New Product has been SAVED!!", MsgBoxStyle.Information)
condb.Close()
loadstock()
Catch ex As Exception
End Try
stock()
clr()
End Sub
```

Barcode Maker Button

```
Private Sub txtCode_TextChanged(sender As Object, e As EventArgs) Handles
txtCode.TextChanged
If cmbType.Text = "EAN13" Then
Dim Generator As New MessagingToolkit.Barcode.BarcodeEncoder
Generator.BackColor = Color.White
Generator.LabelFont = New Font("Arial", 7, FontStyle.Regular)
```

```
Generator.IncludeLabel = True
Generator.CustomLabel = txtCode.Text
Try
pbBarcode.Image = New
Bitmap(Generator.Encode(MessagingToolkit.Barcode.BarcodeFormat.EAN13,
txtCode.Text))
Catch ex As Exception
End Try
Return
End If
If cmbType.Text = "ISBN" Then
Dim Generator As New MessagingToolkit.Barcode.BarcodeEncoder
Generator.BackColor = Color.White
Generator.LabelFont = New Font("Arial", 7, FontStyle.Regular)
Generator.IncludeLabel = True
Generator.CustomLabel = txtCode.Text
Try
pbBarcode.Image = New
Bitmap(Generator.Encode(MessagingToolkit.Barcode.BarcodeFormat.ISBN,
txtCode.Text))
Catch ex As Exception
End Try
Return
End If
If cmbType.Text = "Code93" Then
Dim Generator As New MessagingToolkit.Barcode.BarcodeEncoder
Generator.BackColor = Color.White
Generator.LabelFont = New Font("Arial", 7, FontStyle.Regular)
Generator.IncludeLabel = True
Generator.CustomLabel = txtCode.Text
Try
pbBarcode.Image = New
Bitmap(Generator.Encode(MessagingToolkit.Barcode.BarcodeFormat.Code93,
txtCode.Text))
Catch ex As Exception
End Try
Return
End If
End Sub
```

Credit Payment Form

```
Sub processpay()
If TextBox1.Text = Nothing Or Val(TextBox1.Text) = 0 Then
MsgBox("Invalid Command!", MsgBoxStyle.Information, "System Checked")
Return
Else
If linvoice.Text = "#" Then
If MessageBox.Show("Proceed Transaction?", "System Checked",
MessageBoxButtons.YesNo, MessageBoxIcon.Question) = Windows.Forms.DialogResult.Yes
Then
Call ex()
Call sp()
rdom()
instime()
lrem()
uptime()
```

```
sales()
allReport.receipt6()
allReport.Show()
End If
Else
allReport.receipt6()
allReport.Show()
End If
End If
End Sub
```

New Creditor Form

```
Private Sub Button2_Click(sender As Object, e As EventArgs) Handles Button2.Click
If t1.Text = Nothing Or c1.Text = Nothing Or m1.Text = Nothing Then
MsgBox("Incomplete Data!!", MsgBoxStyle.Information, "System Checked")
Return
End If
If Button2.Text = "SAVE" Then
look()
If b = True Then
MsgBox("Already Exists!!", MsgBoxStyle.Information, "System Checked")
Return
End If
If MessageBox.Show("Save the Record?", "System Checked", MessageBoxButtons.YesNo,
MessageBoxIcon.Question) = Windows.Forms.DialogResult.Yes Then
Try
Dim s As String = "insert into
credit(Acc_No,Acc_Name,Acc_Address,Acc_Contact,Date)values('" & rno.Text & "','" &
remerror(t1.Text) & "','" & remerror(c1.Text) & "','" & remerror(m1.Text) & "','"
& Date.Now.ToString("yyyy-M-dd") & "')"
cQuery(s)
DebtCreditor.loadcred()
Catch ex As Exception
MsgBox(ex, MsgBoxStyle.Information, "System Checked")
End Try
End If
Else
If MessageBox.Show("Update the Record?", "System Checked",
MessageBoxButtons.YesNo, MessageBoxIcon.Question) = Windows.Forms.DialogResult.Yes
Then
Try
Dim s As String = "Update credit set Acc_Name='" & remerror(t1.Text) &
"',Acc_Address='" & remerror(c1.Text) & "',Acc_Contact='" & remerror(m1.Text) &
"',Date='" & Date.Now.ToString("yyyy-M-dd") & "' where Acc_No='" & rno.Text & "'"
cQuery(s)
DebtCreditor.loadcred()
Catch ex As Exception
MsgBox(ex, MsgBoxStyle.Information, "System Checked")
End Try
End If
End If
    End Sub
```

List Creditors Form

```
Sub loadcred()
```

```
Dim lt As String = "select Acc_No as `Account No`,Acc_Name as `Name`,Acc_Address
as `Address`,Acc_Contact as `Contact No.` from credit where Acc_No like '%" +
remerror(txtsrch.Text) + "%' or Acc_Name like '%" + remerror(txtsrch.Text) + "%'
or Acc_Address like '%" + remerror(txtsrch.Text) + "%' or Acc_Contact like '%" +
remerror(txtsrch.Text) + "%' order by Acc_Name "
Dim da As New MySqlDataAdapter(lt, condb)
condb.Open()
Dim ds As New DataSet
da.Fill(ds, "credit")
da.Dispose()
dgview.DataSource = ds.Tables(0)
condb.Close()
dgview.Columns(0).Width = 110
dgview.Columns(2).Width = 250
dgview.Columns(3).Width = 80
End Sub
```

Total Daily & Monthly Sales Form

Daily

```
Sub loadstock()
Dim ls As String = "select s_invoice as Invoice ,s_product as Product, s_quan as
Quantity,s_tot as Amount,sdate as Date from domination where sdate ='" &
Format(dt1.Value, "yyyy-M-dd") & "'"
Dim da As New MySqlDataAdapter(ls, condb)
condb.Open()
Dim ds As New DataSet
da.Fill(ds, "domination")
da.Dispose()
dgview.DataSource = ds.Tables(0)
condb.Close()
End Sub
```

Montly

```
Sub loadstock1()
Dim da1 As DateTime = DateTime.Parse(dt2.Text)
Dim da2 As DateTime = DateTime.Parse(dt3.Text)
Dim ls As String = "select s_invoice as Invoice ,s_product as Product, s_quan as
Quantity,s_tot as Amount,sdate as Date from domination where sdate >= '" &
Format(dt2.Value, "yyyy-M-dd") & "' and sdate <= '" & Format(dt3.Value, "yyyy-M-
dd") & "'"
Dim da As New MySqlDataAdapter(ls, condb)
condb.Open()
Dim ds As New DataSet
da.Fill(ds, "domination")
da.Dispose()
dgview.DataSource = ds.Tables(0)
condb.Close()
End Sub
```

Print

```
Private Sub Button2_Click(sender As Object, e As EventArgs) Handles Button2.Click
If rb1.Checked = True Then
If dgview.RowCount = 0 Then
```

```
MsgBox("No Record!!", MsgBoxStyle.Information, "System Checked")
Return
Else
allReport.rp1()
allReport.Show()
End If
End If
If rb2.Checked = True Then
If dgview.RowCount = 0 Then
MsgBox("No Record!!", MsgBoxStyle.Information, "System Checked")
Return
Else
allReport.rp2()
allReport.Show()
End If
End If
End Sub
```

Create Account w/ Password

```
Private Sub Button1_Click(sender As Object, e As EventArgs) Handles Button1.Click
If t1.Text = Nothing Or t2.Text = Nothing Then
MsgBox("Incomplete Data!!", MsgBoxStyle.Information, "System Checked")
Return
End If
If Button1.Text = "SAVE" Then
look()
If b = True Then
MsgBox("Already Exists!!", MsgBoxStyle.Information, "System Checked")
Return
Else
If t1.Text = "PasS" And t2.Text = "WorD" Then
Button5.Visible = True
Button5.Enabled = False
clr()
Else
If MessageBox.Show("Save the Record?", "System Checked", MessageBoxButtons.YesNo,
MessageBoxIcon.Question) = Windows.Forms.DialogResult.Yes Then
Try
Dim s As String = "insert into pass(Username,Password)values('" &
remerror(t1.Text) & "','" & remerror(t2.Text) & "')"
cQuery(s)
Catch ex As Exception
MsgBox(ex, MsgBoxStyle.Information, "System Checked")
End Try
End If
clr()
loadpass()
End If
End If
End If
End Sub
```

DEVELOPER'S BIODATA

Name : Mhabel Pearl M. Salisid
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Age : 22
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Email Address : mhabelpearlsalisid@gmail.com
Religion : Roman Catholic
Citizenship : Filipino
Father's Name : Isabelito E. Salisid
Mother's Name : Maria Teresita M. Salisid

EDUCATIONAL BACKGROUND

Elementary : Triple Union Elementary School
Camaya-an, Loboc, Bohol
2011-2012

Secondary : Camaya-an National High School
Camaya-an, Loboc, Bohol
2017-2018

Tertiary : Bachelor of Science in Computer Science
Bohol Island State University
Zamora, Bilar, Bohol
2021-2022

Work Experience : On the Job Training
Pioneer Bank Incorporated
Jimili-an, Loboc, Bohol
Office Staff

DEVELOPER'S BIODATA

Name : Dexter A. Mapaño
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Father's Name : Esteban R. Mapaño Jr.
Mother's Name : Josephine B. Mapaño

EDUCATIONAL BACKGROUND

Elementary : Baclayon Central Elementary School
Poblacion, Baclayon, Bohol
2011-2012

Secondary : Immaculata High School
Poblacion, Baclayon, Bohol
2017-2018

Tertiary : Bachelor of Science in Computer Science
Bohol Island State University
Zamora, Bilar, Bohol
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Work Experience : On the Job Training
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Office Staff

DEVELOPER'S BIODATA

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Elementary : Baclayon Central Elementary School
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2011-2012

Secondary : Immaculata High School
Poblacion, Baclayon, Bohol
2017-2018

Tertiary : Bachelor of Science in Computer Science
Bohol Island State University
Zamora, Bilar, Bohol
2021-2022

Work Experience : On the Job Training
Municipality of Sikatuna
Office Staff