SECD2613

SYSTEM ANALYSIS AND DESIGN

SECTION 03

SEMESTER II 2024/2025

TITLE:

PROJECT P1

(PROJECT PROPOSAL AND PLANNING)

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TABLE OF CONTENTS

PHASE 1: (PROJECT PROPOSAL AND PLANNING)

1.0 INTRODUCTION

In today's fast-paced retail environment, effective inventory and sales management is crucial for small shops. Many stores still use manual methods such as writing on paper or using basic spreadsheets. This often leads to problems such as wrong stock counts, forgotten expiry dates, missed deliveries, and poor tracking of supplier items. These inefficiencies can result in financial loss, product wastage, and frustrated staff or customers.

Mrs. Salmi, a small business owner who runs a mini mart at KTDI, UTM (University Technology Malaysia) is facing several challenges with her manual-based business. We visited the mart and noticed the difficulties the staff faced in keeping track of stock and sales. They still use manual data entry, which causes mistakes between actual stock and what is recorded. Sometimes, expired items are not removed in time, and sales reports are not accurate. These problems showed us the need for a better system. Therefore, this project aims to design a suitable inventory and sales management system for Mrs. Salmi's mini mart. The system will include stock-in/stock-out tracking, expiry alerts, barcode scanning, integrated payment tracking, receipt printing and sales performance reporting.

This report includes 3 main phases. The first phase is regarding the project proposal, which we identify the problem faced by the owner and propose suitable solutions. We also defined the objectives to be achieved and the scope of this project. The planning for the project is done by using Work Breakdown Structure (WBS) and charts to ensure consistent project progress.

The second phase is about information system gathering and requirement. In order to design a suitable inventory and sales management system for the mini mart business, we conducted interviews to gather information regarding the current system and the business workflow. We also identify the functional and non-functional requirements and develop the current logical DFD to ease the analysis of the business current system later.

The third phase which is also the last phase of the project is related to the analysis of the current system and design of the new system. In this phase, we develop both logical and physical DFD for the new system and also included a system prototype based on the designed system by using Figma to perform demonstration.

2.0 BACKGROUND STUDY

Mrs. Salmi is a small business owner who operates a mini mart at M01, KTDI, UTM (Universiti Teknologi Malaysia). The mini mart she owns sells daily needs, including packaged food, snacks, beverages, personal hygiene products, stationery and more. The customers of the mini mart mainly are UTM students and university staff.

The mini mart is usually managed by Mrs. Salmi herself, with occasional assistance from one or two staff who operate the mart when she is unavailable. The mart operates almost daily from 10 a.m. to 10 p.m. and only relies on walk-in customer. Like other small retail business in Malaysia, Mrs. Salmi's mini mart does not have a digital-based system and relies heavily on manual operations.

At Mrs. Salmi's mini mart, daily operations such as inventory management and sales recording are performed manually. Every product's name, price and available quantity are recorded in notebooks and spreadsheets. Since there is no real time inventory updating, Mrs. Salmi needs to physically check the products from time to time to restock low quantity products and remove expired inventory. During customer checkout, Mrs. Salmi has to remember all the items price and calculate the total amount using a calculator which is not efficient. Purchase receipts are also not available for customer reference. These manual operations are time consuming and prone to human error.

Owning a retail shop is more than just selling products, it's a daily routine of keeping track of stock, serving customers, managing suppliers, and somehow trying to stay profitable in the middle of it. However, in Malaysia this entire process is still stuck in the past for many small to medium-sized retail businesses. Business owners juggle handwritten stock books, calculators at the counter, and spreadsheets that only one person understands. There is usually no communication between the systems.

Therefore, there is a need for a digital inventory and sales management system for Mrs. Salmi's mini mart, not only to reduce human error, but also improve overall business efficiency and provide better customer experiences.

3.0 PROBLEM STATEMENT

Since Mrs. Salmi's mini mart operates using a manual system, inventory tracking as well as sales recording only relies on notebooks, spreadsheets and calculators. Due to the lack of integrated inventory and sales management approach, Mrs. Salmi faces several issues in the daily operation of her mini mart. The issues are outlined below:

- **Lack of real time inventory tracking:** The activity of recording inventory updates (stock in/out) is done manually, which causes time delays in stock control and difficult to monitor stock availability.
- **Unmonitored expiry dates:** Expired products are not tracked systematically, leading to the possibility of selling expired goods to customers.
- **Inaccurate total calculations during checkout:** Manual calculations using calculator increase the risk of human error, which results in incorrect billing that affect business revenue and customer satisfaction.
- **Inaccurate sales recording:** Manual transaction recording from various sources increases the risk of missing entries and duplication resulting in inaccurate sales report.
- **No real-time visibility in sales trends:** The business is unable to determine the best-selling products and take informed actions to boost the business sales.
- **No automated receipt generation:** The business is unable to generate instantaneous digital receipts for customers and business record purpose.
- **Reduced sales during semester break:** Number of customers are reduced during semester break as students are away from campus and negatively affect business sales.

4.0 PROPOSED SOLUTIONS

To solve the current problems faced by Mrs. Salmi's business, we propose the development of a mobile application that integrates with inventory and sales management system. This mobile application will help Mrs. Salmi's business to efficiently manage the inventory and sales digitally and minimize physical workload.

The mobile application will have two main features which are the Inventory Management System and Sales Management System. For the Inventory Management System, owner and staff will be able to register the products into the system by entering the product details including name, selling price, expiry date and available quantity. The system will also include an automatic alert feature which user will be informed when restocking is needed or when the product is near the expiry date. The Inventory Management System should be able to update automatically from time to time especially after the products are scanned for checkout.

For the Sales Management System, owner and staff will be able to perform barcode scanning via the mobile application to checkout customers items. The system will automatically calculate the total amount to be paid and generate a digital receipt for customers after payment. Each transaction will be recorded in the system for sales reporting. Lastly, owner will be able to view real time sales performance for the business, identify the best-selling products and make decisions to boost the business revenue.

Technical Feasibility:

The proposed solution involves the development of a mobile application integrated with inventory and sales management system. From a technical perspective, the project is technically feasible and can be developed using available common tools and current technologies.

In terms of hardware, the system can be operated using existing smartphones that have a clear camera that support barcode scanning. For software development, the application framework can be built using React Native. This framework allows cross-platform deployment in both iOS and Android devices. Meanwhile for the data storage, there are several real-time cloud databases such as Firebase that can be used to store inventory and sales data securely. The integration of external APIs such as Touch 'n Go e-wallet API also allows digital payment within the sales management system.

With skilled developers and accessible frameworks, the proposed system is technically well-supported.

Operational Feasibility:

The proposed system is designed as a smartphone-based mobile application. From an operational perspective, the project is operationally feasible as both owner and staff can operate the system easily with guided steps.

Nowadays, public are expose and familiar with the use of smartphone and mobile applications, making our proposed system accessible and convenient for the business daily operation. The system interface will be user-friendly to ensure the ease of use. As the business only involves small number of staff, training can be conducted easily to ensure owner and staff are familiar with the use and features of the system.

With sufficient training and support, the proposed system can be implemented smoothly into the business operation. Therefore, the proposed system is said to be operationally feasible.

Economic Feasibility:

Since the proposed system can be operated using existing smartphones, no additional hardware costs are required. The development of the mobile application also can be achieved using low-cost development tools such as React Native and Firebase for data storage. Therefore, the proposed system is said to be economically feasible as the system requires only minimal development and maintenance expenses and it helps to reduce losses cause by human errors and provide insights to boost sales performance.

Overall, the inventory and sales management system for Mrs. Salmi mini mart is feasible in terms of technical, operational and economic.

5.0 OBJECTIVES

The main objective of this project is to develop a digital Inventory and Sales Management System for Mrs. Salmi's mini mart to improve overall business efficiency and reduce time-consuming physical workload. The explicit objectives that the new system aim to achieve are listed below:

- To develop a digital inventory management system that allows the registration and storage of inventory details including product name, price, available quantity and supplier information.
- To automate real-time inventory tracking that updates inventory details from time to time especially during checkout.
- To include alert notification that notifies system user when items are near their expiry date.
- To include barcode scanning for checkout process and automate calculations to reduce human error during transaction and speed up checkout process.
- To generate digital receipts for every transaction for customers' reference.
- To store and track all transactions for accurate business record and sales purpose to avoid missing entries or duplication.
- To provide real-time sales performance, showing the total amount of sales, total transaction and best-selling products for owner decision making.

6.0 PROJECT SCOPE

In this project, the proposed Inventory and Sales Management System are designed and created specifically for Mrs. Salmi mini mart. This digital system aims to replace the current manual system to improve overall business efficiency and reduce operational errors.

This project only focuses on three main system features:

- **Inventory Management:**
  - Product registration including product details such as product name, expiry date, available quantity and supplier information.
  - Real-time inventory tracking and stock quantity updating from time to time.
  - Alert notification when items are near their expiry date or in low stock availability.
- **Sales Management:**
  - Barcode scanning during checkout process.
  - Automated calculations of total payment of the scanned items to reduce error during checkout process.
  - Generation of digital receipts for every customer transaction.
  - Storage of all transactions for accurate business record and sales analysis.
- **Sales Performance Reporting:**
  - Real-time sales performance showing the total amount of sales and transaction made based on the selected duration.
  - Identification of best-selling products.

However, this system will not include any delivery feature to increase business sales during semester break, integration with any external hardware devices, employee payroll or human resource functionalities, or any form of customer loyalty or rewards program. These features may be considered for future system upgrades, but are excluded in this current development phase to maintain focus on core inventory and sales functionalities.

7.0 PROJECT PLANNING

7.1 Human Resource:

Team Member	Role	Responsibility
Fion Tee Xin Yue	Project Manager	Communicates with the client and coordinate, schedule and distribute task assignment among team members.
Lim Zoey	System Analyst	Identify problems in the current system and gather functional and non-functional system requirements.
Lim Chen Han	System Designer	Design the interface of the system as well as ensure the interface are user-friendly, arranged and clean. interaction between the features perform smoothly.
Lee Wei Xuan	Program Developer	Develops the mobile application ensuring all the features interacts smoothly with one another and implement necessary integration.
Edwin Tan Yee En	Documentation Lead	Prepare project documentation and update the report from time to time and provide well informed user manual.

7.2 Work Breakdown Structure (WBS):

The Work Breakdown Structure (WBS) is process oriented.

Level 1: Mini Mart Inventory and Sales Management System Development

Level 2: Project Phases

1. **Project Initiation**
   1.1 Identify Business Need
   1.2 Define Project Scope
   1.3 Identify Stakeholders
   1.4 Conduct Feasibility Study
   1.5 Project Approval

2. **Planning**
   2.1 Create Work Breakdown Structure (WBS)
   2.2 Define Roles and Responsibility
   2.3 Create Project Schedule
   2.4 Define Budget
   2.5 Resource Allocation
   2.6 Develop Stakeholders Communication Plan

3. **Requirements Analysis**
   3.1 Conduct User Interview & Survey
   3.2 Document Business Requirements
   3.3 Define Functional & Non-Functional Requirements
   3.4 Analyse Current Business Process
   3.5 Create Current Data Flow Diagram (DFD)
   3.6 Stakeholder Sign-off

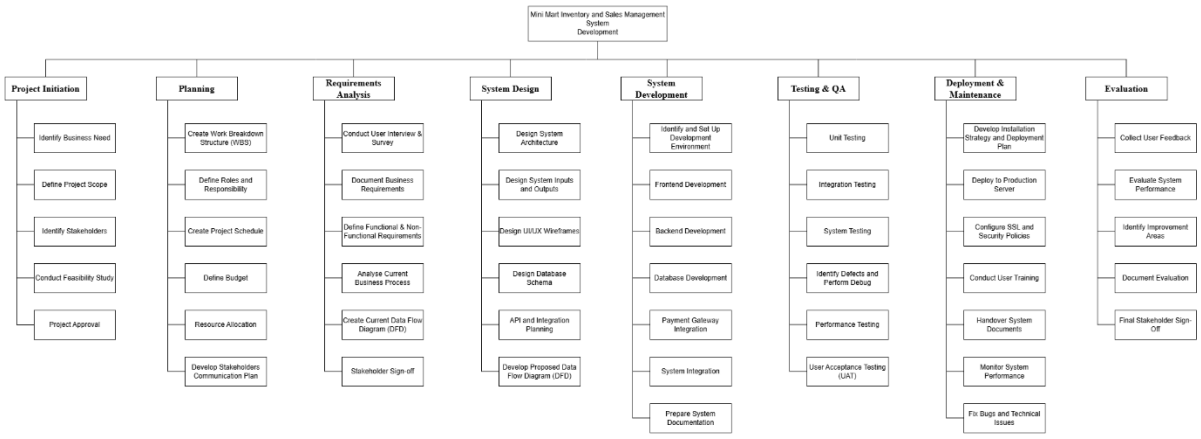
4. **System Design**
   4.1 Design System Architecture
   4.2 Design System Inputs and Outputs
   4.3 Design UI/UX Wireframes
   4.4 Design Database Schema
   4.5 API and Integration Planning
   4.6 Develop Proposed Data Flow Diagram (DFD)

5. **System Development**
   - 5.1 Identify and Set Up Development Environment
   - 5.2 Frontend Development
   - 5.3 Backend Development
   - 5.4 Database Development
   - 5.5 Payment Gateway Integration
   - 5.6 System Integration
   - 5.7 Prepare System Documentation

6. **Testing & QA**
   - 6.1 Unit Testing
   - 6.2 Integration Testing
   - 6.3 System Testing
   - 6.4 Identify Defects and Perform Debug
   - 6.5 Performance Testing
   - 6.6 User Acceptance Testing (UAT)

7. **Deployment & Maintenance**
   - 7.1 Develop Installation Strategy and Deployment Plan
   - 7.2 Deploy to Production Server
   - 7.3 Configure SSL and Security Policies
   - 7.4 Conduct User Training
   - 7.5 Handover System Documents
   - 7.6 Monitor System Performance
   - 7.7 Fix Bugs and Technical Issues

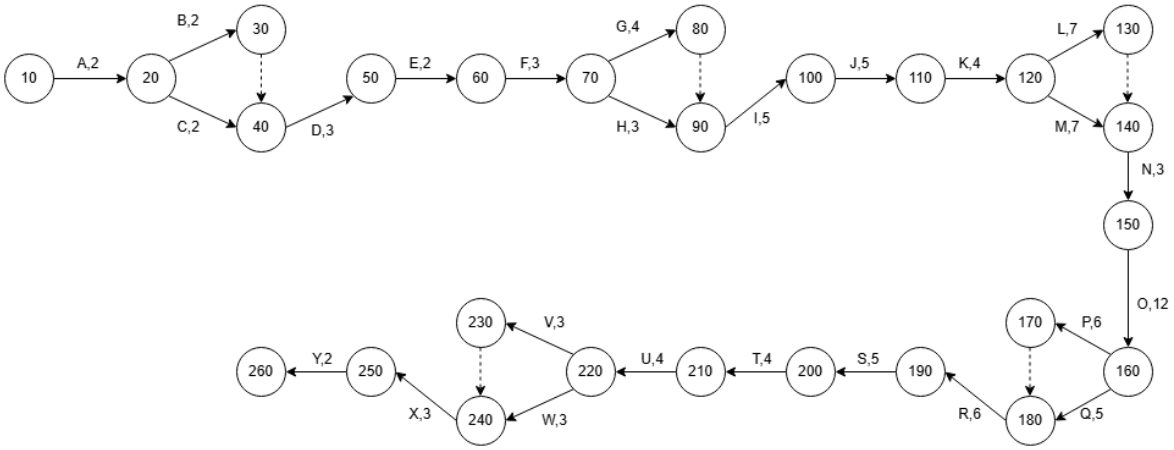
8. **Evaluation**
   - 8.1 Collect User Feedback
   - 8.2 Evaluate System Performance
   - 8.3 Identify Improvement Areas
   - 8.4 Document Evaluation
   - 8.5 Final Stakeholder Sign-Off



7.3 Pert Chart:

The PERT chart provides a detailed visualization of all project activities, their durations, and dependencies. It plans out the process that need to be performed and shows the critical path to determines the shortest feasible finish time. This tool helps to make sure that the project will go forward smoothly and done before its deadlines by assisting the team in efficiently managing timetables, scheduling resources, and preventing any delays. The entire project is planned to be completed within a 90-day timeframe.

ACTIVITY	Task Description	Duration (days)	Predecessors
A	Identify Business Need	2	-
B	Define Project Scope	2	A
C	Identify Stakeholders	2	A
D	Conduct Feasibility Study	3	B, C
E	Project Approval	2	D
F	Create WBS and Define Roles	3	E
G	Create Project Schedule and Budget	4	F
H	Resource Allocation and Communication Plan	3	F
I	Conduct User Interview & Document Requirements	5	G, H
J	Define Functional Requirements and Analyse Process	5	I
K	Create Current DFD and Stakeholder Sign-off	4	J
L	Design Architecture, Inputs/Outputs, and UI	7	K
M	Design Database, API Planning, Proposed DFD	7	K
N	Set Up Development Environment	3	L, M
O	Frontend, Backend, and Database Development	12	N
P	Payment Gateway Integration and System Integration	6	O
Q	Prepare System Documentation	5	O
R	Conduct Unit, Integration, and System Testing	6	P, Q
S	Debug, Performance Test, and UAT	5	R
T	Develop Installation Strategy and Deploy System	4	S
U	Configure Security, Train Users, and Handover	4	T
V	Monitor System and Fix Issues	3	U
W	Collect Feedback and Evaluate Performance	3	U
X	Identify Improvements and Document Evaluation	3	V, W
Y	Final Stakeholder Sign-Off	2	X



PATH 1:
A - B - D - E - F - G - I - J - K - L - N - O - P - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 81

PATH 2:
A - B - D - E - F - G - I - J - K - L - N - O - P - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 81

PATH 3:
A - B - D - E - F - G - I - J - K - L - N - O - Q - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 4:
A - B - D - E - F - G - I - J - K - L - N - O - Q - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 5:
A - B - D - E - F - G - I - J - K - M - N - O - P - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 81

PATH 6:
A - B - D - E - F - G - I - J - K - M - N - O - P - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 81

PATH 7:
A - B - D - E - F - G - I - J - K - M - N - O - Q - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 8:
A - B - D - E - F - G - I - J - K - M - N - O - Q - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 9:
A - B - D - E - F - H - I - J - K - L - N - O - P - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 10:
A - B - D - E - F - H - I - J - K - L - N - O - P - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 11:
A - B - D - E - F - H - I - J - K - L - N - O - Q - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 79

PATH 12:
A - B - D - E - F - H - I - J - K - L - N - O - Q - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 79

PATH 13:
A - B - D - E - F - H - I - J - K - M - N - O - P - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 14:
A - B - D - E - F - H - I - J - K - M - N - O - P - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 15:
A - B - D - E - F - H - I - J - K - M - N - O - Q - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 79

PATH 16:
A - B - D - E - F - H - I - J - K - M - N - O - Q - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 79

PATH 17:
A - C - D - E - F - G - I - J - K - L - N - O - P - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 81

PATH 18:
A - C - D - E - F - G - I - J - K - L - N - O - P - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 81

PATH 19:
A - C - D - E - F - G - I - J - K - L - N - O - Q - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 20:
A - C - D - E - F - G - I - J - K - L - N - O - Q - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 21:
A - C - D - E - F - G - I - J - K - M - N - O - P - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 81

PATH 22:
A - C - D - E - F - G - I - J - K - M - N - O - P - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 81

PATH 23:
A - C - D - E - F - G - I - J - K - M - N - O - Q - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 24:
A - C - D - E - F - G - I - J - K - M - N - O - Q - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 4 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 25:
A - C - D - E - F - H - I - J - K - L - N - O - P - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 26:
A - C - D - E - F - H - I - J - K - L - N - O - P - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 27:
A - C - D - E - F - H - I - J - K - L - N - O - Q - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 79

PATH 28:
A - C - D - E - F - H - I - J - K - L - N - O - Q - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 79

PATH 29:
A - C - D - E - F - H - I - J - K - M - N - O - P - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 30:
A - C - D - E - F - H - I - J - K - M - N - O - P - R - S - T - U - W - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 6 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 80

PATH 31:
A - C - D - E - F - H - I - J - K - M - N - O - Q - R - S - T - U - V - X - Y
2 + 2 + 3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 79

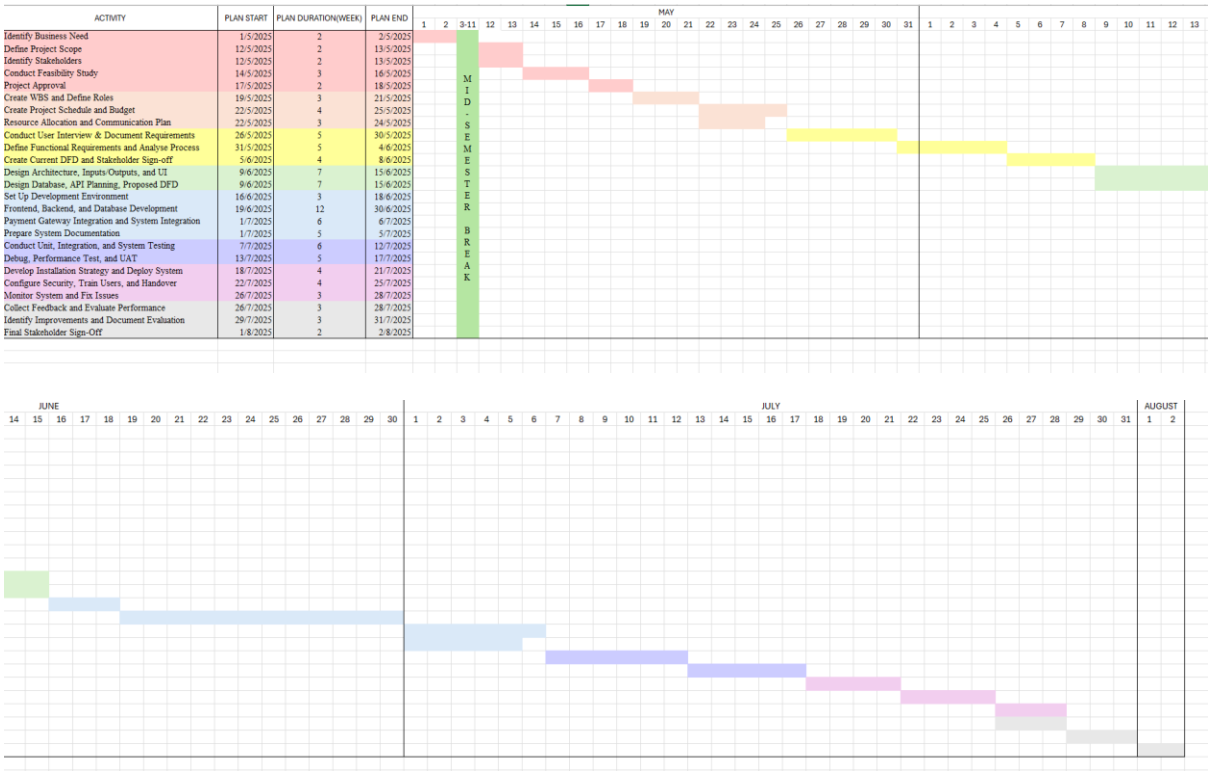
PATH 32:

A - C - D - E - F - H - I - J - K - M - N - O - Q - R - S - T - U - W - X - Y

2 + 2+3 + 2 + 3 + 3 + 5 + 5 + 4 + 7 + 3 + 12 + 5 + 6 + 5 + 4 + 4 + 3 + 3 + 2 = 79

The critical path is made up of tasks that take the longest time to complete, with a total duration of 81 days. These tasks must be finished on time because any delay will affect the whole project. Monitoring the critical path helps ensure that the project is completed on time.

7.4 Gantt Chart:



8.0 BENEFIT AND OVERALL SUMMARY OF THE PROPOSED SYSTEM

Overall, our proposed solution intended to integrate inventory and sales management system into a single and user-friendly platform application that suites Mrs. Salmi for her business daily operations. It enhances operational efficiency, accuracy and the user experience of the cashiers and customers. They will benefit from the centralized, user-friendly platform that enables automated payment processing, real-time stock monitoring, and barcode-based product scanning. These features reduce manual workload and minimize human error at all the operations, improving business performance and customer satisfaction.

The proposed system aims to replace manual methods which was using right now to a fully integrated mobile application that combine inventory tracking and sales management functionality. Developed using a modern framework, the application will automate key processes such as product scanning, identification of best-selling products, and digital receipt generation. Although the initial development and integration of APIs (e.g., Touch ‘n Go, DuitNow) may require investment in technical resources but for the long-term benefits such as faster checkouts, real-time inventory alerts and improved data reliability will far overcome these initial costs. The system is designed to be scalable, secure and compatible with common smartphone hardware, making it accessible for both business owner and staff.