Sri Lanka Institute of Information Technology

Information Technology Project IT2080

Weekend Batch – Malabe 2023 Project

Proposal Document

ITP_WE_B02_20

Mobile Store Management System

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Mobile Store management System

Project proposal

Designed and Created by the group of

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INTRODUCTION

1.1) Background.

'Happy mobile' is a mobile store currently operating through social media platforms and physical stores . The online store sells different kinds of mobile devices & accessories and does both software and hardware repairs of any kind of mobile device . The business purchases products needed to sell from suppliers who are authorized dealers and importers. Those are handed over to the stock. The final products received from the suppliers are stored in inventory stores of the business. Then the items are published on social media platforms (Facebook & Instagram) for sale. If customers are interested in purchasing, they reach through the social media platforms and contact shop by a call. Then employees arrange the order for customer and collect his/she details and send through a delivery method. The customers have the option to choose the payment method as Cash on Delivery or as online payment. The employees who are assigned to the inventory stores, pack the orders including all the delivery details on the package. The orders are then assigned to the delivery personnel to deliver.

1.2) Problems.

Our client is a mobile phone shop located in a busy commercial area. They sell a wide range of mobile phones and accessories, and provide repair services. They have a loyal customer base, but they are struggling to keep up with the increasing demand and competition. They are currently using manual processes to manage their business, which is time-consuming and prone to errors.

After analyzing the current business processes and client requirements, we were able to identify the below mentioned problems in the existing structure.

All business operations are carried out manually

Currently the store directly takes product orders from social media chat facilities (FB messenger, Instagram chats). Without a proper system to manage orders, it can be difficult for the shop to keep track of what items have been ordered, what options were selected, and what the total price is.

- Manual inventory management leading to errors and stockouts.

- Inefficiency in managing the customers of the store.
  - It has been difficult to keep track of customer complaints, leading to potential loss of business. Customers may also face difficulty in submitting inquiries and feedback, leading to a poor customer experience.
- Inefficiency in managing the inventories
  - Real time inventory updates are done in separate excel sheets independently
  - Every time a purchase is made, inventory records should be updated manually
  - Manually managing item details and stock can be time-consuming and prone to errors. Keeping track of the stock levels can be challenging, especially when multiple customers are Buying the same item simultaneously.

- Inefficiency in order handling
    - Customers access the store through different social media platforms and order through the chat facility.
    - The admins go through all the chat facilities time-to-time to check for orders. This is time consuming and reduces the efficiency
- Inability to handle employee details in the shop.
    - Difficulty in keeping track of employee attendance and to communicate with them effectively. This can lead to decreased productivity and poor staff morale.
- Inability to keep up with the competitors
    - compared with the other similar business competitors, the current method of business doesn't capture the interests of enough customers for the business to succeed
    - Customers are more drawn towards brands that possess more convenient online applications thus negatively affecting product sales and profits

1.3) Motivations.

The above problems can be addressed by the web application that is to be developed according to the client requirements. The client will receive the below mentioned benefits from the IT solution

- A completed web solution is handed over to the client by centralizing and interconnecting all the above-mentioned business operations to address the problem of having separated functions from each other.
- All orders are taken through the web application from registered customers which helps the business to keep track of customers in an orderly manner.
- All data related to inventory is stored in a database. Authorized employees have access to the database to view, update, delete records. When purchases are made, the inventory quantities are updated automatically. Data which is input to the DB is verified through client-side and server-side validation techniques. Data redundancies and inconsistencies are reduced through different techniques used within the database.
- Customers access the online store through the web application on any web browser they prefer. As soon as the customers place the order for clothing items, the order is processed immediately. There is no need for any employee to be constantly present to process orders. This reduces the time of placing an order by the customers.

- The web application provides a convenient and an attractive platform that captures the interest of more customers, therefore enhancing the sales and profits of the store. Through this our motivation is to keep up with the competition.

1.4) Aims and Objectives

- Improve Business Processes
    1. Streamline order management to reduce errors and improve efficiency.
    2. Automate inventory management to ensure sufficient stock levels and prevent stockouts.
    3. Enhance financial management to improve accuracy of financial records and facilitate reporting.
    4. Optimize repair management to reduce repair time and improve customer satisfaction.
    5. Streamline delivery management to ensure timely and accurate delivery of products.

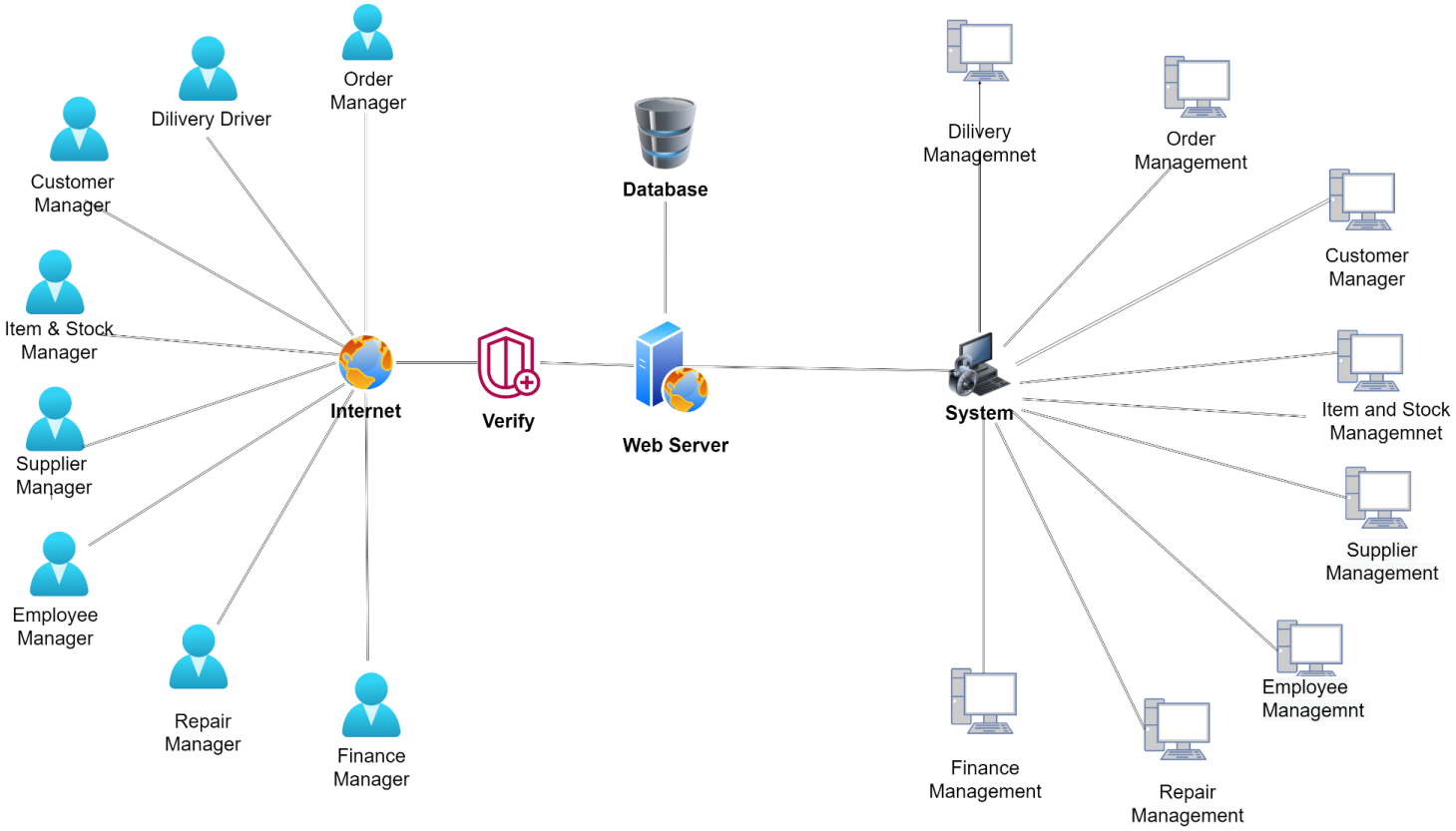
- Enhance Customer Service.
    1. Provide an easy-to-use online platform for customers to purchase products.
    2. Enable customers to track their orders and repairs online.
    3. Facilitate customer feedback and inquiries to improve customer satisfaction.
    4. Ensure timely and accurate delivery of products to customers.

- Improve Employee Management.
    1. Provide a centralized system for managing employee details and schedules.
    2. Enable communication between management and employees through the system.
    3. Track employee attendance and performance through the system

- Maximize the security features

    1. Analyzing the vulnerabilities and security threats that can occur
    2. Review the best possible solutions for the security threats identified above
    3. Decide the users who have access to the system and the unique tasks they are authorized to do
    4. Identify methods to compare the user credentials with the credentials stored in the database
    5. Develop the login mechanism including highly reliable user verification technologies
    6. Identify mechanisms to block access to unauthorized third parties and start development
    7. Develop a mechanism to expire the session and automatically log out of user account after a certain period of inactivity
    8. Testing the developed security features before finalizing the web application

System Overview



Functional & Non-Functional

3.1) Customer Ordering System. **Wishvajith S.A.S. – IT21221378**

This customer ordering system aims to provide a seamless shopping experience for customers on the e-commerce platform. The system **takes** data from the server and displays a full description of each item and the system automatically calculate total price based on the options selected by the user. Customers can **add** multiple items to their cart, which the system **stores** along with the relevant details. The system also allows customers to easily **remove or add** more items to the cart and access previous cart lists, providing a hassle-free shopping experience. When the customer confirms the order, they will be redirected to the payment gateway and after the payment is finalized and the order is successfully placed, Order will be **stored** in the System and send an email to the customer about confirmation .

Overall, the customer ordering system will enhance the efficiency of the ordering process, enabling customers to make informed decisions and enjoy a user-friendly shopping experience.

Non-functional requirements:

- Performance: The system should be able to handle a large number of users and requests at the same time without significant delays or crashes.
- Reliability: The system should be reliable, accurate and always available to customers. It should be able to store customer data and transaction information safely and securely.
- Security: The system must be secure and protect the customer's sensitive information, such as personal details, payment information, and order history, from unauthorized access or theft. The system should use encryption and other security measures to ensure the confidentiality, integrity, and availability of the data.
- Usability: The user interface should be easy to navigate, intuitive and user-friendly, even for non-technical users.
- Compatibility: The system should be compatible with all major web browsers, devices and operating systems to ensure that customers can access it from any device they prefer.

3.2) Inventory management. **Rathnayake M.D.M - IT21202636**

This function covers all the aspects related to managing inventory and item details in the mobile store. The inventory includes the accessories of all categories, received from the relevant suppliers and count of available items to sell. When the accessories are received, the item & stock manager **stores** the accessory category, date received, quantity received, count of the available item, supplier name (taken from the supplier tables) in the database. When the stocks are going down System indicates warning to inventory manager and inventory manager is inform it to supply manager to handle that situation.

The item card includes the name, price, description and availability(taken from the inventory table).when a new item stock is received, the manager **create** a new item card to show customer and store data in in the database

These data can be **modified** and **deleted** anytime from the database by the administrators. When an item goes out of stock, the administrators are notified through emails mentioning the item number, and item name that were sold out. When out of stock items are restocked back again, the quantities of the items are updated. When purchases are made, the count of the available items are automatically updated with relevance to the purchase tables. Manager also can edit the available item count manually. When an item is available in stocks, item card shows to customers as available and otherwise shows not available. If management thinks one item is not suitable for selling, they can also delete the item card.

The system allows administrators of the system to generate inventory related reports such as Item quantities purchased for a given month, accessories sell in a given time period, quantities of the items available at the end of the month. All item brands in each category.

Non-functional requirements:

- Availability – the item and stock manager should be able to handle all inventory information anytime they wish. Make sure the system is available 24x7
- Security - all inventory related details should be securely stored and should prevent third parties from accessing those data as they are sensitive details about the business
- Performance - the system should be fast, and the inventory management pages should be loaded fast
- Reliability - the system should generate error free information in order to make decisions
- Scalability- the manager should be given easy-to-use interfaces for easy access and easy navigation

3.3) Delivery Management M.G.T Rashmika - IT21167546

After the user has placed his order and paid for it, the delivery manager will know about it. Details about that order are displayed in the delivery manager's profile. Delivery manager m takes the details of the order from the user's database and starts the process of sending the order to the user by taking all the details such as the user's address and phone number from the database containing the user's order details and the user's details.
Then in the process of sending the order select the delivery guy and give him his details and order details and send the order.
Delivery guy is a person who is registered for this company and the registration process is done by the delivery manager. For example his name, phone number, address, and details of his vehicle are entered into the delivery guy database.

The user can see the delivery guy carrying the order, order details, delivery guy's details and currently updated interface about this order and by that the user can see the updated information of his order.

After delivering the order, the delivery guy signed a form that we provided to ensure that the customer received the order, after which the delivery guy returned the form to us and confirmed that the order was received by the customer and entered his order into the table named deliver database in the database. As a confirmation, the page that was updated as Order Pending will be updated as Order Complete.

Non-functional Requirements:

- Usability - The delivery manager should have an easy-to-use user interface, the customer will be shown a screen where he/she can track the order
- Reliability - The system should reflect accurate information in display pages and reports, free of junk data and duplicates.
- Availability - TThe CRUD operations should be always accessible to the delivery manager
- Security - Restrict sensitive functionalities such as create, update and delete to those who are not authorized.

3.4) Customer engagement Management. A.M.Y.S Abeykoon - IT21187896

Customer engagement management system provides the “Happy mobile phone” shop a range of activities that are aimed at ensuring that customers have a positive experience and are satisfied with the products and services provided by the Happy mobile phone shop.

Happy mobile phone shop provides an excellent customer service by addressing customer queries, concerns, and complaints in a timely and professional manner. There is a section to share Customer’s feedback and inquires. Once the inquiry is submitted, it assigned to the customer engage manager who will work to address the inquiry and provide response to the Customer via phone and email. If there is any issue with customer contacting details, it can be update through the system. This may improve the overall customer experience.

Customer can provide their ideas and feedback about purchased products. from which the user can gain insight into the item. The user can update and delete the feedback he has given.

Overall, the customer engagement manager plays a critical role in ensuring that the phone shop can build strong relationships with its customers and provide high-quality products and services that meet their needs.

Non-functional requirements:

- Performance: The system should be able to handle a large number of users and transactions without slowing down.

- Scalability: The system should be able to handle an increase in users and transactions without compromising on performance.

- Reliability: The system should be highly available and able to recover from any failures or disruptions.

- Security: The system should be secure and protect customer data from unauthorized access or hacking.

- Usability: The system should be easy to use and intuitive for customers, with clear navigation and simple workflows.

- Accessibility: The system should be accessible to users with disabilities, with features such as screen readers and keyboard navigation.

3.5) Supplier Management. **L.A.I Kumara - IT21180484**

As the stock in the warehouse runs low, organizations have to procure new stock. It is the responsibility of a Supply Manager to manage the suppliers who supply those goods in relation to our organization.

According to the request sent by the stock manager, a form is prepared to get the required stock. The form will be sent only to a few selected suppliers from the list of suppliers held by the supplier manager. Then the suppliers who received the form will send back their reply. According to the answers received, the Supplier Manager selects a Supplier.

Then the Supplier Manager can store information about the supplier's purchases based on the supplier's ID, description, quantity and price in the database.

All these suppliers must be registered in the system by adding details such as name, address, phone number etc. to the database by the Supplier Manager. When a supplier is successfully added to the system, a supplier ID will be generated.

Also, the Supply Manager has the authority to change supplier details as required and remove suppliers who are unnecessary or disruptive to the company.

Each product added to the database is assigned a product ID. The Supplier Manager can update these details to keep the system up to date.

A provider has a separate interface. A supplier profile must be created for each supplier added to the list. The supplier has to fill personal details like phone number, permanent address, email, name and they have the right to update their details.

Non-functional requirements:

- Simple and easy-to-understand interface
- Security of data.
- Speed of the process.
- Reliability of the system.

3.6) Employee Management System. Balamanage.T.G - IT20301118

This function covers all aspects of employees in this system.

The HR Manager will manually collect all the details of the employees including Employee ID Number, Name, National Identity Number, Email Address, Position, and Registration Date, and register them as employees in the system.

If an employee wants to edit the registration details, HR Manager will update the details accordingly. The HR manager can delete the records when the employee leaves the company. Employees can log into the system by providing their credentials.

Employees are given a unique username and password which they are allowed to change in the system. Employees come to the office in the morning and record their attendance in the system and the HR manager checks their attendance at the end of the month.

The system counted the total number of days they worked. Other employees can also see whether their attendance is marked or not when they log into the system. The HR manager will calculate the salaries of each employee through the system.

At the end of each month, the system generates employee-related reports containing all the necessary details such as attendance reports and salary reports.

Non-functional Requirements:

● Usability – The HR manager should have an easy-to-use user interface.

● Reliability – The system should generate reliable reports and display reliable information.

● Availability – The HR manager should be able to add, read, update, and delete details at any time if required.

● Security – Unauthorized parties should not be able to access employees' data

3.7) Repair Management system **Abisheka J. M.M - IT21212086**

Through a mobile repair management system, a tool that helps customers quickly and efficiently manage their hardware and software breakdowns. The responsibility of the repair manager overseeing the repair process of mobile devices including mobile phones, smartphones, tablets, and other mobile devices, it is also the responsibility of the contractor to ensure that the repair process goes smoothly and efficiently. They are usually the establishment of contact for customers who have problems with their devices and need repairs.

When a customer requests a repair, The technician can use the system to input the customer's personal details. Such as name, contact information, and address. Additionally, the technician can enter the repair details such as the model of the device, the serial number and the issue that needs to be resolved, and the estimated repair time. Once this information is entered into the system, it can be easily retrieved and viewed by the technician, allowing them to effectively manage the repair process.

Under the repair management system, technicians can update repair details. under different status categories, whether the device is "completed," "ongoing" or "progress". Also, a filter option can be provided in the system that allows technicians to filter devices based on their status. And the technician can quickly and easily find devices that are still in progress or have been completed. Once the repair is completed, the technician can update the status of the ticket to indicate that the device has been repaired. After that the system will automatically send an email to the customer, letting them know that their device is ready for pickup

The system will generate a monthly report that includes details about the number of devices that need to be repaired, the number of devices that have been completed and the number of devices that are on hold or paused.

As the main purpose under the repair management system, the staff can avoid repair delays and help to work effectively. Also Streamlining the mobile device recycling process can save time as well as money. From the initial diagnosis of the device problem to the consumer to the completion of the repair. They must ensure that repairs are completed on time and that customers are satisfied with the service they receive. As a result, the technician can construct insert, update, and remove crud functions.

Non-Functional Requirements

- **Performance:** The system should respond quickly to user input and process requests efficiently, even during peak usage periods**.**
- **Reliability:** The system should be always reliable and available with minimal downtime for maintenance or upgrades. The system should be able to recover from errors without losing data.
- **Maintainability:** The system should be easy maintain and update, with clear documentation and module design.
- **Security:** The system should protect user data and sensitive data from unauthorized access, data breaches and other security risks. User authentication and data encryption should be implemented.
- **Usability:** The system is easy to use and navigate with a clear and intuitive interface. It should be accessible to users with varying levels of technical expertise.

3.8) Finance management. Isheni M.A.K. - IT21321122

Finance management handles all the financial activities in the system. This is not a requirement for the customers of this system. Financial management only satisfies the state holders who are employees of this system. These stakeholders can be supplier manager, item and stock manager, repair manager, delivery manager, employee manager. The finance management user will only be able to use finance related functions.

One of the features of this system is to **calculate the value of income** in the mobile shop.

For this data will be retrieved from the inventory tables and the sum of the values of items left in stock will be calculated and displayed to be viewed by the user. All the transaction data will also be retrieved from order management tables. This is for the finance manager to **view successful transactions**. In the main UI of the financial management page there will be a main dashboard for the users to **view essential quick information**. Daily transactions, sum of daily sales, number of successful transactions, sum of unsuccessful transactions**,** etc. for this cart management tables data from number of transactions, sales amounts, count of successful transactions, count of unsuccessful transactions will be taken.In addition to that get data from the repair table and delivery tables what are are the income details of mobile shop.

Expenses play a major role in terms of the financial status of the mobile shop. So, it's up to the finance manager to keep a very close eye on the expenses of the business. To **maintain records of the expenses** to become easier for the finance manager we have **made a separate segment to enter expenses**. It is up to the finance to look up for expenses and upload them. There will be a separate UI for the user to enter the expenses. The finance will need to **enter the details about the reason why the expense is done**, in which type the expense was paid (cash or by credit) and the date if the expense date was not on that date. These will be recorded in the database for the final report.

At the end of the day the finance manager needs to reach the expectations of calculating the profits and losses of the business. Therefore, the finance manager can take crucial business decisions so that the company can have a stable financial status. For this to be easy the system will **generate a monthly financial report**. This monthly report will be very helpful for the finance manager to do his task. Before the final report will be available the finance manager can **edit the report** if needed. This can happen when exceptions are to be made regarding expenses or sales in the business. if the owner decides to bring in capital to the business some of the expenses can be deducted from the expenses list. Also, the value of the access also increases. Although the final report is available at the end of the month, **the report is updated regularly with the data that comes into the system**. Therefore, if required the necessary updates can be made by the finance manager. For the finance manager to make the required updates there will be a separate UI for **updating the report**. Up to now these are features that have been planned to be implemented and the feature which was specified by the clients. If there are features that are required for a user-friendly experience, they will be added with the acknowledgment of the clients.

Non-functional requirements:

● Usability - the finance manager and the product owner must be able to use the system without any inconvenience.

● Security - the data in this section must be secured as they are very confidential data ofthe business.

● Performance - This section in the system must work with high speed and slowing down when doing two will cost the users with time.

● Reliability - The finance management section must work without any breakdown so that the users can carry out their tasks

Technical Requirements

- Internet Connection required.
- High data quality required.
- Human error detection - The application must be able to detect when people have made errors and notify and advise about such discrepancies. Ex: JavaScript data validations etc.
- Technical devices are required - A PC or mobile.
- Technical knowledge is required to navigate through the web application.

Literature Review

Why is a web application suitable according to the identified client requirements?

Happy mobile is a local based online mobile store for which the client needs an application that suits its unique business requirements. The application needs to be developed according to a tight allocated budget, within a limited time period, as it is yet a small-scale business in Sri Lanka. Both the customers and the employees of the online store should be able to access the system through the same web solution. This online store needs to be easily reached out to a large customer base, and the employees of the store need to be able to manage and update the online store in an easier and more efficient manner.

4.1) Possible solutions reviewed and compared.

Purchasing Predefined System

Benefits –

- Speed - system can develop less time duration because development team weight will be reduced.
- Price - Customer cost will be reduced because of development time not long.

Drawbacks -

- Implementation issues - It's hard to adapt to a completely different environment for a company.
- Requirements changes - Exact requirements are not meets because requirement engineering section not covered as well.
- Users need to download or install specific tools to run a predefined System.
- Updates are not easy - Users may have to face different kind of issues updating system parts.

Develop specific System

Benefits-

- Catch exact requirements - System is developed for exact company requirements
- Easy to launch - every evolutions are going with company needs. So easy to adapt environment
- No need to download or install and can be accessed through a web browser - Users can open web applications on mobile browsers or desktop browsers without having to install apps.
- No storage required on devices
- Always up to date - Updates are fast because developers must push them to a server, so users see them instantly.

Drawbacks

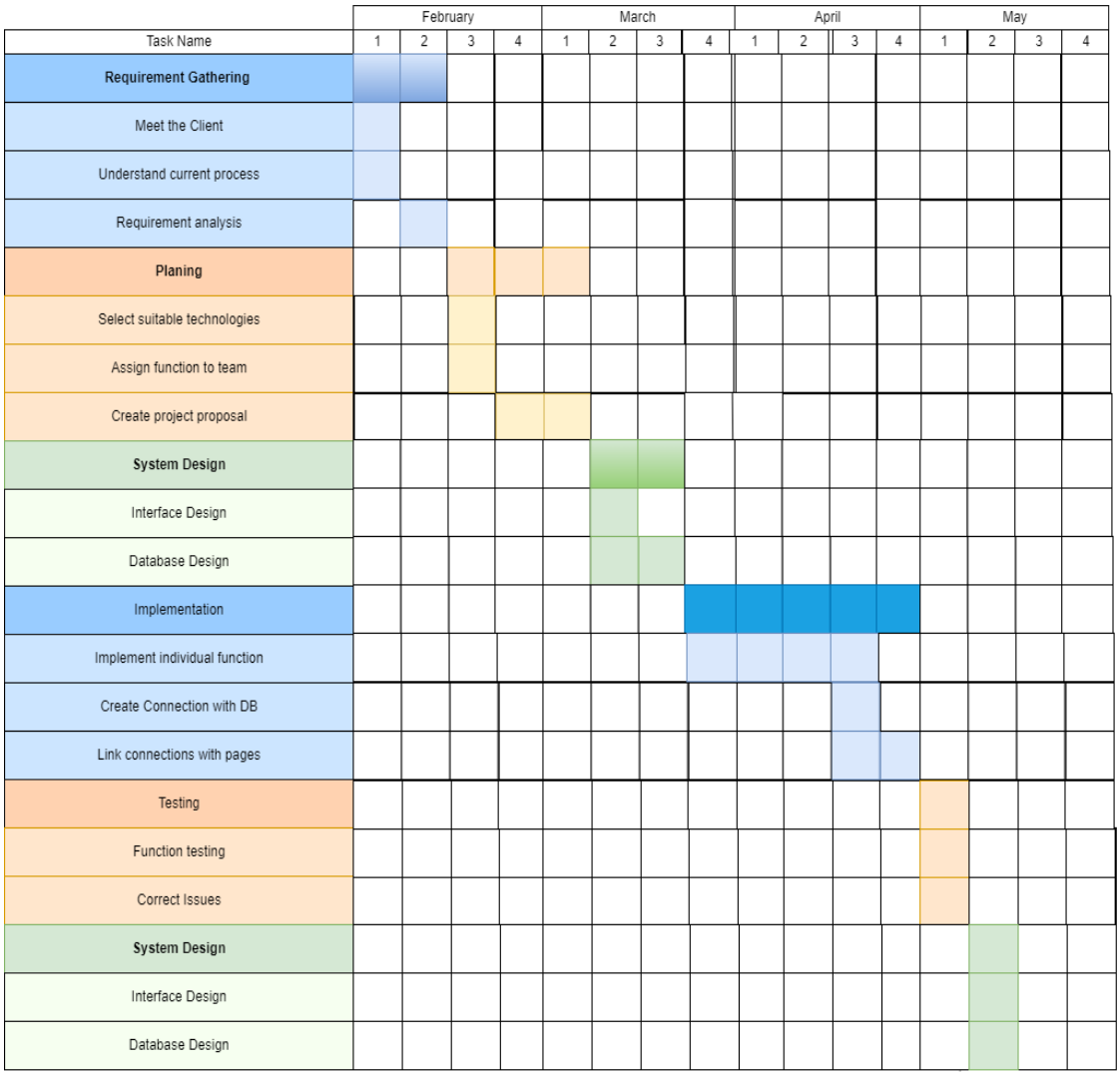
- time consuming - have to spend more time developing from beginning.
- cost - client have to spend more cost for hire developing team because developing team contribution and duration is more higher

After reviewing and comparing the above benefits and drawbacks of both Specific and pre defined applications, we can conclude that the Specific web application is much more suitable for the requirements stated by the client.

Methodology

	Methods
Requirement Engineering methods	Gather requirements by meeting up with the client Clarifying the doubts regarding the requirements by contacting the client.
Design methods	Wireframes - mock flow, Figma.
Development tools and technologies	Front-End Framework - React(.js) Back-End Framework - Express(.js) JavaScript runtime environment - Node(.js) Database Management System - MongoDB (Cross Platform document-oriented database)
Testing methods	Database connectivity – Postman. White box testing - JSUnit.net. Black box testing.
Integration methods	GitHub version control

Gantt Chart


February
March
April
May
Task Name
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
Requirement Gathering
Meet the Client
Understand current process
Requirement analysis
Planing
Select suitable technologies
Assign function to team
Create project proposal
System Design
Interface Design
Database Design
Implementation
Implement individual function
Create Connection with DB
Link connections with pages
Testing
Function testing
Correct Issues
System Design
Interface Design
Database Design

Work Breakdown Structure

	Student ID & Name with Initials	Work distribution
	Wishvajith S.A.S (IT21221378)	• Customer ordering system • Gantt chart. • Finalizing the document. • Designing the cover page.
	Rathnayake M.D.M (IT21202636)	• Inventory management. • Gantt chart. • Aims and objectives. • Literature review.
	Balamanage.T.G (IT20301118)	• Employee management. • Gantt chart. • Problems and motivations. • Table of content.
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	Isheni M.A.K. (IT21321122)	• Finance Management. • Gantt chart. • Problems and motivation. • Finalizing the document.
	L.A.I Kumara (IT21180484)	• Supplier Management. • Gantt chart. • Introduction • System Overview
	Abisheka J. M.M (IT21212086)	• Repair Management. • Problems and Motivations • Aims and Objectives