

# **IBM - NALAIYATHIRAN PROJECT**

## **INVENTORY MANAGEMENT SYSTEM FOR RETAILERS**

### **PROJECT REPORT DOCUMENTATION**

**TEAM ID: PNT2022TMID35256**

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# **1. INTRODUCTION**

## **1.1 PROJECT OVERVIEW**

A computerized application called an inventory management system (IMS) assists firms in keeping track of and managing their inventories. Businesses can lower their inventory expenses and increase supply accuracy and timeliness by using an IMS. Businesses use an IMS for a variety of things, including suppliers, finished goods, and raw materials. The majority of IMS applications have tools for shipping, receiving, and order management. Numerous systems additionally have reporting features including monthly business reviews and sales and operations planning reports (S&OP) (MBR). Some systems are also created for particular sectors of the economy, such industry and healthcare. Retail IMS systems can automate the ordering and tracking of goods and are designed for small enterprises with little funding and resources. producers and substantial wholesalers often purchase more robust IMS systems that are designed specifically for their needs.

An inventory management system is in charge of making sure that customers may purchase the appropriate product in the right amount at the right time and price. An effective IMS will assist increase productivity, save expenses, and lessen the chance of obsolescence or excess inventory. It can be difficult to implement an IMS since many firms find it difficult to manage their inventories effectively without a committed resource. However, a clear plan and effective implementation techniques can help to guarantee a positive result. Understanding the advantages and disadvantages of the system is the first step in putting a new inventory management system into place.

## **1.2 PURPOSE**

An inventory management system's major objective is to assist businesses in keeping track of the number, location, and state of all goods. Decisions about resource allocation and when to place new product orders can then be determined to use this information. Systems for inventory management can also assist businesses in reducing the amount of inventory they have, which can save money and boost earnings.

Inventory needs will increase as your business expands. The complexity of your inventory will increase as products arrive from various vendors and warehouses. It will be tough and time-consuming to manage your inventory manually, which will make it impossible for you to keep enough stock on hand to meet client demand and expand your business.

## 2 . LITERATURE SURVEY

### 2.1 EXISTING PROBLEM

The inability to track inventory in real time is one issue that plagued the majority of systems. This is due to a lack of integration between the systems and the point-of-sale system. This indicated that the inventory was not continuously updated. Sales and profits were lost as a result of this.

### 2.2 REFERENCES

- [Research paper on Inventory management system](#)
- [Inventory management efficiency analysis: A case study of an SME company](#)
- [A Study of Inventory Management System - Case Study](#)
- [Informative Review on Inventory Control System](#)
- [Improvement of Inventory Management System Processes by an Automated Warehouse Management](#)
- [Study of Smart Inventory Management System Based on the Internet of Things \(IOT\)](#)
- [Research and Design of the Intelligent Inventory Management System Based on RFID](#)

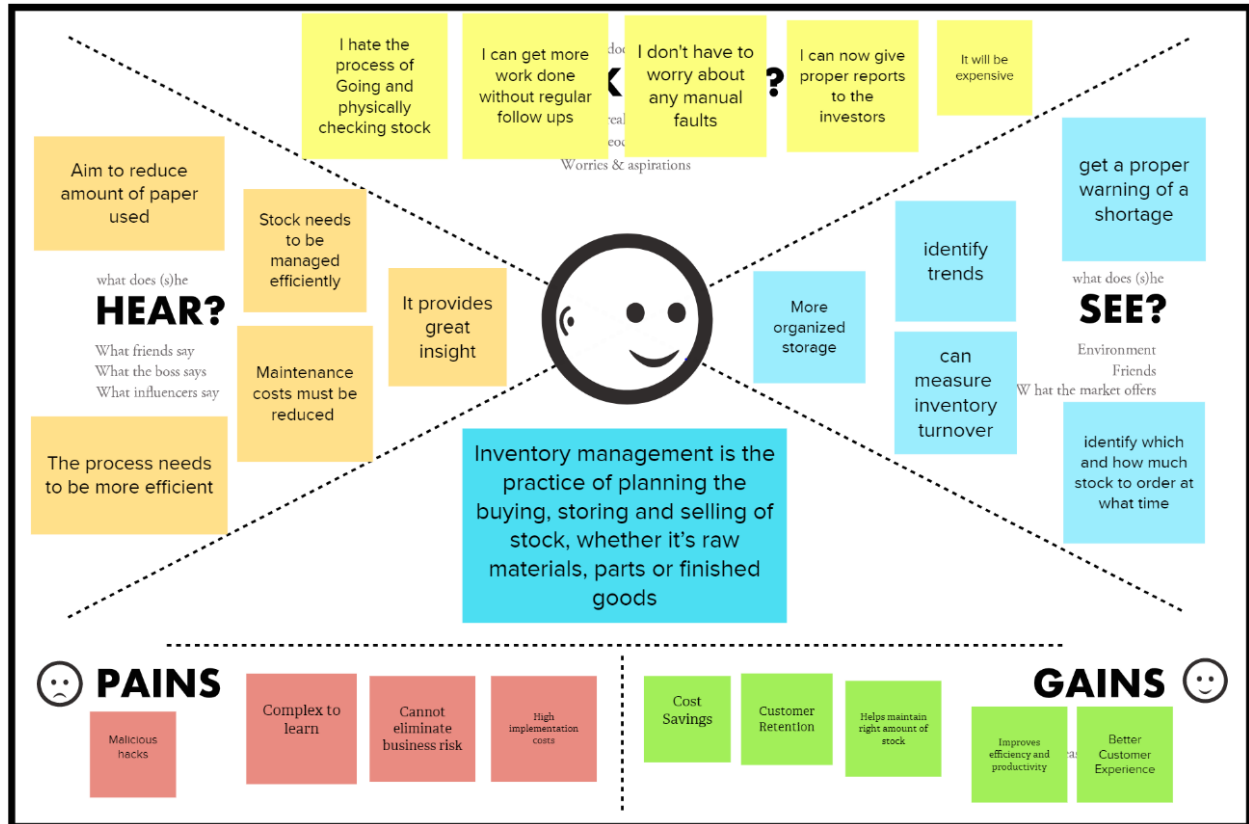
## 2.3 PROBLEM STATEMENT DEFINITION

The main objective of this project is to provide a desktop-based application that allows retailers to monitor all Inventory related information, including stock management, sales data and purchase information. The application allows the retailers to manage their products flexibility and have complete insight into what is stored in their inventory, and request additional stock as and when needed.

|                       |  |
|-----------------------|--|
| <b>I am</b>           | Retailers and Customers  |
| <b>I'm trying to</b>  | Have more insights on stocks and their availability to increase productivity                               |
| <b>But</b>            | Manual management of the stocks are difficult and existing systems aren't much flexible                    |
| <b>Because</b>        | Too much stock items cause bigger problems and current systems are obsolete                                |
| <b>Which makes me</b> | Want to create better inventory management system and increase the accuracy and flexibility of the vendors |

## 3. IDEATION & PROPOSED SOLUTION

### 3.1 EMPATHY MAP AND CANVAS



### 3.2 IDEATION & BRAINSTORMING



# Team Gathering, Collaboration and Select the Problem Statement



## Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes



### Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.



### Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.



### Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) →



## Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

### PROBLEM

How might we design an inventory management system?



## Key rules of brainstorming

To run an smooth and productive session



Stay in topic.



Encourage wild ideas.



Defer judgment.



Listen to others.



Go for volume.



If possible, be visual.

## Brainstorm

Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

### Ashwin

|   |                                    |                                    |
|---|------------------------------------|------------------------------------|
| Send Mail when minimum stock limit is reached | Enhanced user interface            | Periodic Analysis of Sales Reports |
| Managing customer feedback                    | Maintain proper product categories | Tax Calculations                   |

### Rahul

|                                       |                                      |                          |
|---------------------------------------|--------------------------------------|--------------------------|
| Analyze low and high selling products | Display graphs to show clear picture | Provide product insights |
| Enabling customer return policy       | Monitor products for cost changes    | Managing multiple orders |

### Krishna Teja

|                                  |                                   |                                       |
|----------------------------------|-----------------------------------|---------------------------------------|
| Avoid overstocking of products   | Enable remote access of software  | Managing customer account             |
| Maintain records for the product | Enabling Multiple Payment Options | Occasional discounts for the products |

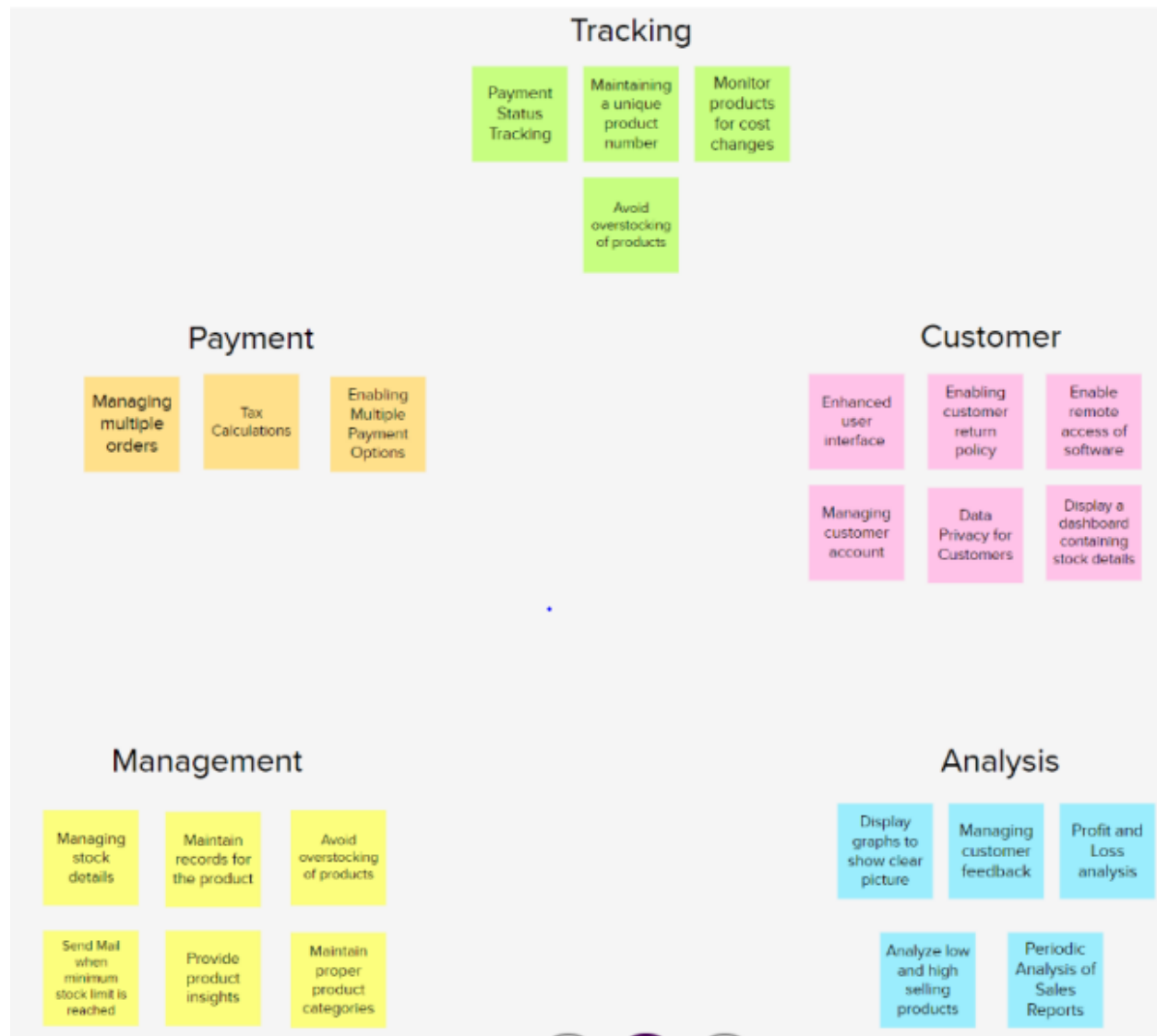
### Vignesh

|                            |  |                          |
|----------------------------|--|--------------------------|
| Data Privacy for Customers | Maintaining a unique product number          | Payment Status Tracking  |
| Managing stock details     | Display a dashboard containing stock details | Profit and Loss analysis |

## Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

🕒 20 minutes

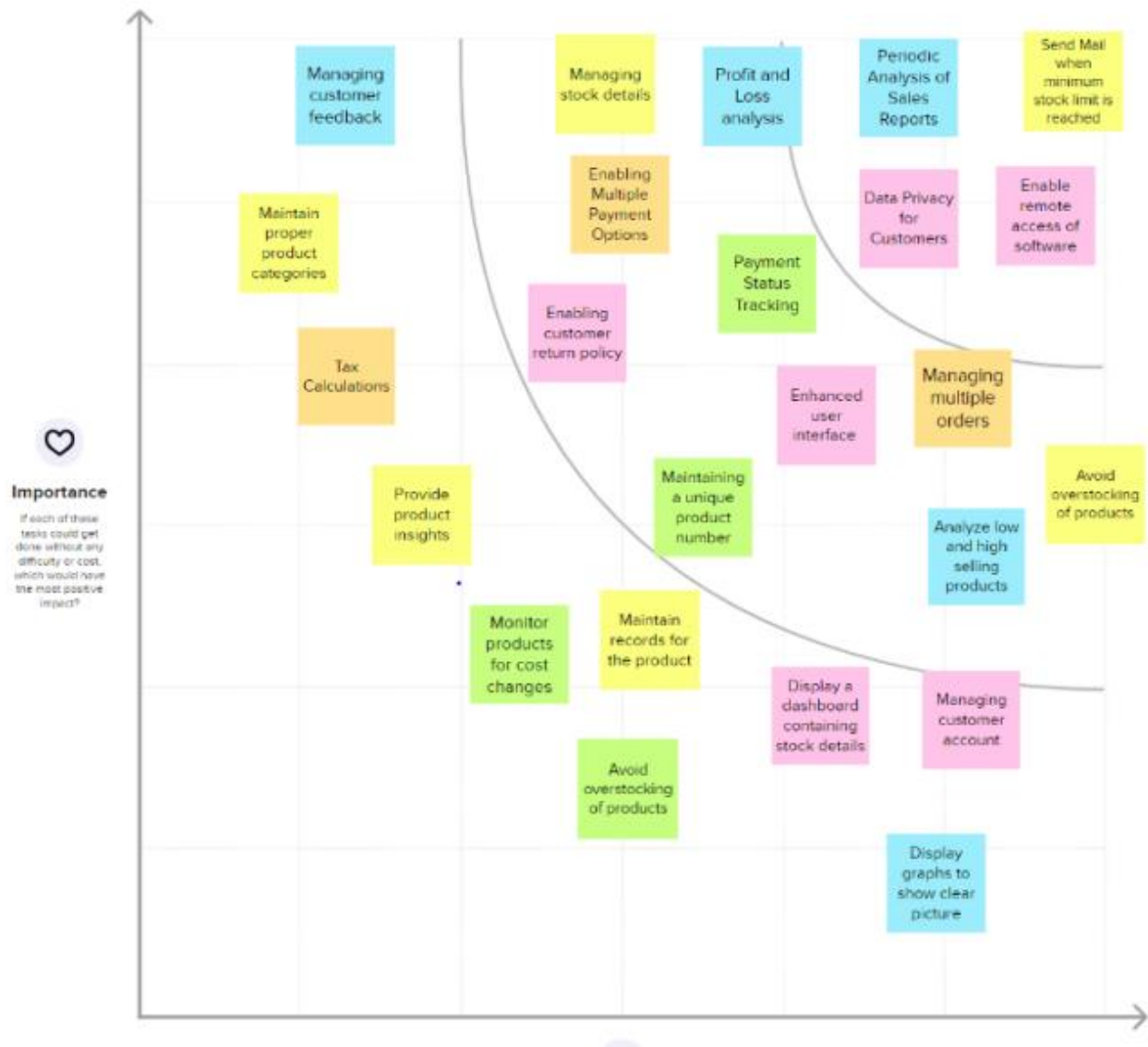


4

## Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

⌚ 20 minutes



### 3.3 PROPOSED SOLUTION

| S.No. | Parameter                                | Description  |
|-------|--|--|
| 1.    | Problem Statement (Problem to be solved) | How to provide a systematic system that not only records data but also allows for easier arrangement of the inventory mainly from the retailer's end?  |
| 2.    | Idea / Solution description              | <p>The application mainly focuses on helping the retailers track and manage stocks of products. The System will ask the retailers to create their accounts by providing essential details. Retailers can access their accounts by logging into the application. After they login in, they can update the details of a stock that they possess and also add a product/stock with relevant details.</p> <p>They can view details of the current inventory. The System will automatically send an email alert to the retailers if there is no stock found in their accounts so that they can order new stock.</p> |

|    |                      |  |
|----|----------------------|--|
| 3. | Novelty / Uniqueness | <p>Providing a user-friendly environment to maintain the stock by</p> <p>-&gt; Display of Dashboard containing stock details</p> <p>-&gt;Report on weekly or monthly basis</p> <p>Apart from the standard features of the inventory management system like handling products, warehouses, locations we also plan to include the feature of sales prediction using regression and the previous sales data within our application.</p> |
|----|----------------------|--|

|    |                                       |  |
|----|---------------------------------------|--|
| 4. | Social Impact / Customer Satisfaction | <p>This system can have a positive impact on social life. This system improves the Management of resources and reduces excess inventory and thus reduces the wastage of products. It is also easy to use and can arrange the inventory with efficiency. It also improves the relationship with vendors and suppliers and can negotiate better deals with the suppliers by knowing the demand beforehand.</p> |
| 5. | Business Model (Revenue Model)        | <p>Retailers can order the right amount and type of stock at the right time with the aid of an inventory management system. It eliminates the unnecessary expense for the retailers.</p>   |

|    |                             |   |
|----|-----------------------------|---|
| 6. | Scalability of the Solution | A scalable cloud architecture is made possible through virtualization. Unlike physical machines whose resources and performance are relatively set, virtual machines (VMs) that we use in IBM cloud are highly flexible and can be easily scaled up or down |
|----|-----------------------------|---|

# 3.4 PROBLEM SOLUTION FIT

Project Title: Inventory Management for Retailers

Project Design Phase-I - Solution Fit Template

Team ID: PNT2022TMD35256

|                        |  |   |  |                           |
|------------------------|--|---|--|---------------------------|
| Define CS, fit into CC | <b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span><br>Who is your customer?<br>The concerned inventory system involves an unreliable supplier, a retailer, and customers. The retailer adopts a continuous-review inventory policy. The primary level of customers will be customers. The secondary customers will be suppliers and retailers.  | <b>6. CUSTOMER CONSTRAINTS</b> <span>CC</span><br>What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.<br>Managing inventory is a daunting task. Common types of resource constraints include limits on raw materials, machine capacity, workforce capacity, inventory investment, storage space, or the total number of orders placed. The major constraints for the suppliers is warehouse efficiency. The challenge is to perform all these tasks in the most efficient way possible.  | <b>5. AVAILABLE SOLUTIONS</b> <span>AS</span><br>Which solutions are available to the customers when they face the problem? or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking<br>Centralized Tracking of software that provides automated features for re-ordering and procurement providing cloud-based databases for accurate, automatic inventory updates and real-time data backup. Frequent stock auditing processes, reduce error and provide more accurate, up-to-date inventory data for managing cash flow. Use inventory management systems with warehouse management features to optimize storage space and inventory flow. | Explore AS, differentiate |
|                        | <b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <span>J&amp;P</span><br>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides<br>The main problem is to provide an optimized and efficient Inventory Management application to the retailers for stock maintenance for any organization  | <b>9. PROBLEM ROOT CAUSE</b> <span>RC</span><br>What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the change in regulations.<br><ul style="list-style-type: none"> <li>Consistent stockouts</li> <li>Low rate of inventory turnover</li> <li>High amount of working capital</li> <li>High cost of storage</li> </ul>   | <b>7. BEHAVIOUR</b> <span>BE</span><br>What does your customer do to address the problem and get the job i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)<br><ul style="list-style-type: none"> <li>The customer has to maintain their own warehouse to stock their products, manually manage the data Regarding the stocks i.e. manual inventory tracking and adequate forecasting i.e. identify appropriate sales trends, best item selling, and sales behavior.</li> <li>The primary reason to address the problem in the customer who wants proper inventory management to manage the stock</li> </ul>             |                           |
| Identifying TR & EM    | <b>3. TRIGGERS</b> <span>TR</span><br>What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.<br>The retailer using the software makes good productivity. This makes the other retailers also to use the same software.<br><b>4. EMOTIONS: BEFORE / AFTER</b> <span>EM</span><br>How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure > confident, in control - use it in your communication strategy & design.<br><ul style="list-style-type: none"> <li>Using manual paperwork and process will consume lot of time.</li> <li>Using software to manage inventory will cut down on time it takes to process, audit and track our merchandise. With one interface, we can check the stock amounts on all your inventory, track what's selling and what's not, find vendor information.</li> </ul> | <b>10. YOUR SOLUTION</b> <span>SL</span><br>If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.<br>If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.<br><ul style="list-style-type: none"> <li>This project is aimed at developing a desktop-based application named Inventory Management System for managing the inventory system of any organization.</li> <li>This system can be used to store the details of the inventory, stock maintenance, update the inventory based on the sales details, and generate inventory reports weekly or monthly based</li> </ul> | <b>8. CHANNELS of BEHAVIOUR</b> <span>CH</span><br><b>8.1 ONLINE</b><br>What kind of actions do customers take online? Extract online channels from #7<br>The actions taken by the customer in the ways of online is that storing the details of the inventory, stock maintenance, update the inventory based on the sales details, and generate inventory reports weekly or monthly based.<br><b>8.2 OFFLINE</b><br>What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.<br>Managing inventory with paperwork and manual processes is tedious and not secure. And it doesn't easily scale across multiple warehouses with lots of stock.   | Identifying TR & EM       |



## 4. REQUIREMENT ANALYSIS

### 4.1 SOLUTION & TECHNICAL REQUIREMENTS

#### Functional Requirements:

Following are the functional requirements of the proposed solution.

|   | Functional Requirement             | Sub-Task  |
|---|------------------------------------|---|
| 1 | User Registration                  | Mail-in registration /Using a form to register                                    |
| 2 | User Confirmation                  | Call/OTP/Email confirmation   |
| 3 | Logging in                         | Enter the essential credentials to access the application (email ID and password) |
| 4 | Dashboard                          | View the products details (Name, description, quantity)                           |
| 5 | Adding items to the Inventory list | The inventory can be updated by users with items they want to purchase.           |
| 6 | Updating of stock                  | Increasing the availability of a specific product                                 |

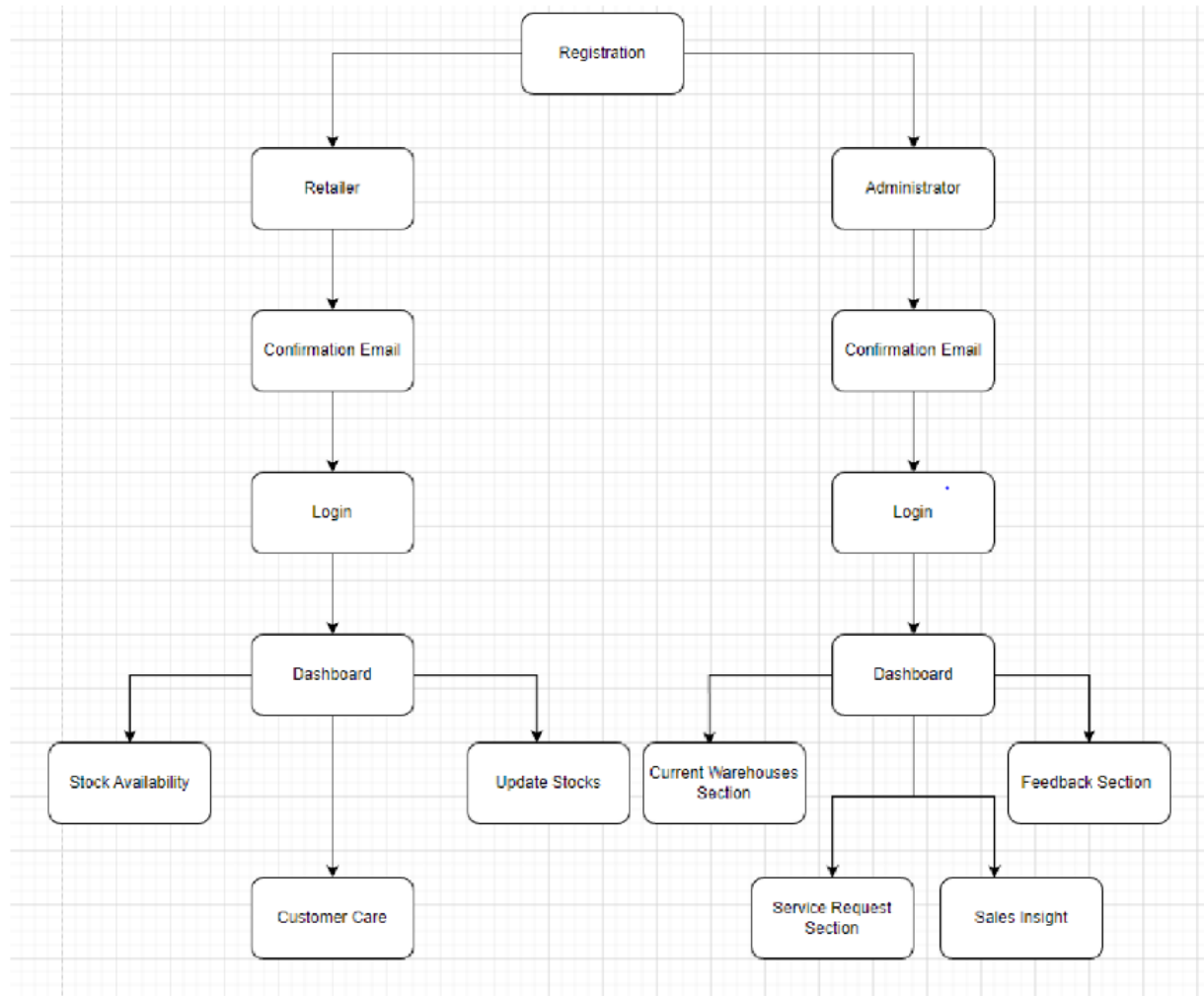
**Non-functional Requirements:** Following are the non-functional requirements of the proposed solution.

|   | Non-Functional Requirement | Description   |
|---|----------------------------|---|
| 1 | Usability                  | <p>If the system has a steep learning curve, the organisation in need of an inventory management system is unlikely to purchase it.</p> <ul style="list-style-type: none"><li>• The user interface is straightforward and simple to use.</li><li>• The design and colours are consistent.</li><li>• The websites are mobile-friendly and responsive.</li><li>• Email delivery must be quick.</li></ul>    |
| 2 | Security                   | <p>Security refers to the safety and management of the inventory of a company such that only authorised personnel are allowed to access them.</p> <ul style="list-style-type: none"><li>• Login system is used to provide authentication.</li><li>• Users need to create account and verify it with their email OTP.</li><li>• Cookie based security is user for authentication on client side.</li></ul> |

|   |              |  |
|---|--------------|--|
| 3 | Reliability  | <ul style="list-style-type: none"> <li>• To ensure that the app functions properly even when mistakes occur during runtime, exception handling will be done at the code level.</li> <li>• To ensure sustained operation, many instances of the App would be online.</li> </ul>   |
| 4 | Performance  | <p>The efficiency with which various tasks in an inventory management system can be completed determines its performance.</p> <ul style="list-style-type: none"> <li>• Reduces manpower, costs, and time. When stocks are unavailable, emails will be issued automatically.</li> <li>• Improves the efficiency of the business process.</li> <li>• Enhances the performance of organisations.</li> <li>• Even at minimal bandwidth, it will perform quickly and securely.</li> </ul> |
| 5 | Availability | The use of IBM DB2 ensures high availability   |
| 6 | Scalability  | <p>An inventory management system's scalability relates to the expansion of its activities.</p> <ul style="list-style-type: none"> <li>• DB2 is extremely scalable.</li> <li>• By reusing the code, the code is created effectively to allow for the addition of new features with few adjustments. Docker, which is very scalable, is utilised in the IBM Container Registry.</li> </ul>  |

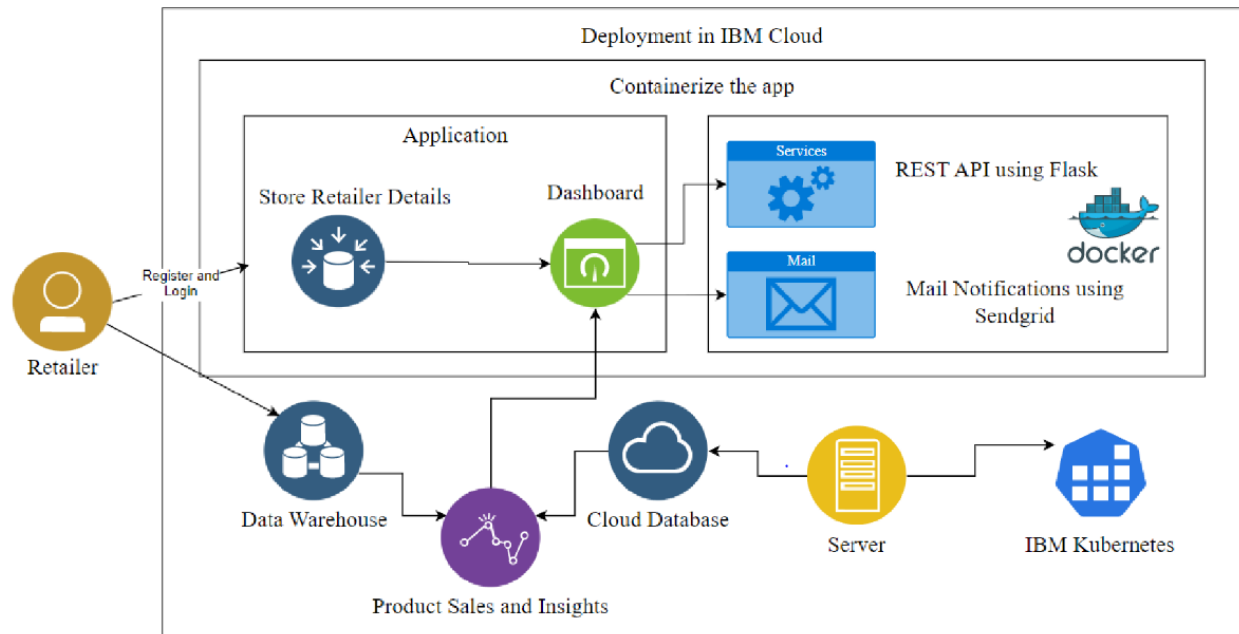
# 5. PROJECT DESIGN

## 5.1 DATA FLOW DIAGRAMS



## 5.2 TECHNICAL ARCHITECTURE

**Solution Architecture Diagram:**



## 5.3 USER STORIES

| User Type           | Functional Requirement (Epic) | User Story Number | User Story / Task   | Acceptance criteria   | Priority | Release  |
|---------------------|-------------------------------|-------------------|---|---|----------|----------|
| Customer (Web user) | Registration                  | USN-1             | By providing my email address, a password, and a password confirmation, I can register for the application as a user. | I can access my account / dashboard   | High     | Sprint-1 |
|                     |                               | USN-2             | I can sign up for the application as a user by email.   | I can access my account / dashboard   | Medium   | Sprint-1 |
|                     | Confirmation                  | USN-3             | I will receive a confirmation email once I have registered for the application.                                       | I can get a confirmation for my email and password and create an authenticated account. | Medium   | Sprint-1 |
|                     | Login                         | USN-4             | By entering the registered email address and password, I can access the application as a user.                        | I can log onto the application with the verified email and password                     | High     | Sprint-1 |

|               |                          |       |   |  |        |          |
|---------------|--------------------------|-------|---|--|--------|----------|
|               | Dashboard                | USN-5 | As a user, I can view the products which are available.   | Once I log on to the application, I can view the inventory.  | High   | Sprint-2 |
|               | Stock Update             | USN-6 | I can add items to the stock list as a user that aren't listed in the dashboard.  | If any of the products are not available, as a user I can update the inventory.                    | Medium | Sprint-2 |
|               | Sales Prediction         | USN-7 | I can access a sales forecasting tool as a user, which will enable me to more accurately forecast the volume of orders. | The sales prediction tool should forecast the sales so that I, as a User, can order appropriately. | Medium | Sprint-3 |
| Administrator | Request to Customer Care | USN-8 | I can contact the Administrator as a user and request any assistance I need with services.                              | As a user, I can contact Customer Care and get support from them.                                  | Low    | Sprint-4 |
|               | Give feedback            | USN-9 | I should be able to report any difficulties I encounter.  | As user, I can give my support in my possible ways to the administrator and to the administration. | Medium | Sprint-4 |

## 6. PROJECT PLANNING & SCHEDULING

### 6.1 SPRINT PLANNING & ESTIMATION

| Sprint   | Functional Requirement (Epic) | User Story Number | User Story / Task  | Story Points | Priority | Team Members   |
|----------|-------------------------------|-------------------|--|--------------|----------|--|
| Sprint-1 | Registration                  | USN-1             | As a user, I can register for the application by entering my email, password, and then confirming my password. | 5            | High     | Ashwin Menon,Krishna Teja,Rahul Reddy Mora Reddy,Vignesh Kumar K |
| Sprint-1 |                               | USN-2             | As a user, I can register for the application through email.   | 3            | Medium   | Ashwin Menon,Krishna Teja,Rahul Reddy Mora Reddy,Vignesh Kumar K |
| Sprint-1 | Confirmation                  | USN-3             | As a user, I will receive a confirmation email once I have registered for the application.                     | 4            | Medium   | Ashwin Menon,Krishna Teja,Rahul Reddy Mora Reddy,Vignesh Kumar K |

| Sprint   | Functional Requirement (Epic) | User Story Number | User Story / Task   | Story Points | Priority | Team Members   |
|----------|-------------------------------|-------------------|---|--------------|----------|--|
| Sprint-1 | Login                         | USN-4             | As a user, I can log into the application by entering the registered email & password                           | 8            | High     | Ashwin Menon,Krishna Teja,Rahul Reddy Mora Reddy,Vignesh Kumar K |
| Sprint-2 | Dashboard                     | USN-5             | As a user, I can view the products which are available.   | 10           | High     | Ashwin Menon,Krishna Teja,Rahul Reddy Mora Reddy,Vignesh Kumar K |
| Sprint-2 | Stock Update                  | USN-6             | As a user, I can add products which are not available in the dashboard to the stock list.                       | 10           | Medium   | Ashwin Menon,Krishna Teja,Rahul Reddy Mora Reddy,Vignesh Kumar K |
| Sprint-3 | Sales Prediction              | USN-7             | As a user, I can get access to a sales prediction tool which will help me to better predict the order quantity. | 10           | High     | Ashwin Menon,Krishna Teja,Rahul Reddy Mora Reddy,Vignesh Kumar K |
| Sprint-4 | Administration                | USN-8             | As a user, I am able to get in touch with the Administrator and ask for whatever services I require help with.  | 10           | Low      | Ashwin Menon,Krishna Teja,Rahul Reddy Mora Reddy,Vignesh Kumar K |
| Sprint-4 |                               | USN-9             | I should be able to report any difficulties I experience to the administrator.                                  | 10           | Medium   | Ashwin Menon,Krishna Teja,Rahul Reddy MoraReddy,Vignesh Kumar K  |



## 6.2 SPRINT DELIVERY SCHEDULE

| Sprint   | Total Story Points | Duration | Sprint Start Date | Sprint End Date (Planned) | Story Points Completed (as on Planned End Date) | Sprint Release Date (Actual) |
|----------|--------------------|----------|-------------------|---------------------------|---|------------------------------|
| Sprint-1 | 20                 | 6 Days   | 24 Oct 2022       | 29 Oct 2022               | 20  | 4 Nov 2022                   |
| Sprint-2 | 20                 | 6 Days   | 31 Oct 2022       | 05 Nov 2022               | 20  | 15 Nov 2022                  |
| Sprint-3 | 10                 | 6 Days   | 07 Nov 2022       | 12 Nov 2022               | 10  | 22 Nov 2022                  |
| Sprint-4 | 20                 | 6 Days   | 14 Nov 2022       | 19 Nov 2022               | 20  | 19 Nov 2022                  |

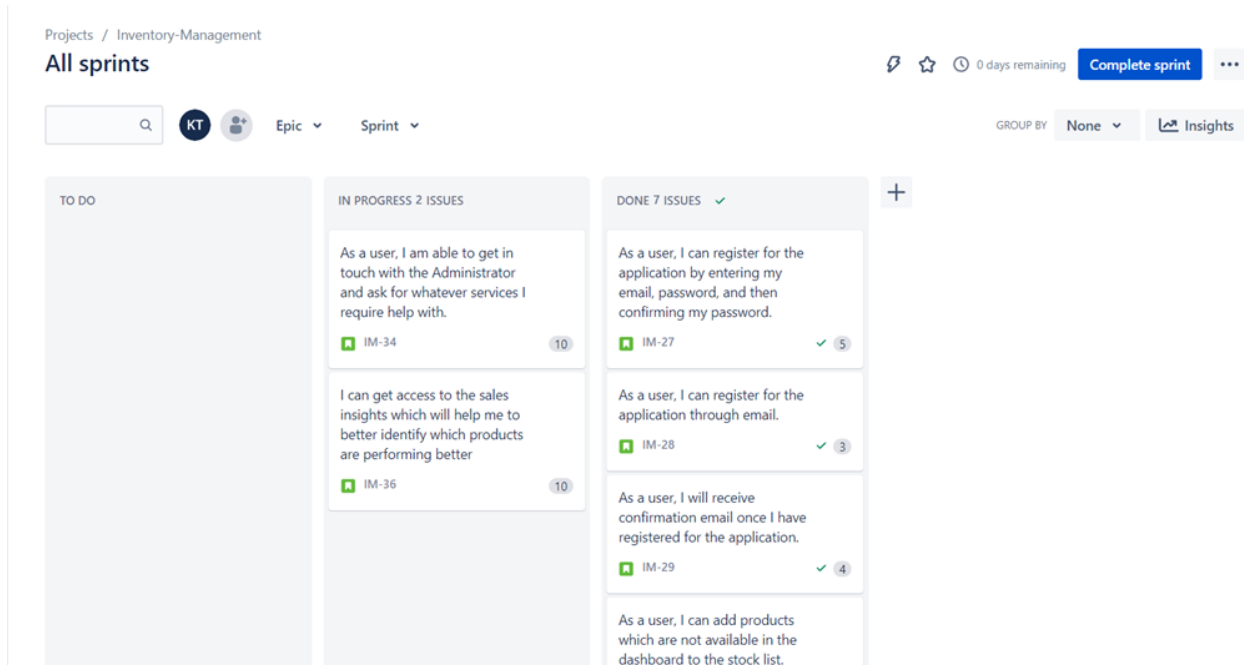
## 6.3 REPORTS FROM JIRA

### Creation of the backlog (issues) for the project:

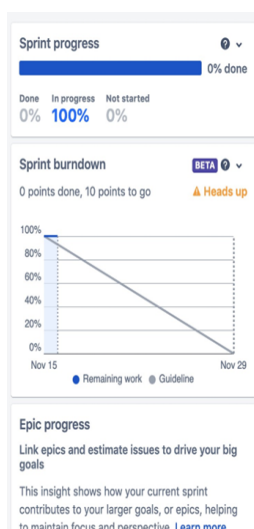
The screenshot displays four Jira sprints, each with a list of issues and their status. Each sprint header includes the sprint name, dates, issue count, and progress bars for 'To Do', 'In Progress', and 'Done' items. A 'Complete sprint' button and a menu icon are also present.

- IM Sprint 1** (26 Oct – 29 Oct, 3 issues):
  - IM-27: As a user, I can register for the application by entering my email, password, and then confirming my password. (5 points, DONE)
  - IM-28: As a user, I can register for the application through email. (3 points, DONE)
  - IM-29: As a user, I will receive confirmation email once I have registered for the application. (4 points, DONE)
- IM Sprint 2** (31 Oct – 5 Nov, 2 issues):
  - IM-37: As a user, I can log into the application by entering the registered email & password (8 points, DONE)
  - IM-38: As a user, I can view the products which are available (10 points, DONE)
- IM Sprint 3** (7 Nov – 12 Nov, 2 issues):
  - IM-33: As a user, I can add products which are not available in the dashboard to the stock list. (10 points, DONE)
  - IM-34: As a user, I am able to get in touch with the Administrator and ask for whatever services I require help with. (10 points, IN PROGRESS)
- IM Sprint 4** (14 Nov – 19 Nov, 2 issues):
  - IM-35: I should be able to report any difficulties I experience to the administrator. (10 points, DONE)
  - IM-36: I can get access to the sales insights which will help me to better identify which products are performing better (10 points, IN PROGRESS)

## Creation of the scrum boards for the project:



## Burndown for the project:



# 7.CODING & SOLUTIONING

## 7.1 FEATURE-1

Users can register or login through this dashboard

The screenshot shows a web dashboard for an 'Inventory System'. At the top, there is a dark header bar with 'Inventory System' on the left and 'Register Login' on the right. The main content area has a light blue background. In the center, the text 'Inventory Management System' is displayed in a large, bold, black font. Below this text are two dark blue buttons with white text: 'REGISTER' and 'LOGIN'.

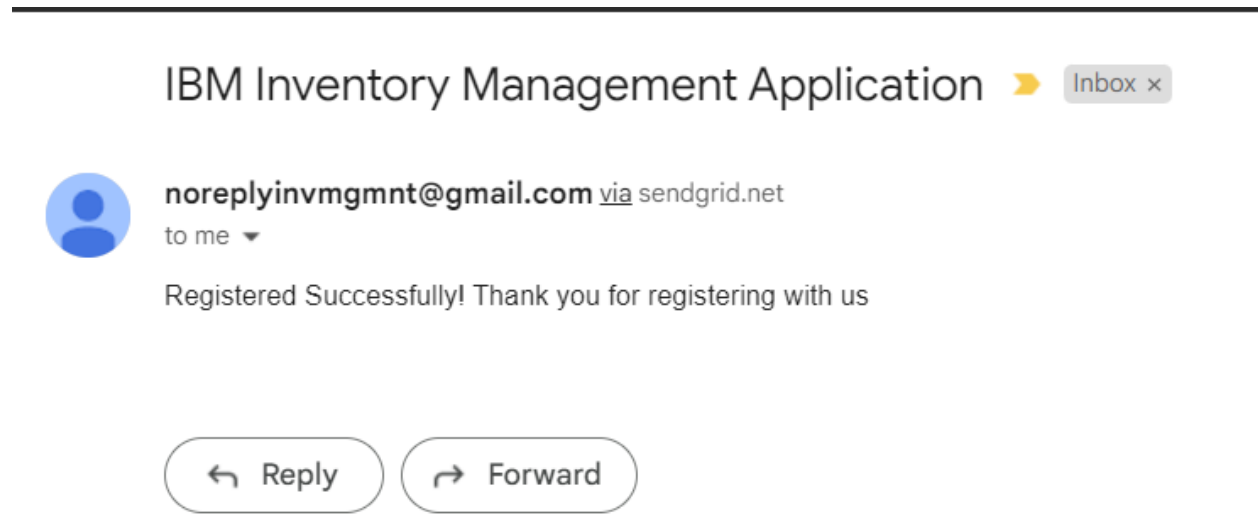
Used flask web framework to create an interactive dashboard

The screenshot displays a 'Stock Inventory' dashboard. At the top, a dark header bar contains 'Inventory System' on the left and 'Dashboard Orders Suppliers Profile Logout' on the right. Below the header, the title 'Stock Inventory' is centered. A table with five columns is shown: 'SID', 'STOCK\_NAME', 'QUANTITY', 'PRICE\_PER\_QUANTITY', and 'TOTAL\_PRICE'. The table contains four rows of data. Below the table, there are three white cards with rounded corners and shadows. The first card, 'Update Stock', has input fields for 'Enter Item' (with a placeholder 'Any Item'), a dropdown menu for 'Choose a field:' (with 'STOCK\_NAME' selected), and an 'Enter Value' field (with '0' entered). The second card, 'Add New Stock', has input fields for 'Enter the item' (with a placeholder 'Any Item'), 'Enter quantity' (with '0' entered), and 'Enter price' (with '0' entered). The third card, 'Remove Stock Item', has an input field for 'Enter the item' (with a placeholder 'Any Item') and a red 'Remove' button.

| SID | STOCK_NAME       | QUANTITY | PRICE_PER_QUANTITY | TOTAL_PRICE |
|-----|------------------|----------|--------------------|-------------|
| 4   | Samsing A52S     | 10       | 25000.0            | 375000.0    |
| 2   | Apple Iphone 12  | 5        | 30000.0            | 375000.0    |
| 6   | Apple Iphone 11S | 10       | 10000.0            | 100000.0    |
| 8   | Samsung M32      | 15       | 20000.0            | 300000.0    |

## 7.2 FEATURE-2

### Used sendgrid for autonomous mails



## 7.3 DATABASE SCHEMA

### User Table

| Table definition |           |          |        |       | :                        | x |
|------------------|-----------|----------|--------|-------|--------------------------|---|
| USERS            |           |          |        |       | No statistics available. |   |
| Name             | Data type | Nullable | Length | Scale |                          |   |
| USERNAME         | VARCHAR   | N        | 32     | 0     | 👁                        |   |
| EMAIL            | VARCHAR   | N        | 52     | 0     | 👁                        |   |
| PASSWORD         | VARCHAR   | N        | 52     | 0     | 👁                        |   |

## Inventory Stock Table

Table definition

: ✕

STOCK

No statistics available.

| Name               | Data type | Nullable | Length | Scale |   |
|--------------------|-----------|----------|--------|-------|---|
| SID                | INTEGER   | N        |        | 0     | 👁 |
| STOCK_NAME         | VARCHAR   | Y        | 350    | 0     | 👁 |
| QUANTITY           | INTEGER   | Y        |        | 0     | 👁 |
| PRICE_PER_QUANTITY | DOUBLE    | Y        |        | 0     | 👁 |
| TOTAL_PRICE        | DOUBLE    | Y        |        | 0     | 👁 |

## Orders Table

Table definition

: ✕

ORDERS

No statistics available

| Name          | Data type | Nullable | Length | Scale |   |
|---------------|-----------|----------|--------|-------|---|
| OID           | INTEGER   | N        |        | 0     | 👁 |
| STOCK_ID      | INTEGER   | Y        |        | 0     | 👁 |
| QUANTITY      | INTEGER   | Y        |        | 0     | 👁 |
| ODATE         | VARCHAR   | Y        | 30     | 0     | 👁 |
| DELIVERY_DATE | VARCHAR   | Y        | 30     | 0     | 👁 |
| PRICE         | DOUBLE    | Y        |        | 0     | 👁 |

## Suppliers Table

### Table definition

⋮ ×

SUPPLIERS

No statistics available.

| Name      | Data type | Nullable | Length | Scale |   |
|-----------|-----------|----------|--------|-------|---|
| ORDER_ID  | INTEGER   | Y        |        | 0     | 👁 |
| SNAME     | VARCHAR   | Y        | 80     | 0     | 👁 |
| SLOCATION | VARCHAR   | Y        | 300    | 0     | 👁 |

# 8.TESTING

## 8.1 TEST CASES

Testing can be verification and validation or reliability estimation. The primary objective if testing includes:

- To identify defects in the application.
- The most important role of testing is simply to provide information.
- To check the proper working of the application while inserting updating and deleting the entry of the products.

| Test case ID     | Feature Type | Component  | Test Scenario  | Pre-Requisite                            | Steps To Execute   | Test Data   | Expected Result  | Actual Result                | Status | Comments | TC for Automation(Y/N) | BUG ID | Executed By   |
|------------------|--------------|------------|--|--|--|---|--|------------------------------|--------|----------|------------------------|--------|---------------|
| HomePage_TC_001  | Functional   | Home page  | Verify user is able to move to the Register page to create a new account   | -  | 1.Enter URL and click go<br>2. Click on the Register button / Click on the Register link in navbar   | <a href="http://127.0.0.1">http://127.0.0.1</a>   | User should be navigated to the Register page  | Working as expected          | Pass   |          |                        |        | Ashwin Menon  |
| HomePage_TC_002  | Functional   | Home page  | Verify user is able to move to the Login page to create a new account      | -  | 1.Enter URL and click go<br>2. Click on the Login button / Click on the Login link in navbar   | <a href="http://127.0.0.1">http://127.0.0.1</a>   | User should be navigated to the Login page   | Working as expected          | Pass   |          |                        |        | Ashwin Menon  |
| HomePage_TC_003  | UI           | Home Page  | Verify the UI elements in the home page                                    | -  | 1.Enter URL and click go<br>2.Verify that below UI elements exist:<br>a.Register button<br>b.Login button  | <a href="http://127.0.0.1">http://127.0.0.1</a>   | Page should show below UI elements:<br>a. A blue Register button<br>b. A green Login button                              | All mentioned elements exist | Pass   |          |                        |        | Ashwin Menon  |
| LoginPage_TC_001 | Functional   | Login page | Verify user is able to log into application with their correct credentials | Account must exist                       | 1.Enter URL and click go<br>2. Click on the Login button<br>3.Enter Username and Password  | <a href="http://127.0.0.1">http://127.0.0.1</a><br>Username: testuser<br>Password: testpassword | Application should accept user credentials and user should be navigated to the dashboard                                 | Working as expected          | Pass   |          |                        |        | Rahul Reddy   |
| LoginPage_TC_002 | Functional   | Login page | Verify user is able to log into application with incorrect credentials     | Incorrect account details must not exist | 1.Enter URL and click go<br>2. Click on the Login button<br>3.Enter Username and Password  | <a href="http://127.0.0.1">http://127.0.0.1</a><br>Username: testuser<br>Password: testpass     | Application should show 'Incorrect email or password' validation message.  | Working as expected          | Pass   |          |                        |        | Rahul Reddy   |
| LoginPage_TC_003 | UI           | Login page | Verify the UI elements in the login page                                   | -  | 1.Enter URL and click go<br>2. Click on the Login button<br>3. Verify that below UI elements exist:<br>a. Username field<br>b. Password field<br>c. Login button<br>d. 'Signup now' link | <a href="http://127.0.0.1">http://127.0.0.1</a>   | Page should show below UI elements:<br>a. Username field<br>b. Password field<br>c. Login button<br>d. 'Signup now' link | All mentioned elements exist | Pass   |          |                        |        | Vignesh Kumar |



|                      |            |                |  |                                |   |  |  |                              |      |  |  |               |
|----------------------|------------|----------------|--|--------------------------------|---|--|--|------------------------------|------|--|--|---------------|
| RegisterPage_TC_001  | Functional | Register page  | Verify user is able to register to create a new account and get redirected to the login page                                 | Account must not already exist | 1. Enter URL and click go<br>2. Click on the Register button / Register link in navbar<br>3. Enter Name, Email, Username, Password, and Confirm Password  | <a href="http://127.0.0.1">http://127.0.0.1</a><br>Name: testname<br>Email: test@gmail.com<br>Username: testusername<br>Password: testpassword | New account should get created and user should be redirected to the login page   | Working as expected          | Pass |  |  | Vignesh Kumar |
| RegisterPage_TC_002  | UI         | Register page  | Verify the UI elements in the login page   |                                | 1. Enter URL and click go<br>2. Click on the Register button<br>3. Verify that below UI elements exist:<br>a. Name field<br>b. Email field<br>c. Username button<br>d. Password button<br>e. Confirm Password button  | <a href="http://127.0.0.1">http://127.0.0.1</a>  | Page should show below UI elements:<br>a. Name field<br>b. Email field<br>c. Username button<br>d. Password button<br>e. Confirm Password button<br>f. Submit button   | All mentioned elements exist | Pass |  |  | Vignesh Kumar |
| DashboardPage_TC_001 | Functional | Dashboard page | Verify if the user can update stock, add new stock, and remove stock   | Table must exist               | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Stock Update:<br>a. Enter item name, select a field and enter value.<br>b. Click on 'Update'<br>5. New Stock Addition:<br>a. Enter item name, quantity, and price | <a href="http://127.0.0.1">http://127.0.0.1</a><br>Item name: testitemname<br>value:0<br>quantity:100<br>price:100                             | Stock gets updated, new stock gets added, and stock gets removed   | Working as expected          | Pass |  |  | Krishna Teja  |
| DashboardPage_TC_002 | Functional | Dashboard page | Verify if the user cannot update non-existent stock, add already existing stock, or remove non-existent stock                | Table must exist               | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Stock Update:<br>a. Enter invalid item name, select a field and enter value.<br>b. Click on 'Update'<br>5. New Stock Addition:                                    | <a href="http://127.0.0.1">http://127.0.0.1</a><br>Item name: testitemname1<br>value:0<br>quantity:100<br>price:100                            | Respective error messages get shown  | Working as expected          | Pass |  |  | Krishna Teja  |
| DashboardPage_TC_003 | UI         | Dashboard page | Verify if the user is able to see a table of products along with functionality for updating, adding, and removing stock      | Table must exist               | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Dashboard page is displayed along with UI elements  | <a href="http://127.0.0.1">http://127.0.0.1</a>  | Page should show below UI elements:<br>a. A table of products<br>b. Three text fields and 'Update' button under Update Stock<br>c. Three text fields and 'Add Stock' button under Add New Stock                | All mentioned elements exist | Pass |  |  | Krishna Teja  |
| ProfilePage_TC_001   | Functional | Profile page   | Verify if the user can update their details and password   |                                | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Click Profile in navbar<br>5. Update user details and password  | <a href="http://127.0.0.1">http://127.0.0.1</a><br>Username: testusername<br>Password: testpassword  | User details and password should get updated   | Working as expected          | Pass |  |  | Ashwin Menon  |
| ProfilePage_TC_002   | UI         | Profile page   | Verify if the user is able to see their current details, and functionality to update their details and password              |                                | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Click Profile in navbar   | <a href="http://127.0.0.1">http://127.0.0.1</a>  | Page should show below UI elements:<br>a. Current user details with username, name, and email<br>b. Two text fields and 'Update' button under 'Update user details'<br>c. Three text fields and 'Update'       | All mentioned elements exist | Pass |  |  | Ashwin Menon  |
| SuppliersPage_TC_001 | Functional | Suppliers page | Verify if the user can update supplier, add new supplier, and delete supplier  | Table must exist               | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Click Suppliers in navbar<br>5. Supplier Update:<br>a. Enter name, select a field and enter value.<br>b. Click on 'Update'  | <a href="http://127.0.0.1">http://127.0.0.1</a><br>Supplier name: testsupplier<br>location: abc<br>Value: 100                                  | Supplier details get updated, new supplier gets added, and a supplier is deleted   | Working as expected          | Pass |  |  | Rahul Reddy   |
| SuppliersPage_TC_002 | Functional | Suppliers page | Verify if the user cannot update non-existent supplier, add already existing supplier, or remove non-existent supplier       | Table must exist               | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Click Suppliers in navbar<br>5. Supplier Update:<br>a. Enter invalid name, select a field and enter value.<br>b. Click on 'Update'<br>6. New Supplier Addition:   | <a href="http://127.0.0.1">http://127.0.0.1</a><br>Supplier name: testsupplier1<br>location: abc<br>Value: 100                                 | Respective error messages get shown  | Working as expected          | Pass |  |  | Rahul Reddy   |
| SuppliersPage_TC_003 | UI         | Suppliers page | Verify if the user is able to see a table of suppliers along with functionality for updating, adding, and deleting suppliers | Table must exist               | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Click Suppliers in navbar   | <a href="http://127.0.0.1">http://127.0.0.1</a>  | Page should show below UI elements:<br>a. A table of suppliers<br>b. Two text fields, a dropdown, and 'Update' button under Update Supplier<br>c. Two text fields, a dropdown, and 'Add Supplier' button under | All mentioned elements exist | Pass |  |  | Rahul Reddy   |
| OrdersPage_TC_001    | Functional | Orders page    | Verify if the user can create a new order, update an order, and cancel an order  | Table must exist               | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Click Orders in navbar<br>5. Order Creation:<br>a. Enter Stock ID, quantity<br>b. Click on 'Create'<br>6. Order Update:   | <a href="http://127.0.0.1">http://127.0.0.1</a><br>Stock ID: 12345<br>Order ID: 123<br>Quantity: 100<br>Value: 100                             | New order gets created, an order gets updated, and an order gets cancelled   | Working as expected          | Pass |  |  | Krishna Teja  |
| OrdersPage_TC_002    | Functional | Orders page    | Verify if the user cannot update a non-existent order, or cancel a non-existent order  | Table must exist               | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Click Orders in navbar<br>5. Order Update:<br>a. Enter invalid Order ID, choose a field, and enter value.<br>b. Click on 'Update'                                 | <a href="http://127.0.0.1">http://127.0.0.1</a><br>Stock ID: 12346<br>Order ID: 124<br>Quantity: 100<br>Value: 100                             | Respective error messages get shown  | Working as expected          | Pass |  |  | Vignesh Kumar |
| OrdersPage_TC_003    | UI         | Orders page    | Verify if the user is able to see a table of orders along with functionality for creating, updating, and cancelling orders   | Table must exist               | 1. Enter URL and click go<br>2. Click on the Login button<br>3. Enter Username and Password<br>4. Click Orders in navbar  | <a href="http://127.0.0.1">http://127.0.0.1</a>  | Page should show below UI elements:<br>a. A table of orders<br>b. Two text fields and 'Create' button under Create Order<br>c. Two text fields, a dropdown, and 'Update' button under Update Order             | All mentioned elements exist | Pass |  |  | Krishna Teja  |

## 8.2 USER ACCEPTANCE TESTING

### Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved.

| Resolution     | Severity 1 | Severity 2 | Severity 3 | Severity 4 | Subtotal |
|----------------|------------|------------|------------|------------|----------|
| By Design      | 3          | 2          | 2          | 1          | 8        |
| Duplicate      | 0          | 1          | 2          | 1          | 4        |
| External       | 1          | 3          | 2          | 1          | 7        |
| Fixed          | 4          | 2          | 3          | 15         | 24       |
| Not Reproduced | 0          | 0          | 1          | 1          | 2        |
| Skipped        | 1          | 0          | 1          | 1          | 3        |
| Won't Fix      | 2          | 3          | 2          | 1          | 8        |
| Totals         | 11         | 11         | 13         | 21         | 56       |

### Test Case Analysis

| Section           | Total Cases | Not Tested | Fail | Pass |
|-------------------|-------------|------------|------|------|
| Login             | 8           | 0          | 0    | 8    |
| Dashboard         | 19          | 0          | 0    | 19   |
| Db2 Database      | 9           | 0          | 0    | 9    |
| Flask Application | 4           | 0          | 0    | 4    |

# 9.RESULTS

## 9.1 PERFORMANCE METRICS

|      |                        |                   | NFT - Risk Assessment    |   |                   |  |   |                   |                               |
|------|------------------------|-------------------|--------------------------|---|-------------------|--|---|-------------------|-------------------------------|
| S.No | Project Name           | Scope/feature     | Functional Changes       | Hardware Changes                          | Software Changes  | Impact of Downtime                             | Load/Volume Changes                       | Risk Score        | Justification                 |
| 1    | Login Authentication   | New               | Moderate                 |   | Moderate          |  | >30 to 50 %                               | ORANGE            | Required feature              |
| 2    | Transaction Management | New               | High                     |   | Moderate          |  | >30 to 50 %                               | RED               | Indispensible feature         |
| 3    | Containerization       | New               | Low                      |   | Moderate          |  | >5 to 10%                                 | ORANGE            | Feature to make it deployable |
|      |                        |                   | NFT - Detailed Test Plan |   |                   |  |   |                   |                               |
|      |                        |                   | S.No                     | Project Overview                          | NFT Test approach | Assumptions/Dependencies/Risks                 | Approvals/SignOff                         |                   |                               |
|      |                        |                   | 1                        | INVENTORY MANAGEMENT SYSTEM FOR RETAILERS | Stress Test       | Proper internet Connection<br>User Credentials | Approved                                  |                   |                               |
|      |                        |                   | End Of Test Report       |   |                   |  |   |                   |                               |
| S.No | Project Overview       | NFT Test approach | NFR - Met                | Test Outcome                              | GO/NO-GO decision | Recommendations                                | Identified Defects (Detected/Closed/Open) | Approvals/SignOff |                               |

# **10.ADVANTAGES & DISADVANTAGES**

## **10.1 Advantages**

- Manage multiple warehouses.
- Reduce business cost.
- Greater productivity.
- Improve supply chain.
- Reduce cost overselling.

## **10.2 Disadvantages**

- This application is not suitable for those organizations where there is a large quantity of product and different levels of warehouses.
- This software application is able to generate only simple reports.
- Single admin panel is only made. It is not suitable for large organizations.

## **11. CONCLUSION**

In conclusion, the Inventory Management System for merchants is a straightforward web application ideal for SMEs. It has every component a fundamental inventory management system needs to function, and enterprises employ it. Our team has been successful in creating an application that allows us to update, insert, and delete items as needed. Our staff is adamant that, despite some restrictions, the adoption of this system will undoubtedly be advantageous to enterprises.

## **12.FUTURE SCOPE**

A system for keeping track of inventory changes, valuing items, and planning for future inventory levels are some of the additional uses for an inventory system. The inventory value at the end of each period serves as the basis for the financial reporting on the balance sheet. By evaluating the change in inventory, the company can determine the cost of items sold during the period: As a result, the company can get ready for upcoming inventory needs.

# 13.APPENDIX

## 13.1 SOURCE CODE

### app.py:

```
from flask import Flask, render_template, flash, redirect, url_for,
session, request, logging
from wtforms import Form, StringField, TextAreaField, PasswordField,
validators, SelectField, IntegerField
import ibm_db
from functools import wraps
from datetime import datetime, timedelta
import sendgrid
import os
from sendgrid.helpers.mail import Mail, Email, To, Content
from dotenv import load_dotenv
load_dotenv()

app = Flask(__name__)
app.secret_key = 'ceg1234'
dsn_hostname = "98538591-7217-4024-b027-
8baa776ffad1.c3n41cmd0nqnrk39u98g.databases.appdomain.cloud"
dsn_uid = "hgd72603"
dsn_pwd = "qUt0VtWTanLWm4bJ"

dsn_driver = "{IBM DB2 ODBC DRIVER}"
dsn_database = "bludb"
dsn_port = "30875"
dsn_protocol = "TCPIP"
dsn_security = "SSL"

dsn = (
    "DRIVER={0};"
    "DATABASE={1};"
    "HOSTNAME={2};"
    "PORT={3};"
    "PROTOCOL={4};"
```

```

        "UID={5};"
        "PWD={6};"
        "SECURITY={7};"

"SSLServerCertificate=DigiCertGlobalRootCA.crt").format(dsn_driver,
dsn_database, dsn_hostname, dsn_port, dsn_protocol, dsn_uid,
dsn_pwd,dsn_security)

    try:
        conn = ibm_db.connect(dsn,"","")
    except:
        print("Unable to connect: ", ibm_db.conn_error())

SUBJECT = "IBM Inventory Management Application"

def sendgridmail(user,TEXT):
    try:
        print("Helo")
        content = Content("text/plain",TEXT)
        message = Mail(
            from_email=os.environ.get('SENDGRID_FROM_EMAIL'),
            to_emails=user,
            subject=SUBJECT,
            html_content=content)
        print("Hello1")
        sg =
sendgrid.SendGridAPIClient(os.environ.get('SENDGRID_API_KEY'))
        print("Hello2")
        response = sg.send(message)
        print("Hello3")
        print(response.status_code)
        print(response.body)
        print(response.headers)

    except Exception as e:
        print("Hello4")
        print(e)

@app.route('/')

```



```

def index():
    return render_template('home.html')

#Register Form Class
class RegisterForm(Form):
    name = StringField('Name', [validators.Length(min=1, max=50)])
    username = StringField('Username', [validators.Length(min=1,
max=25)])
    email = StringField('Email', [validators.length(min=6, max=50)])
    password = PasswordField('Password', [
        validators.DataRequired(),
        validators.EqualTo('confirm', message='Passwords do not
match')
    ])
    confirm = PasswordField('Confirm Password')

#Register new User
@app.route('/register', methods=['GET','POST'])
def register():
    form = RegisterForm(request.form)
    if request.method == 'POST' and form.validate():
        email = form.email.data
        username = form.username.data
        password = str(form.password.data)

        sql = "SELECT * FROM users WHERE email=?"
        prep_stmt = ibm_db.prepare(conn, sql)
        ibm_db.bind_param(prepare_stmt, 1, email)
        ibm_db.execute(prepare_stmt)
        account = ibm_db.fetch_assoc(prepare_stmt)
        print(account)
        if account:
            error = "Account already exists! Log in to continue !"
        else:
            insert_sql = "INSERT INTO users
(email,username,password) values(?,?,?)"
            prep_stmt = ibm_db.prepare(conn, insert_sql)
            ibm_db.bind_param(prepare_stmt, 1, email)
            ibm_db.bind_param(prepare_stmt, 2, username)
            ibm_db.bind_param(prepare_stmt, 3, password)

```

```

        ibm_db.execute(prepare_stmt)
        sendgridmail(email, "Registered Successfully! Thank you
for registering with us")
        flash(" Registration successful. Log in to continue !")

        return redirect(url_for('login'))
    return render_template('register.html', form = form)

#User Login
@app.route('/login', methods = ['GET', 'POST'])
def login():
    if request.method == 'GET':
        return render_template('login.html')
    else:
        error = None
        account = None
        username = request.form['username']
        password = request.form['password']
        print(username, password)

        sql = "SELECT * FROM users WHERE username=? AND password=?"
        stmt = ibm_db.prepare(conn, sql)
        ibm_db.bind_param(stmt, 1, username)
        ibm_db.bind_param(stmt, 2, password)
        ibm_db.execute(stmt)
        account = ibm_db.fetch_assoc(stmt)
        print(account)
    if account:
        session['logged_in'] = True
        session['username'] = username
        flash("Logged in successfully","success")
        return redirect(url_for('dashboard'))
    else:
        error = "Incorrect username / password"
        return render_template('login.html', error=error)

#Check for if user is logged in
def is_logged_in(f):
    @wraps(f)

```

```

def wrap(*args, **kwargs):
    if 'logged_in' in session:
        return f(*args, **kwargs)
    else:
        flash('Unauthorized, Please login', 'danger')
        return redirect(url_for('login'))
    return wrap

#Main Dashboard Page
@app.route('/dashboard')
@is_logged_in
def dashboard():
    sql = "SELECT * FROM stock"
    stmt = ibm_db.exec_immediate(conn, sql)
    dictionary = ibm_db.fetch_assoc(stmt)
    stocks = []
    print(dictionary)
    headings = [*dictionary]
    while dictionary != False:
        stocks.append(dictionary)
        dictionary = ibm_db.fetch_assoc(stmt)
    return render_template('dashboard.html', headings=headings,
data=stocks)

#User Logout
@app.route('/logout')
@is_logged_in
def logout():
    session.clear()
    flash("Logged out successfully", "success")
    return redirect(url_for('login'))

#Update Stock Inventory
@app.route('/inventoryUpdate', methods=['POST'])
@is_logged_in
def inventoryUpdate():
    if request.method == "POST":
        try:
            item = request.form['item']
            field = request.form['input-field']

```

```

        value = request.form['input-value']
        print(item, field, value)
        insert_sql = 'UPDATE stock SET ' + field + "= ?" + "
WHERE STOCK_NAME=?"

        print(insert_sql)
        pstmt = ibm_db.prepare(conn, insert_sql)
        ibm_db.bind_param(pstmt, 1, value)
        ibm_db.bind_param(pstmt, 2, item)
        ibm_db.execute(pstmt)
        if field == 'PRICE_PER_QUANTITY' or field == 'QUANTITY':
            insert_sql = 'SELECT * FROM stocks WHERE STOCK_NAME=
?'

            pstmt = ibm_db.prepare(conn, insert_sql)
            ibm_db.bind_param(pstmt, 1, item)
            ibm_db.execute(pstmt)
            dictionary = ibm_db.fetch_assoc(pstmt)
            print(dictionary)
            total = dictionary['QUANTITY'] *
dictionary['PRICE_PER_QUANTITY']
            insert_sql = 'UPDATE stocks SET TOTAL_PRICE=? WHERE
STOCK_NAME=?'

            pstmt = ibm_db.prepare(conn, insert_sql)
            ibm_db.bind_param(pstmt, 1, total)
            ibm_db.bind_param(pstmt, 2, item)
            ibm_db.execute(pstmt)
        except Exception as e:
            msg = e

    finally:

        return redirect(url_for('dashboard'))

# Add to Stock Inventory
@app.route('/addstocks', methods=['POST'])
@is_logged_in
def addStocks():
    if request.method == "POST":
        print(request.form['item'])
        try:
            item = request.form['item']

```

```

        quantity = request.form['quantity']
        price = request.form['price']
        total = int(price) * int(quantity)
        insert_sql = 'INSERT INTO stock
(STOCK_NAME,QUANTITY,PRICE_PER_QUANTITY,TOTAL_PRICE) VALUES (?, ?, ?, ?) '
        pstmt = ibm_db.prepare(conn, insert_sql)
        ibm_db.bind_param(pstmt, 1, item)
        ibm_db.bind_param(pstmt, 2, quantity)
        ibm_db.bind_param(pstmt, 3, price)
        ibm_db.bind_param(pstmt, 4, total)
        ibm_db.execute(pstmt)

    except Exception as e:
        msg = e

    finally:

        return redirect(url_for('dashboard'))

#Delete from Stock Inventory
@app.route('/deletestocks', methods=['POST'])
@is_logged_in
def deleteStocks():
    if request.method == "POST":
        print(request.form['item'])
        try:
            item = request.form['item']
            insert_sql = 'DELETE FROM stock WHERE STOCK_NAME=?'
            pstmt = ibm_db.prepare(conn, insert_sql)
            ibm_db.bind_param(pstmt, 1, item)
            ibm_db.execute(pstmt)
        except Exception as e:
            msg = e

    finally:
        return redirect(url_for('dashboard'))

#Update Username
@app.route('/update-user', methods=['POST', 'GET'])
@is_logged_in

```

```

def updateUser():
    if request.method == "POST":
        try:
            email = session['username']
            value = request.form['input-value']
            insert_sql = 'UPDATE users SET username= ? WHERE
username=?'

            pstmt = ibm_db.prepare(conn, insert_sql)
            ibm_db.bind_param(pstmt, 1, value)
            ibm_db.bind_param(pstmt, 2, email)
            print(pstmt)
            ibm_db.execute(pstmt)
        except Exception as e:
            print(e)
            msg = e

        finally:
            session['username'] = value
            return redirect(url_for('profile'))

#Update Password
@app.route('/update-password', methods=['POST', 'GET'])
@is_logged_in
def updatePassword():
    if request.method == "POST":
        try:
            email = session['username']
            password = request.form['prev-password']
            curPassword = request.form['cur-password']
            confirmPassword = request.form['confirm-password']
            insert_sql = 'SELECT * FROM users WHERE username=? AND
PASSWORD=?'

            pstmt = ibm_db.prepare(conn, insert_sql)
            ibm_db.bind_param(pstmt, 1, email)
            ibm_db.bind_param(pstmt, 2, password)
            ibm_db.execute(pstmt)
            dictionary = ibm_db.fetch_assoc(pstmt)
            print(dictionary)
            if curPassword == confirmPassword:

```

```

        insert_sql = 'UPDATE users SET PASSWORD=? WHERE
username=?'

        pstmt = ibm_db.prepare(conn, insert_sql)
        ibm_db.bind_param(pstmt, 1, confirmPassword)
        ibm_db.bind_param(pstmt, 2, email)
        ibm_db.execute(pstmt)
    except Exception as e:
        msg = e
    finally:

        return redirect(url_for('profile'))

#Get Orders
@app.route('/orders', methods=['POST', 'GET'])
@is_logged_in
def orders():
    query = "SELECT * FROM orders"
    stmt = ibm_db.exec_immediate(conn, query)
    dictionary = ibm_db.fetch_assoc(stmt)
    orders = []
    headings = [*dictionary]
    while dictionary != False:
        orders.append(dictionary)
        dictionary = ibm_db.fetch_assoc(stmt)
    return render_template("orders.html", headings=headings,
data=orders)

#Create new Order
@app.route('/createOrder', methods=['POST'])
@is_logged_in
def createOrder():
    if request.method == "POST":
        try:
            stock_id = request.form['stock_id']
            query = 'SELECT PRICE_PER_QUANTITY FROM stock WHERE SID=
?'

            stmt = ibm_db.prepare(conn, query)
            ibm_db.bind_param(stmt, 1, stock_id)
            ibm_db.execute(stmt)
            dictionary = ibm_db.fetch_assoc(stmt)

```

```

        if dictionary:
            quantity = request.form['quantity']
            date = str(datetime.now().year) + "-" + str(
                datetime.now().month) + "-" +
str(datetime.now().day)

            delivery = datetime.now() + timedelta(days=7)
            delivery_date = str(delivery.year) + "-" + str(
                delivery.month) + "-" + str(delivery.day)
            price = float(quantity) * \
                float(dictionary['PRICE_PER_QUANTITY'])
            query = 'INSERT INTO orders
(STOCK_ID,QUANTITY,ODATE,DELIVERY_DATE,PRICE) VALUES (?, ?, ?, ?, ?) '
            pstmt = ibm_db.prepare(conn, query)
            ibm_db.bind_param(pstmt, 1, stock_id)
            ibm_db.bind_param(pstmt, 2, quantity)
            ibm_db.bind_param(pstmt, 3, date)
            ibm_db.bind_param(pstmt, 4, delivery_date)
            ibm_db.bind_param(pstmt, 5, price)
            ibm_db.execute(pstmt)
        except Exception as e:
            print(e)

    finally:
        return redirect(url_for('orders'))

#Update Order
@app.route('/updateOrder', methods=['POST'])
@is_logged_in
def updateOrder():
    if request.method == "POST":
        try:
            item = request.form['item']
            field = request.form['input-field']
            value = request.form['input-value']
            query = 'UPDATE orders SET ' + field + "= ?" + " WHERE
OID=?"

            pstmt = ibm_db.prepare(conn, query)
            ibm_db.bind_param(pstmt, 1, value)
            ibm_db.bind_param(pstmt, 2, item)
            ibm_db.execute(pstmt)

```



```

        except Exception as e:
            print(e)

    finally:
        return redirect(url_for('orders'))

#Cancel Order
@app.route('/cancelOrder', methods=['POST'])
@is_logged_in
def cancelOrder():
    if request.method == "POST":
        try:
            order_id = request.form['order_id']
            query = 'DELETE FROM orders WHERE OID=?'
            pstmt = ibm_db.prepare(conn, query)
            ibm_db.bind_param(pstmt, 1, order_id)
            ibm_db.execute(pstmt)
        except Exception as e:
            print(e)

    finally:
        return redirect(url_for('orders'))

#Get Suppliers
@app.route('/suppliers', methods=['POST', 'GET'])
@is_logged_in
def suppliers():
    sql = "SELECT * FROM suppliers"
    stmt = ibm_db.exec_immediate(conn, sql)
    dictionary = ibm_db.fetch_assoc(stmt)
    suppliers = []
    orders_assigned = []
    headings = [*dictionary]
    while dictionary != False:
        suppliers.append(dictionary)
        orders_assigned.append(dictionary['ORDER_ID'])
        dictionary = ibm_db.fetch_assoc(stmt)

    sql = "SELECT OID FROM orders"
    stmt = ibm_db.exec_immediate(conn, sql)

```

```

        dictionary = ibm_db.fetch_assoc(stmt)
        order_ids = []
        print("dictionary")
        print(dictionary)
        while dictionary != False:
            order_ids.append(dictionary['OID'])
            dictionary = ibm_db.fetch_assoc(stmt)
        unassigned_order_ids=None
        return render_template("suppliers.html", headings=headings,
data=suppliers, order_ids=order_ids)

#Update Supplier
@app.route('/updatesupplier', methods=['POST'])
@is_logged_in
def UpdateSupplier():
    if request.method == "POST":
        try:
            item = request.form['name']
            field = request.form['input-field']
            value = request.form['input-value']
            print(item, field, value)
            insert_sql = 'UPDATE suppliers SET ' + field + "= ?" + "
WHERE SNAME=?"

            print(insert_sql)
            pstmt = ibm_db.prepare(conn, insert_sql)
            ibm_db.bind_param(pstmt, 1, value)
            ibm_db.bind_param(pstmt, 2, item)
            ibm_db.execute(pstmt)
        except Exception as e:
            msg = e

        finally:
            return redirect(url_for('suppliers'))

# Add new Supplier
@app.route('/addsupplier', methods=['POST'])
@is_logged_in
def addSupplier():
    if request.method == "POST":
        try:

```

```

        name = request.form['name']
        order_id = request.form.get('order-id-select')
        print(order_id)
        location = request.form['location']
        insert_sql = 'INSERT INTO suppliers
(SNAME,ORDER_ID,SLOCATION) VALUES (?, ?, ?)'

        pstmt = ibm_db.prepare(conn, insert_sql)
        ibm_db.bind_param(pstmt, 1, name)
        ibm_db.bind_param(pstmt, 2, order_id)
        ibm_db.bind_param(pstmt, 3, location)
        ibm_db.execute(pstmt)

    except Exception as e:
        msg = e

    finally:
        return redirect(url_for('suppliers'))

#Delete Supplier
@app.route('/deletesupplier', methods=['POST'])
@is_logged_in
def deleteSupplier():
    if request.method == "POST":
        try:
            item = request.form['name']
            insert_sql = 'DELETE FROM suppliers WHERE SNAME=?'
            pstmt = ibm_db.prepare(conn, insert_sql)
            ibm_db.bind_param(pstmt, 1, item)
            ibm_db.execute(pstmt)
        except Exception as e:
            msg = e

    finally:
        return redirect(url_for('suppliers'))

#Get User's Profile
@app.route('/profile', methods=['POST', 'GET'])
@is_logged_in
def profile():
    if request.method == "GET":

```

```
email = session['username']
insert_sql = 'SELECT * FROM users WHERE username=?'
pstmt = ibm_db.prepare(conn, insert_sql)
ibm_db.bind_param(pstmt, 1, email)
ibm_db.execute(pstmt)
dictionary = ibm_db.fetch_assoc(pstmt)
print(dictionary)
return render_template("profile.html", data=dictionary)

if __name__ == '__main__':

    app.run(host="0.0.0.0",port=5000)
```

## 13.2 GITHUB & PROJECT DEMO LINK

**GITHUB Link-** <https://github.com/IBM-EPBL/IBM-Project-29277-1660123060/tree/main>

**Application Demo Link -** <https://drive.google.com/file/d/1RLDUj-UFdYttbHJBOiBUwEUz7Ntt5RLq/view?usp=sharing>

**Live Application Deployed on Kubernetes Link -** <http://169.51.204.209:31617/>