LITERATURE SURVEY
FOR INVENTORY MANAGEMENT SYSTEM FOR RETAILERS

S.no	Title	Author	Year	Methodology	Pros and Cons
1.	Inventory management for retail companies: A literature review and current trends.	Cinthya Vanessa Muñoz Macas,jorge Andrés Espinoza Aguirre,Rodrigo Arcentales-CarriónMario Peña	March,2021	They focused on solving all the retail issues that happened from 2015 to 2019 through different systems and software.	Pros: They addressed almost 22 issues that retailers faced. Cons: All the software and methodologies they suggested were not cost effective and couldn't be used by small scale retailers.
2.	Inventory decisions on the transportation system and carbon emissions under COVID-19 effects: A sensitivity analysis	Abu Hashan Md Mashuda,SujanMiah,YoefDaryantoc,Ripon K.Chakrabortty, S.M. MahmudulHasan,Ming-Lang Tseng	September,2022	This study investigates how intensification of the COVID-19 affects the retailer's profit. • Study about the interrelation of vaccination and covid outbreak in transportation. • This model provides the decision making on efficient uses of green technology.	Pros: This study considers product deterioration, time-dependent holding costs, price-dependent demands, and carbon emissions from vehicle operation and intends to establish a harmonious relationship among these attributes. Cons: This study failed to show how COVID-19 affects customers' purchases instead of the effects on the transportation system.
3.	Two-stage inventory management with financing under demand updates	TianyunLi, WeiguoFang, MelikeBaykal-Gürsoy	February,2021	The paper presents a recourse approach to solve the two-stage optimization problem and derive the optimal inventory/financing policies	Pros: This research incorporates the financial and operational decisions into demand updates, and brings new managerial results and insights. Cons: due to the complexity of the objective function,

LITERATURE SURVEY
## FOR INVENTORY MANAGEMENT SYSTEM FOR RETAILERS

					we do not have simple formulas for the optimal procurement policies, we provide the complete analytical description of the optimal solutions
4.	Internet of things for perishable inventory management systems: an application and managerial insights for micro, small and medium enterprises	Pratik Maheshwari, Sachin Kamble, Ashok Pundir, Amine Belhadi, Nelson Oly Ndubisi & Sunil Tiwari	2021	The study aimed to investigate the impact of IoT on existing operating parameters (holding cost, selling cost, deterioration rate, shortage cost, goodwill cost, unit purchase cost) and how it can increase the overall profit of retailers by reducing spoilage.	Pros: we formulated and analyzed IoT implementation costs in the retailer warehouse Cons: They only focused on retailer benefits. They only considered deterministic demand rates with zero lead time..
5.	DESIGN AND IMPLEMENTATION OF A COMPUTER BASED HOUSEHOLD INVENTORY SYSTEM	Laff non Stop, Yonas Kebede	March,2021	The research work embraces all activities of household inventory management valuation feasibility and liability but our study is narrowed down to the valuation of property as a way of bringing the work home	Pros: home.It is focus on valuation because the field area of household inventory is generated to acknowledge the importance of household inventory to individual and the society at large.The Cons: It doesn't support the small scale industry which couldn't afford a computer.

IBM PROBLEM STATEMENT.

Who does the problem affect?	Common retailers who run their business with large scale or small scale stocks.
What is the issue?	It is crucial for an organization today to understand its inventory to achieve both efficient and fast operations, that too, at an affordable cost. Lack of the right inventory at the right time can mean back orders, excess inventory, etc. These drive up costs. Late delivery due to stock-outs is bound to give you a bad reputation. Inaccurate calculations of stock and price.
When does the issue occur?	Late deliveries are due to late planning. Poor tracking may lead to back orders. Overstocking of discounted products and neglecting the trends of seasonal sales may result in excess inventory.
Where is the issue coming?	Due to human error, Lack of interest and consciousness. Amount of data which is beyond the limits of human power to be calculated manually.
Why is it important that we fix the problem?	Nearly 81% of consumers experienced an "out-of-stock" situation in the past 12 months, resulting in lost sales for retailers and lots of disappointment for in-store shoppers. Globally, retailers recorded losses of a whopping $1.75 trillion due to mismanaged inventory. Therefore considering the economic crisis of the retailers and to reduce the manpower efficiently while handling data, it is very important to have a best inventory management system for retailers.

What do they THINK AND FEEL?

what really counts
major preoccupations
worries & aspirations
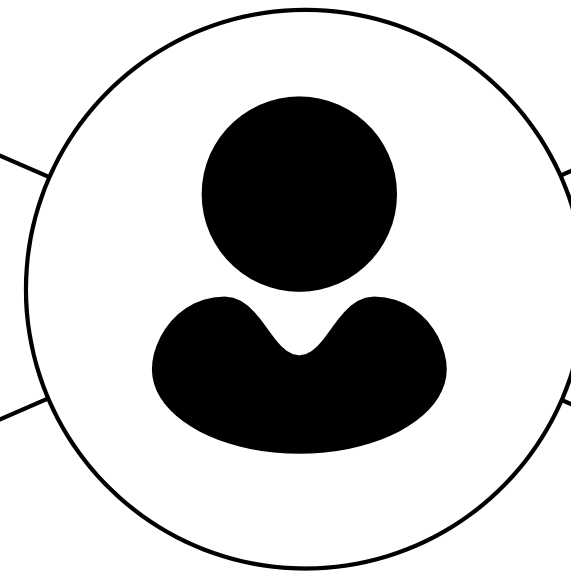
- Retail is one of the important public service sector which is very vital for daily lives.
- Best retailing practice will also bring a healthy competitive environment.
- In the absence of retailer, buying of goods directly from factory outlets is not practically possible in modern times.
- Retail therapy is actually real, where research have proved that retail therapy uplift the customer mood and sometimes convince them to buy an unplanned product.

What do they HEAR?

what friends say
what boss say
what influencers say

- The smartest method to reduce the work load and to increase the rate of accuracy in calculations.
- Getting an idea about what an inventory management system is all about
- A brilliant way to know and learn about the trending seasonal sales.
- Can observe The effectiveness and responsiveness of the current inventory system comparatively.
- It is not required to be conscious about the availability of the stocks and its requirements.

What do they SEE?

environment
friends
what the market offers

- An effective inventory system is absolutely error free and no chance of miscalculations.
- The market offers many IM software tools to facilitate the retailers few of which are HDPOS, Shoper 9 and Primasellar etc.
- Not only customer friendly but also it reduces the administrative work loads of the organization.
- Modern inventory system is always user friendly in both product delivery and customer service aspects.

What do they SAY AND DO?

attitude in public
appearance
behavior towards others

- To understand about the retail store inventory metrics.
- To identify slow moving products via inventory turnover radio and to set low stock alerts.
- Need of careful purchasing and receiving outline.
- Use of past sales performance data and to check inventory values regularly.

PAIN

fears
frustrations
obstacles

- Lack of scalability and labor-intensive ancient time system is not feasible in modern times.
- Pen and paper recording keeping system was not reliable and no centralized database for record sharing purpose.
- Possibility of poor tracking and lack of transparency.
- Manual counting of stocks and tallying items in modern system may not be possible.
- Quantity to order and the timing to order may be not accurate.
- Limited access and tight reign on inventory is not helpful.

GAIN

"wants" / needs
measures of success
obstacles

- Helps to make effective utilization of working capital by avoiding its blockage in excess inventory
- It helps companies to cut expenses by minimizing the number of needless products and materials in storage.
- Additionally it gives a clear insights into the trends.
- It helps in efficient stock counting and eliminates the general human errors.
- It increases the efficiency since it allows many automated inventory tasks like collecting data and calculating the cost.
- It provides up-to-date data which helps in the process of decision making.
- Helps to reduce risk of loss on account of obsolescence or deterioration of items.

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 🕐 **10 minutes** to prepare
- 🕐 **1 hour** to collaborate
- 👥 **2-8 people** recommended

Share template feedback

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

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

B **Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.

C **Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.

Open article →

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1 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
An inventory management system for both small and medium scale retailers, which should be beneficial for both retailers and customers.

Key rules of brainstorming
To run a smooth and productive session

- Stay in topic.
- Defer judgment.
- Go for volume.
- Encourage wild ideas.
- Listen to others.
- If possible, be visual.

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2 Brainstorm

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

🕐 10 minutes

TIP 📌
You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

Team lead- S.SWETHA

- Predicting the Future sales analysis of the products using machine learning algorithms and past data available dataset.
- Triggering the alert message when the stock falls down the threshold amount.
- Providing an easy and user friendly E-commerce site for the customers.
- Centralized transportation system among the shop branches along with the product tracking functionality.

Team member 1 - SWEETY KUMARI

- Customer Feedback and rating system including both the product and the retail shop service.
- Sending E-mail notification to the customer regarding the new arrivals and available stocks.
- Keeping a Track of the expiry dates of all the stock and announcing the discounts and offer for those products which is going to expire soon.
- Plan appropriate strategic business plans with regard to the competitors and bring the plan noticeable among the customers.
- Bring RFID based product tracking system into the existence.
- Keep a record of regular customers and send them regular notice about the arrivals and exclusive offers and discounts for them.

Team member 2 - Swetha.S

- Can make use of excel sheet for processing the data.
- Advertise the presence of the store in all the nearest geographic locations.
- Provide special discount for the first purchase and can add key points with further purchase so future special discounts.
- Keep a profit and loss records of all the stocks.
- Make sure that the store contains all the day to day vital used from day to down.
- Easy and fast billing system with also provides option for the customers either through cash or through net banking.

Team member 3 - Sharmila . A

- Deciding whether to invest in a product or not using some predictive analysis of the newly arrived product.
- Enhancing customer loyalty and providing transparency in the billing.
- Tax and GST clearance regularly.
- Make sure to have free door deliveries to the nearest areas and to avoid late deliveries.
- Scheduling all the product delivery properly for maximum utilization of transportation.
- Alerting the user regarding the end sale discounts and real time statistics.
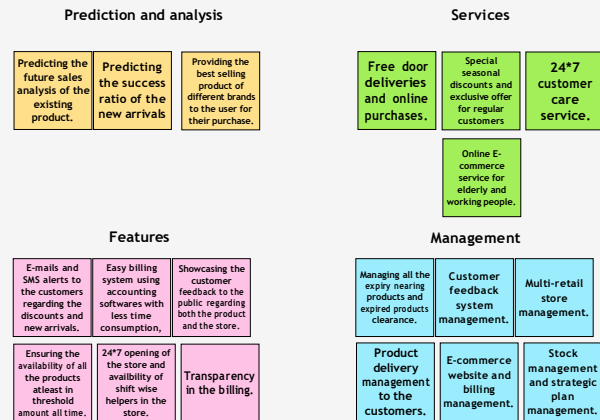
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3 Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, 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

Prediction and analysis

- Predicting the future sales analysis of the existing product.
- Predicting the success ratio of the new arrivals
- Providing the best selling product of different brands to the user for their purchase.

Services

- Free door deliveries and online purchases.
- Special seasonal discounts and exclusive offer for regular customers.
- 24*7 customer care service.
- Online E-commerce service for elderly and working people.

Features

- E-mails and SMS alerts to the customers regarding the discounts and new arrivals.
- Easy billing system using accounting softwares with less time consumption.
- Showcasing the customer feedback to the public regarding both the product and the store.
- Ensuring the availability of all the products atleast in threshold amount all time.
- 24*7 opening of the store and availbility of shift wise helpers in the store.
- Transparency in the billing.

Management

- Managing all the expiry nearing products and expired products clearance.
- Customer feedback system management.
- Multi-retail store management.
- Product delivery management to the customers.
- E-commerce website and billing management.
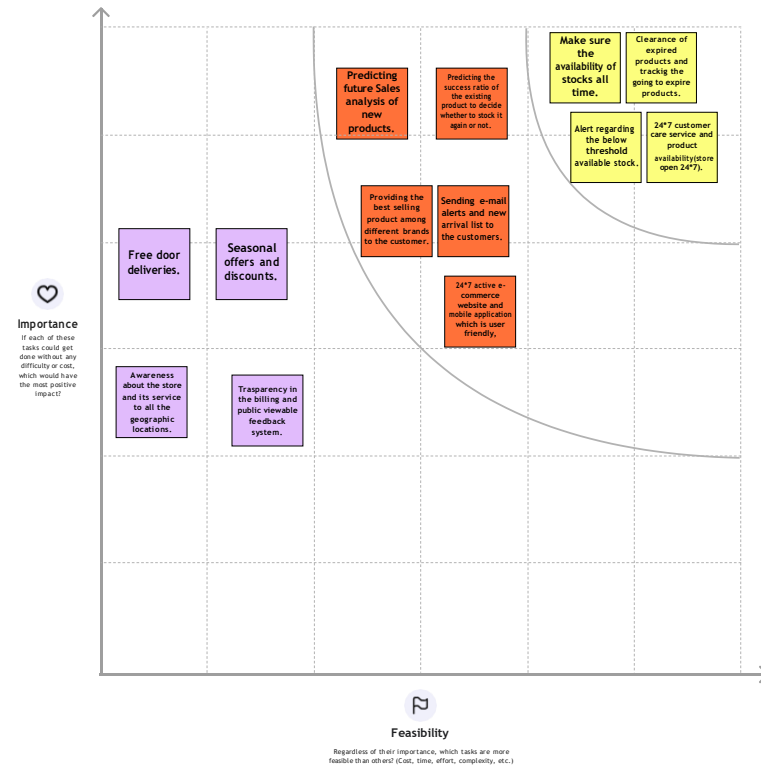- Stock management and strategic plan management.

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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

Importance
If each of these tasks could get done without difficulty or any difficulty or risk, which would have the most positive impact?

Feasibility
Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

Grid notes:
- Free door deliveries.
- Seasonal offers and discounts.
- Predicting future Sales analysis of new products.
- Providing the best selling product among different brands to the customers.
- Predicting the success rate of the existing product to whether to stock it again or not.
- Make sure the availability of stocks all time.
- Clearance of expired products and tracking the going to expire products.
- Sending e-mail alerts and new arrival list to the customers.
- Alert regarding the below threshold available stock.
- 24*7 customer care service and product availability(store open 24*7).
- Awareness about the store and its service to all the geographic locations.
- 24*7 active e commerce website and mobile application which is user friendly.
- Transparency in the billing and public viewable feedback system.

After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

Share the mural
Share a new link to the mural with stakeholders to keep them in the loop about the outcomes of the session.

Export the mural
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward

Strategy blueprint
Define the components of a new idea or strategy.
Open the template →

Customer experience journey map
Understand customer needs, motivations, and obstacles for an experience.
Open the template →

Strengths, weaknesses, opportunities & threats
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
Open the template →

Share template feedback

Need some inspiration?
See a finished version of this template to kickstart your work.
Open example →

Project Design Phase-I
Proposed Solution Template

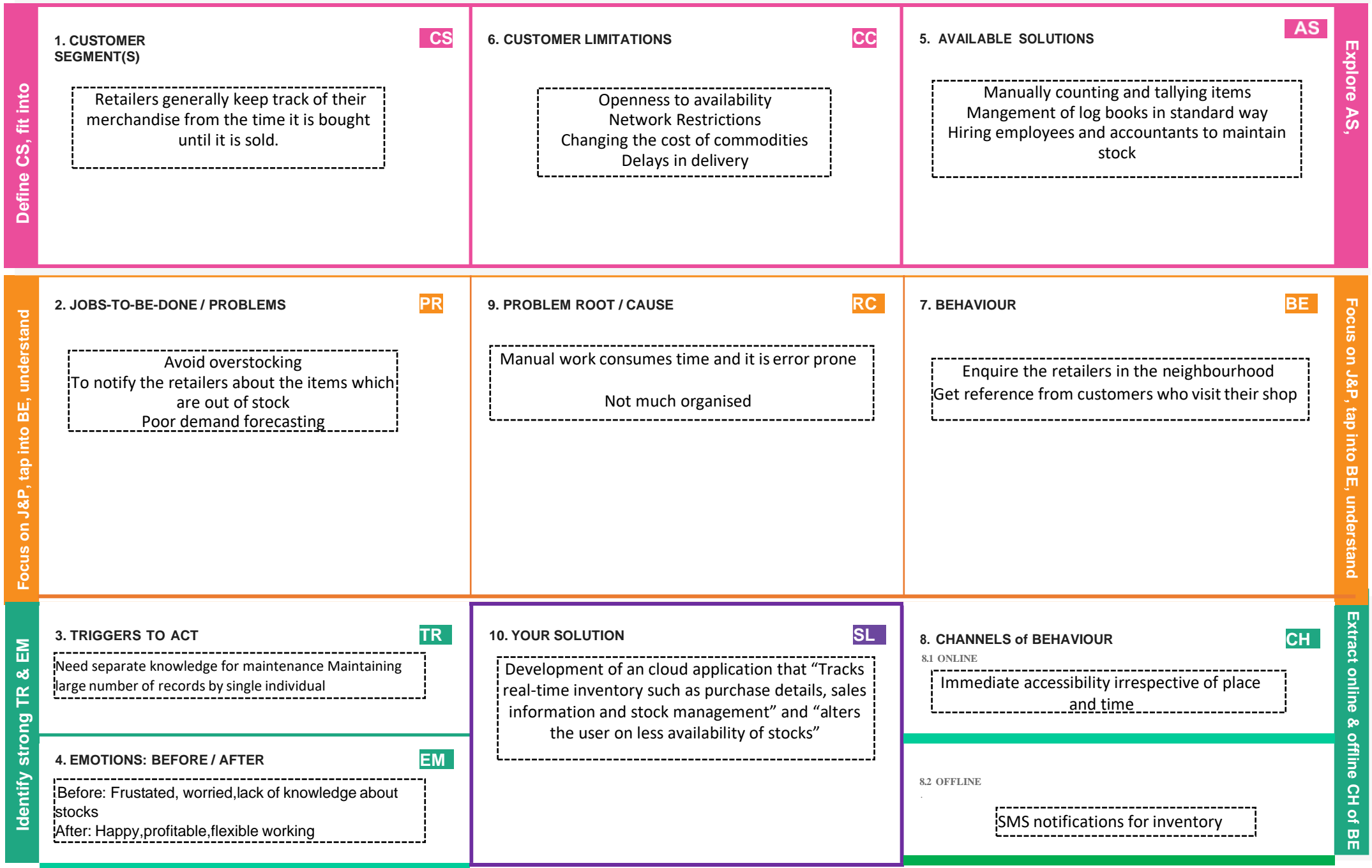|	
Date	21 September 2022
Team ID	PNT2022TMID31150
Project Name	Project – Inventory Management system for retailers
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
❖	Problem Statement (Problem to be solved)	• The retailers generally facing issues in recording the stocks and its threshold limit available. • The retailers doesn't know which product is getting expired and when it is being expired. • The retailers couldn't track the availability of all the stocks up-to date. • The customers are not satisfied with the retailers store since it doesn't have enough supplements and the deliveries were not made on time.
❖	Idea / Solution description	• This proposed system will have a daily update system whenever a product is sold or it is renewed more. • The system will have an alert triggered to indicate both the expired product and soon going to expire products. • The product availability is tracked daily and an alert system in again kept on to indicate those products which falls below the threshold limit. • All the customers can register their accounts after which they will be given a login credentials which they can use whenever they feel like buying the stocks. • The application allows the customers to know all the present time available stocks and also when the new stock will be available on the store for them to buy. • Tracking the order have become easy with this application for both the retailers and the customers.

❖	Novelty / Uniqueness	• Certain machine learning algorithms are used to predict the seasonal high selling products which can be made available during that time. • Prediction of the best selling brand of all certain products based on their popularity, price and customer trust and satisfaction will be implemented. • Notifications will be sent to the retailers if any product that the customers have been looking for is not available so that the product can be stocked up soon. • Notification will be sent to the customers who buys any certain products regularly when the new arrivals are stocked up. • Exclusive discounts and offers are given for regular customers to keep them engaged with the store regularly.
❖	Social Impact / Customer Satisfaction	• The customers will be highly satisfied since the wasting of time while searching for an unavailable product is reduced. • The work load of the retailers will be minimized if the system is automated every day and during every purchase. • The customer satisfaction will be improved for getting appropriate response from the retailers and that too immediately.

❖	Business Model (Revenue Model)	• Hereby we can provide a robust and most reliable inventory management system by using:
		  1. ML algorithms for all the prediction purposes using all the past dataset since datasets are undoubtedly available in huge amounts.
		  2. Can deploy the most appropriate business advertising models.
		  3. To establish a loss preventing strategy.
		  4. And to ensure the all time, any where availability of products system.
		  5. Usage of freebies business strategy for dragging the customer's attention.

❖	Scalability of the Solution	• This system can even work more efficiently with large volume of data. • Implementation of anyone and anywhere using system can be helpful for even a commoner to buy the products. • Daily and Each time purchase updation of the stock for preventing inventory shrinkage. • Direct chat system with the retailers and the customers for providing best customer service.

Problem Solution Fit

Define CS, fit into

1. CUSTOMER SEGMENT(S) — CS

Retailers generally keep track of their merchandise from the time it is bought until it is sold.

6. CUSTOMER LIMITATIONS — CC

Openness to availability
Network Restrictions
Changing the cost of commodities
Delays in delivery

5. AVAILABLE SOLUTIONS — AS

Manually counting and tallying items
Mangement of log books in standard way
Hiring employees and accountants to maintain stock

Explore AS,

Focus on J&P, tap into BE, understand

2. JOBS-TO-BE-DONE / PROBLEMS — PR

Avoid overstocking
To notify the retailers about the items which are out of stock
Poor demand forecasting

9. PROBLEM ROOT / CAUSE — RC

Manual work consumes time and it is error prone

Not much organised

7. BEHAVIOUR — BE

Enquire the retailers in the neighbourhood
Get reference from customers who visit their shop

Focus on J&P, tap into BE, understand

Identify strong TR & EM

3. TRIGGERS TO ACT — TR

Need separate knowledge for maintenance Maintaining large number of records by single individual

4. EMOTIONS: BEFORE / AFTER — EM

Before: Frustated, worried,lack of knowledge about stocks
After: Happy,profitable,flexible working

10. YOUR SOLUTION — SL

Development of an cloud application that "Tracks real-time inventory such as purchase details, sales information and stock management" and "alters the user on less availability of stocks"

8. CHANNELS of BEHAVIOUR — CH

8.1 ONLINE

Immediate accessibility irrespective of place and time

8.2 OFFLINE

SMS notifications for inventory

Extract online & offline CH of BE

Project Design Phase-II
Data Flow Diagram & User Stories

Date	16 October 2022
Team ID	PNT2022TMID31150
Project Name	Project – Inventory Management System for retailers
Maximum Marks	4 Marks

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the rightamount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

DATA FLOW DIAGRAM
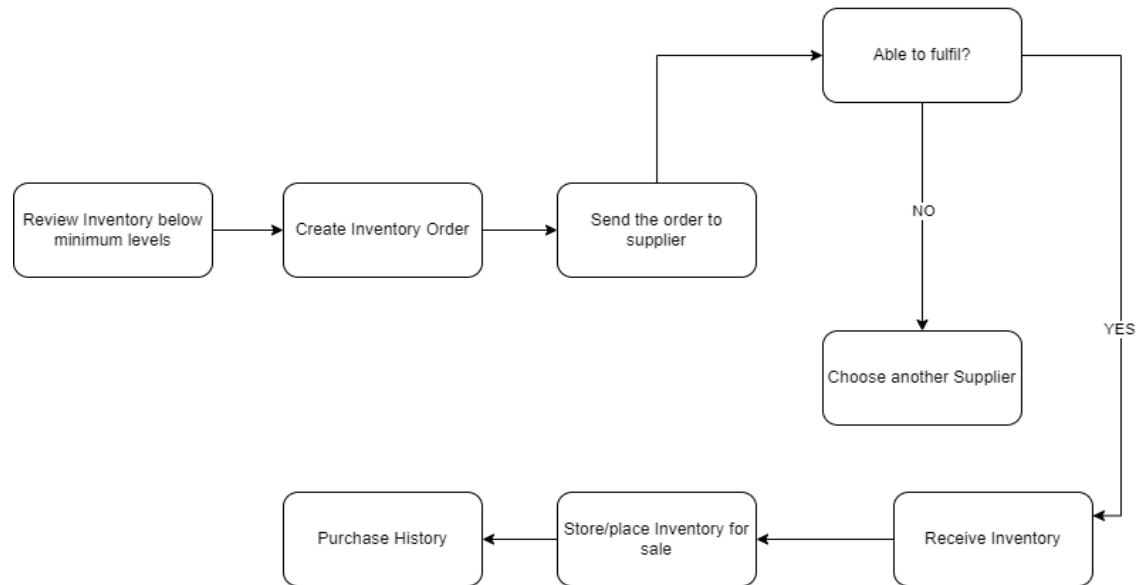
User Stories

Use the below template to list all the user stories for the product.

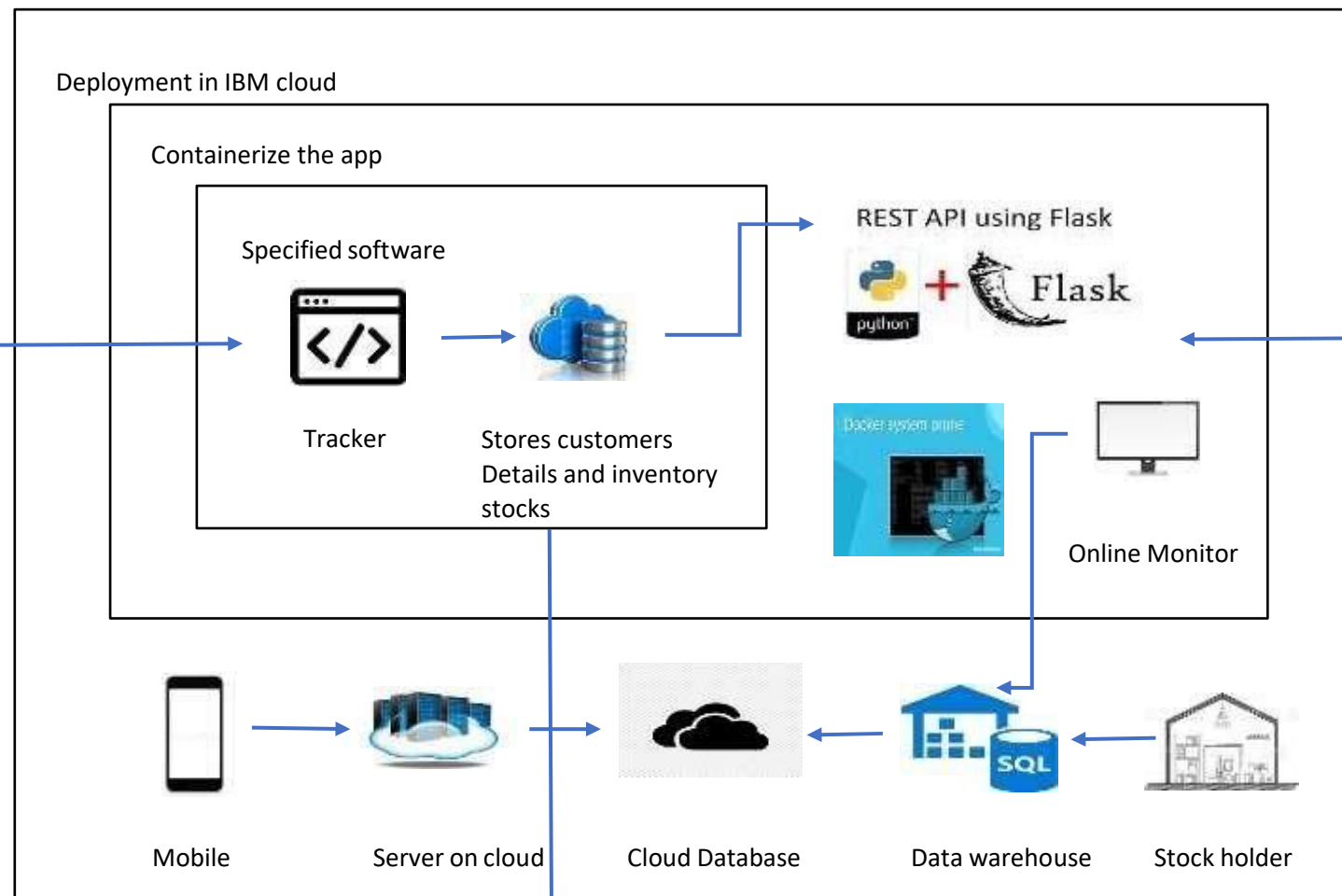| User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-3
		USN-4	As a user, I can register for the application through Gmail	I can register for the application through Gmail	Medium	Sprint-2
	Login	USN-5	As a user, I can log into the application by entering email & password	I can log in by entering Gmail & password	High	Sprint-1
	Dashboard	USN-6	As a user, I can track data of sales of products and inventory levels	I can track data of sales of products and inventory levels.	High	Sprint-1
Customer (Web user)	Registration	USN-7	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-8	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-9	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-3
		USN-10	As a user, I can register for the application through Gmail	I can register for the application through Gmail	Medium	Sprint-2
	Login	USN-11	As a user, I can log into the application by entering email & password	I can log in by entering Gmail & password	High	Sprint-1
	Dashboard	USN-12	As a user, I can track data of sales of products and inventory levels	I can track data of sales of products and inventory levels.	High	Sprint-1
Customer Care Executive	Support	USN-13	As a Executive, I Provide answers for the queries asked by users.	I provide the answers for the queries asked by the users.	High	Sprint-1

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Administrator	Manage the Stocks	USN-14	As a administrator, I manage the stocks by adding, shipping and storing the stocks in the storage units	I manage the stocks by adding, shipping and storing the stocks in the storage units.	High	Sprint-1
	Control all the users	USN-15	As a administrator, I can control all the users by performing basic CRUD operations.	I can control all the users by performing basic CRUD operations	High	Sprint-1
	Access the database	USN-16	As a administrator, I can control and access the database	I can control and access the database.	High	Sprint-1

PROJECT DESIGN PHASE I

SOLUTION ARCHITECTURE

Date:	13 October 2022
Team ID:	PNT2022TMID31150
Project Name:	Inventory Management System For Retailers
Maximum marks:	4 marks

Deployment in IBM cloud

Containerize the app

Specified software

Tracker

Stores customers
Details and inventory
stocks

REST API using Flask

Online Monitor

User

Supplier

Mobile

Server on cloud

Cloud Database

Data warehouse

Stock holder

IBM Cloud
Kubernetes Service

Send Emails in .NET with
FluentEmail and SendGrid

Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	16 October 2022
Team ID	PNT2022TMID31150
Project Name	Project – Inventory Management System for Retailers
Maximum Marks	4 Marks

Technical Architecture:
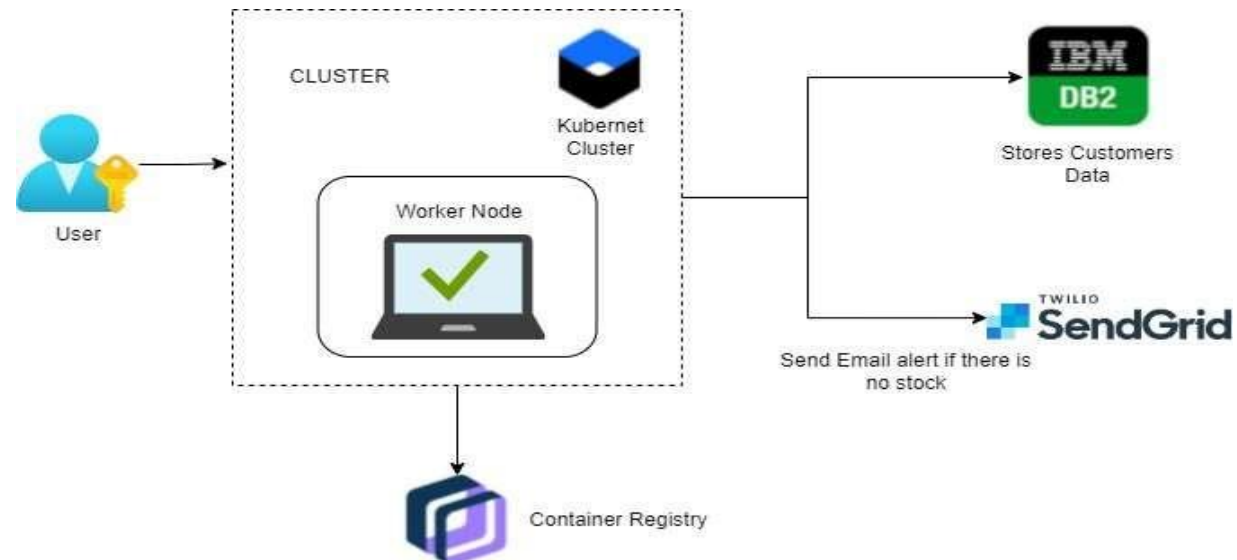
Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Through web application, the information processed willbe sent to the user via mail.	HTML, CSS, jQuery, JavaScript, python, etc.
2.	Application Logic-1	User registration through form and confirmation will be sent to the user via email.	Flask, SendGrid
3.	Application Logic-2	Dashboard is used by which the system will Maintain tracking of sales of product and inventory levels.	Flask
4.	Application Logic-3	User will get notified about the stock status.	Flask
5.	Database	The data can be stored in database and user can retrieve or manipulate the data whenever required.	IBM DB2.
6.	Cloud Database	Information of the stocks will be stored and hosted on the cloud.	IBM DB2.
7.	File Storage	Requirements to store files	IBM Block Storage or Other Storage Service or Local File system
8.	External API-1	SendGrid used in application will send the email alert if there is less number or no stock to the user	SendGrid
9.	External API-2	IBM container Registry enables you to store and distribute Docker images in a managed private registry	IBM container registry
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / CloudLocal Server Configuration:localhost:5001(Flask) Cloud Server Configuration : Kubernetes	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	SendGrid will send email alert, if there is less number of stock to user, Kubernetes for manipulating Kubernetes API objects, IBM DB2 is used for storing and retrieving the data efficiently.	Flask, SendGrid, IBMDB2, Kubernetes
2.	Security Implementations	We use login for the user and the information will be hashed so that it will be very secure to use.	IBM container registry.
3.	Scalable Architecture	It is scalable that we are going to use data in kb so that the quite amount of storage is satisfied.	Flask
4.	Availability	Prediction will be available for every user but only for premium user news, database and price alertwill be alert.	Flask.
5.	Performance	It will perform fast and secure even at the lower bandwidth.	Flask, IBM container registry, IBM DB2.

References:

https://c4model.com/

https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

https://www.ibm.com/cloud/architecture

https://aws.amazon.com/architecture

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d

Project Planning Phase
Project Planning Template (Product Backlog, Sprint Planning, Stories, Story points)

Date	5/11/2022
Team ID	PNT2022TMID31150
Project Name	Inventory Management System for Retailers
Maximum Marks	8 Marks

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Initial Registration by customer	USN-1	As a user, I can register for the application by entering my email or number, and password, and confirming my password.	3	High	Niranjan M(TL) Deepan CJ Parvez Musharaf US
Sprint-1	Confirmation for registering	USN-2	As a user, I can receive my confirmation throughemail or number once I have registered for the application.	3	Medium	Niranjan M(TL) Parvez Musharaf US
Sprint-1	Initial Login	USN-3	As a user, I can log in to the authorized account by entering the registered email or number and password.	2	High	Niranjan M(TL) Deepan CJ Parvez Musharaf US Hariharan.G
Sprint-1	Viewing Dashboard	USN-4	As a user, I can view my account details which I have given during my registration process.	3	High	Niranjan M(TL) Hariharan.G
Sprint-2	Adding products to cart and order confirmation.	USN-5	As a user, I can view the available products and it to the cart and once the cart is filled I can confirm my order.	2	High	Niranjan M(TL) Deepan C.J

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-2	Feedback system	USN-6	As a user, I can give the feedback about the product and/or the service and chat with the serviced provider.	2	Medium SHARMILA	Niranjan M(TL) Deepan. CJ
Sprint-2	Registration for retailer	USN-7	As a user, I can register for the application by entering my email, and password, and confirming my password.	2	High	Niranjan M(TL) Deepan CJ Hariharan.G
Sprint-2	Confirmation	USN-8	As a user, I can receive my confirmation email once I have registered for the application	2	Medium	Niranjan M(TL) Parvez Musharaf US
Sprint-2	Login	USN-9	As a user, I can log in to the authorized account by entering the registered email and password	2	High	Niranjan M(TL) Deepan CJ Parvez Musharaf US Hariharan.G
Sprint-3	Retailers Dashboard	USN-10	As a user, I can view the products that are currently available.	8	High	Niranjan M(TL) Deepan CJ Parvez Musharaf US Hariharan.G
Sprint-4	Stocks update	USN-11	As a user, I can restore the products which are not available in the inventory and restore the inventory details.	2	Medium	Niranjan M(TL) Deepan CJ
Sprint-4	Stock Alert	USN-12	Alerting the retailer when the stock is low on quantity by using SendGrid.	3	High	Niranjan M(TL) Parvez Musharaf US
Sprint-4	Admin Login	USN-13	As an admin, I can modify and verify the regular and customized users.	2	Medium	Niranjan M(TL) Hariharan.G

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-4	Dashboard and updation.	USN-14	As a user, I can change the UI & update features	2	High	Niranjan M(TL) Deepan CJ Parvez Musharaf US Hariharan.G

Project Tracker, Velocity & Burndown Chart: (4 Marks)

| 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	11	6 Days	24 Oct 2022	29 Oct 2022	11	29 Oct 2022
Sprint-2	10	6 Days	31 Oct 2022	05 Nov 2022	10	05 Nov 2022
Sprint-3	8	6 Days	07 Nov 2022	12 Nov 2022	8	12 Nov 2022
Sprint-4	7	6 Days	14 Nov 2022	19 Nov 2022	9	19 Nov 2022

Velocity:
Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

Our velocity should be:

$$AV \quad \frac{(11+10+8+9)}{24} = \frac{38}{24} = 1.58$$
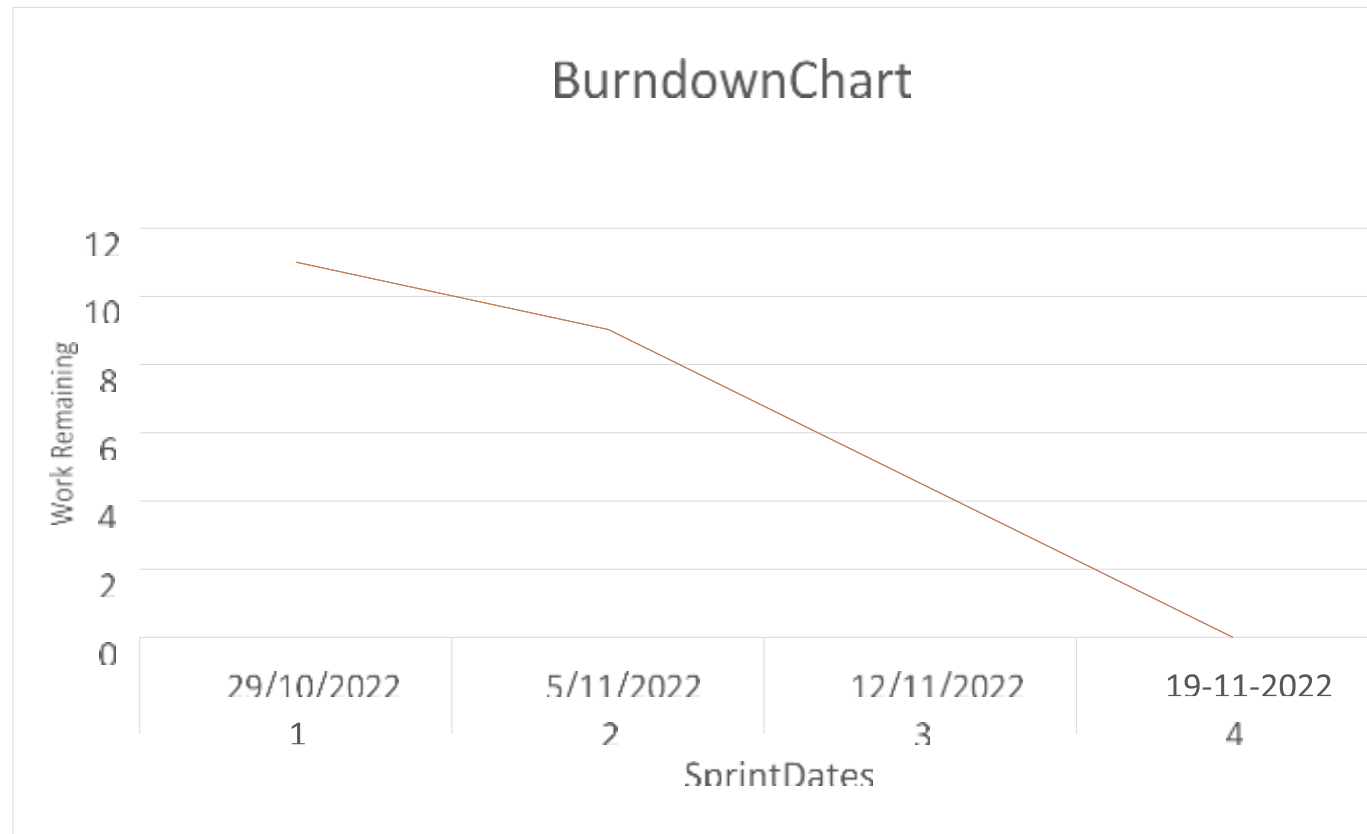
BurndownChart

Burndown Chart:

A burndown chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn-down charts can be applied to any project containing measurable progress over time.

https://www.visual-paradigm.com/scrum/scrum-burndown-chart/

https://www.atlassian.com/agile/tutorials/burndown-charts

Reference:

https://www.atlassian.com/agile/project-management

https://www.atlassian.com/agile/tutorials/how-to-do-scrum-with-jira-software

https://www.atlassian.com/agile/tutorials/epics

https://www.atlassian.com/agile/tutorials/sprints

https://www.atlassian.com/agile/project-management/estimation

https://www.atlassian.com/agile/tutorials/burndown-charts

Gitup I'd:

https://github.com/IBM-EPBL/IBM-Project-5631-1658812191

Flask application link:

http://159.122.183.25:32672/

Video demo link reference:

https://youtu.be/_hLiYkcaeko

IBM I'd:

IBM-Project-5631-1658812191