A company is having manufacturing plants and warehouses in various parts of the country. They manufacture ice-cream and milk products.

They want to build software to achieve two goals.

- Manage the inventory
- Quickest delivery to the customers

Assignment 1:

1. Please make a BRD which can be presented to the client along with complete development and resource plan.

A **Business Requirements Document (BRD)** is a formal document that outlines the **business needs, objectives, and requirements** for a project. It serves as a foundation for project development, ensuring all stakeholders have a clear understanding of what needs to be achieved.

Project Details:

- **Project Name: Ice-Cream & Dairy Inventory & Delivery Management System**
- **Project ID: ICDMS2025**
- **Version ID: 1.0**
- **Author: Manisha Tilekar**
- **Date: 13/07/2025**

1. Document Revisions:

Date	Version Number	Document Changes
05/02/2025	0.1	Initial draft created — project overview added
10/02/2025	0.2	Added detailed requirements for inventory management
15/02/2025	0.3	Included delivery management module requirements
20/02/2025	0.4	Added use case diagrams and process flows
25/02/2025	1	Finalized first version of BRD for review
01/03/2025	1.1	Incorporated stakeholder feedback — updated scope
05/03/2025	1.2	Refined technical requirements and integrations
10/03/2025	1.3	Added non-functional requirements (security, performance)
15/03/2025	1.4	Updated test scenarios and acceptance criteria
20/03/2025	1.5	Final document reviewed and approved for implementation

2. Approvals:

Role	Name	Responsibility	Signature	Date
Project Sponsor	Mr. Ramesh Kulkarni	Approves project budget & final deliverables		
Operations Manager	Ms. Priya Desai	Provides operations and logistics requirements		
Warehouse Manager	Mr. Arjun Singh	Provides warehouse-level processes & needs		
IT Head	Ms. Priya Deshmukh	Technical feasibility & infrastructure support		
Business Analyst	Ms. Manisha Tilekar	Requirements gathering, BRD, coordination		
Project Manager	Mr. Ajay Patil	Manages timelines, resources, and project delivery		
Development Lead	Mr. Karan Sharma	Leads development team		
QA Lead	Mr. Vivek Mehra	Oversees testing activities		
End Users	Warehouse Staff, Delivery Managers	Provide UAT feedback & day-to-day use		

3. RACI Chart for This Document

The RACI chart identifies the persons who need to be contacted whenever changes are made to this document. RACI stands for responsible, accountable, consulted, and informed. These are the main codes that appear in a RACI chart, used here to describe the roles played by team members and stakeholders in the production of the BRD. They are adapted from charts used to assign roles and responsibilities during a project.The following describes the full list of codes used in the table:

R – Responsible: Who does the work to complete the task.

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I – Informed: Who needs to be kept informed about progress or decisions.

Name	Position	R	A	C	I
Mr. Ramesh Kulkarni	CEO / Project Sponsor			✔	✔
Ms. Priya Deshmukh	Director, Fresh Produce (Business Owner)			✔	✔

Mr. Ajay Patil	Senior Project Manager	✔	✔	✔	✔
Ms. Sneha Joshi	Lead Solution Architect	✔	✔		
Mr. Karan Sharma	Senior Software Developer (Dev Lead)	✔	✔		
Ms. Anjali Verma	UX/UI Designer (UX Lead)	✔		✔	
Mr. Vivek Mehra	QA Lead	✔		✔	
Ms. Manisha Tilekar	Business Analyst (BA)	✔	✔	✔	✔

4. Introduction

4.1 Business Goals

The company aims to improve its market position by enhancing operational efficiency and customer satisfaction. A centralized system will streamline inventory, ensure timely delivery of perishable products, and maintain product freshness. By automating tracking, optimizing routes, and monitoring cold chain conditions in real-time, the company seeks to reduce errors, cut costs, and support future growth.

4.2 Business Objectives

- Manage real-time inventory across plants and warehouses.
- Track product batches and expiry to reduce wastage.
- Monitor cold storage with alerts for temperature deviations.
- Efficiently receive and process customer orders.
- Auto-assign orders to nearest stock location.
- Optimize delivery routes for speed and cost.
- Enable real-time delivery tracking for all users.
- Send automated customer notifications and updates.
- Generate reports and dashboards for management.
- Ensure secure, role-based user access.
- Develop mobile apps for easy order management.

4.3 Business Rules

- Record all inventory transactions in real-time.
- Assign unique IDs and expiry dates to each product batch.
- Flag near-expiry products for priority dispatch.
- Trigger alerts for cold storage temperature deviations.

- Follow FIFO for order fulfillment to maintain freshness.
- Allocate orders to nearest location with available stock.
- Restrict inventory/order changes to authorized users only.
- Handle customer data per applicable privacy laws.
- Ensure delivery vehicles meet cold chain standards.
- Review system reports weekly for inventory and delivery metrics.
- Enforce secure, role-based access for mobile app usage.

4.4 Background

Ice-Cream & Dairy Inventory & Delivery Management System operates multiple manufacturing plants and warehouses across the country, producing and distributing ice-cream and milk products.
Currently, the company faces challenges in:

- Managing real-time inventory across multiple locations.
- Ensuring the quickest possible delivery of perishable goods to customers.

An integrated software solution is required to digitize inventory management and optimize delivery operations.

4.5 Project Objective

- Build an integrated system to manage inventory and deliveries of dairy and ice-cream products.
- Enable real-time stock tracking, batch and expiry monitoring, and cold chain compliance.
- Automate order processing and allocate to the nearest stock location.
- Optimize delivery routes for speed and cost-efficiency.
- Provide web and mobile apps for order placement and tracking.
- Generate reports for better planning and decisions.
- Ensure system integration, regulatory compliance, and improved operational efficiency.

4.6 Project Scope

This project aims to develop a centralized system to manage inventory and delivery operations for the company's dairy and ice-cream products.

4.6.1 In-Scope:

- Real-time inventory and batch expiry tracking
- Cold storage monitoring with alerts
- Order placement, processing, and smart allocation
- Delivery route optimization and live tracking

- Role-based user access and notifications
- Reporting dashboards
- Web portal and mobile apps for staff and customers

4.6.2 Out of Scope:

- Integration with external ERP or legacy systems
- Fleet management for third-party logistics
- Marketing and promotion tools
- International shipping
- HR and payroll features
- Delivery will be possible in only tier 1 cities ,tier 2 are not covered.

5. Assumptions

- All sites have stable internet connectivity.
- Cold storage sensors will be installed and functional.
- Accurate master data will be provided pre-deployment.
- Users will be trained on the system and apps.
- Delivery partners will support tracking and routing.
- Food safety and compliance guidelines will be shared.
- Integration approvals with internal systems will be granted.
- Mobile apps will be approved by app stores without delay.

6. Constraints:

The following limitations and restrictions may affect the design, development, and implementation of the project.

- Must be delivered within approved budget and timeline.
- Limited internal IT staff may slow development.
- Legacy system integration may need extra time if added later.
- Cold storage monitoring relies on functional hardware.
- Must comply with food safety and data privacy laws.
- System must handle peak demand without downtime.
- Logistics staff and fleet availability are out of scope.

8. Development plan:

Development Plan (Waterfall Model)

Project: Inventory & Delivery Management System
Model: Waterfall (sequential phases)

Requirements Gathering – 2 weeks

- Study current processes
- Visit plants & warehouses
- Conduct stakeholder interviews
- Document business needs

Requirements Analysis – 2 weeks

- Refine and analyze inputs
- Define functional & non-functional needs
- Finalize and approve BRD

System Design – 3 weeks

- Design architecture & database
- Create UI/UX wireframes and workflows
- Get design sign-off

Development – 8 weeks

- Build Inventory and Delivery modules
- Develop Reporting/Dashboard features
- Perform internal testing

System Testing – 3 weeks

- Conduct QA, integration & performance testing
- Fix bugs and prepare test reports

UAT – 2 weeks

- Pilot run with real users
- Gather feedback and resolve issues
- Final user approval

Deployment & Training – 1 week

- Deploy system and migrate data
- Train users and provide manuals
- Offer 2-week post-launch support

Total Estimated Duration: ~21 weeks (~5 months)

Total Estimated Budget 35–38 Lakhs INR

Phase	Deliverable
Requirements Gathering	**Approved BRD (Business Requirements Document)**
Requirements Analysis	**Functional Specification Document, SRS – Software Requirements Specification, SSD – System Specification Document, RTM – Requirements Traceability Matrix**
System Design	**Architecture diagrams, database design, wireframes**
Development	**Fully built software modules**
System Testing	**QA test cases, defect logs, test report**
UAT	**UAT sign-off document**
Deployment & Training	**Live system, trained users, support plan**

9. Resource Plan:

Role	Quantity	Responsibility
Project Manager	1	Overall project execution
Business Analyst	1	Requirements gathering, documentation
Solution Architect	1	System design
Backend Developer	2	Core development
Frontend Developer	2	UI/UX development
QA/Testers	2	Testing all phases
DevOps Engineer	1	Deployment, environment setup
Trainer	1	User training & support

BUDGET ESTIMATES:

Cost Head	Estimated Cost (INR)	Details
Requirements & Analysis	2,50,000	Business Analyst workshops, site visits, BRD, Use Cases

Design	3,00,000	System architecture, UI/UX wireframes
Development	20,00,000	Backend & Frontend development (inventory + delivery modules)
Testing & QA	4,00,000	Unit, integration, system testing
Deployment & Hosting Setup	2,50,000	Cloud setup, deployment, DevOps
User Training & Support	1,50,000	Staff training, manuals
Contingency (10%)	3,40,000	Unforeseen expenses
Total Estimated Budget	**37,90,000 INR**	*(Approx.)*

7. Risks

This section lists possible risks that could affect the project's success, grouped by category.

7.1 Technological Risks

- IoT device failures or integration issues
- App store approval delays
- Peak-time performance problems

7.2 Skills Risks

- Shortage of skilled developers
- Difficulty in user training
- Dependence on third-party experts

7.3 Political Risks

- Changes in food safety regulations
- Disruption due to local unrest
- New data privacy policies

7.4 Business Risks

- Budget cuts or priority shifts
- Continued inefficiencies if project fails

- Delays may impact customer satisfaction

7.5 Requirements Risks

- Misunderstood or missed needs
- Vague tracking or delivery features
- Scope changes mid-project

7.6 Other Risks

- Staff resistance to change
- Poor connectivity at remote locations
- Data breaches or hardware delays

8. Business Process Overview

This section describes the overall business process flow for managing inventory and deliveries, covering how it is handled currently (**AS-IS**) and setting the context for the new solution (**TO-BE**, if needed later).

8.1 Legacy System (AS-IS):

- Inventory and stock updates are handled manually or via spreadsheets.
- No real-time sync between warehouses, causing stock mismatches.
- Cold storage is monitored manually without instant alerts.
- Orders are received via phone/email and entered manually.
- Stock allocation lacks system-driven optimization.
- Delivery routing is done manually with basic tools.
- No real-time delivery tracking or customer notifications.
- Reports are created manually, often delayed and inaccurate.

8.2 Proposed Recommendations (TO-BE)

- Implement real-time, centralized inventory management.
- Digitally track batches and expiry dates to reduce wastage.
- Use IoT for cold storage monitoring with instant alerts.
- Enable online order placement, tracking, and processing.
- Automate stock allocation based on location and availability.

- Optimize delivery routes with smart planning tools.
- Provide real-time delivery tracking and customer updates.
- Develop mobile apps for order placement and staff operations.
- Auto-generate reports and dashboards for key metrics.
- Use role-based access control for secure data handling.

9. Business Requirements:

The following business requirements have been gathered based on stakeholder discussions, industry analysis, and customer feedback. These requirements ensure smooth operations, scalability, and efficiency within the application.

Requirement ID	Requirement Name	Description	Priority	Category
BRD-001	User Registration	Users should be able to register using email, phone number, or social media.	High	Functional
BRD-002	User Login	Users should be able to log in securely with registered credentials.	High	Functional
BRD-003	Password Recovery	Users should be able to reset forgotten passwords via email or SMS.	High	Functional
BRD-004	Inventory Tracking	System must track stock levels in real time across all plants and warehouses.	High	Functional
BRD-005	Batch & Expiry Management	System must record product batch numbers and expiry dates.	High	Functional
BRD-006	Cold Storage Monitoring	System must monitor storage temperatures and trigger alerts if limits are breached.	High	Functional
BRD-007	Order Placement	Customers should be able to place orders through web and mobile apps.	High	Functional
BRD-008	Order Allocation	System should allocate orders to the nearest warehouse with available stock.	High	Functional
BRD-009	Delivery Route Optimization	System should suggest optimal delivery routes to drivers.	High	Functional
BRD-010	Real-Time Tracking	Customers should be able to track their orders in real time.	High	Functional
BRD-011	Notifications	System must send automated order status updates via SMS/email.	High	Functional
BRD-012	User Roles & Access	System must have role-based access for admin, warehouse staff, delivery managers.	High	Functional

BRD-013	Reporting Dashboard	System must generate daily, weekly, monthly reports on inventory and deliveries.	Medium	Functional
BRD-014	Mobile App Support	System must provide mobile applications for Android and iOS.	High	Functional
BRD-015	Data Backup	System must perform daily data backups automatically.	High	Non-Functional
BRD-016	Security Compliance	System must comply with industry standards for data security and privacy.	High	Non-Functional
BRD-017	Performance	System must handle at least 10,000 concurrent users without performance degradation.	High	Non-Functional
BRD-018	Availability	System must be available 99.9% of the time, excluding planned maintenance.	High	Non-Functional
BRD-019	Usability	System interfaces must be user-friendly and require minimal training for staff.	Medium	Non-Functional
BRD-020	Scalability	System must support future expansion to add new warehouses or plants.	Medium	Non-Functional
BRD-021	Response Time	System must respond to inventory and delivery requests within 2 seconds.	High	Non-Functional
BRD-022	Offline Functionality	Mobile delivery app must support offline updates and sync when online.	Medium	Non-Functional
BRD-023	Audit Logging	System must log all inventory changes and delivery events for auditing.	High	Non-Functional
BRD-024	Data Retention	Inventory and delivery data must be retained for a minimum of 5 years.	Medium	Non-Functional
BRD-025	Interoperability	System must allow data export in CSV, JSON, and XML formats.	Low	Non-Functional
BRD-026	Localization	Interface should support English and at least one regional language.	Medium	Non-Functional

BRD-028	Compliance	System must adhere to local regulatory requirements for inventory management.	High	Non-Functional

10. Appendices

10.1 List of Acronyms

Acronym	Description
BRD	Business Requirements Document
ERP	Enterprise Resource Planning
IoT	Internet of Things
FIFO	First In, First Out
API	Application Programming Interface
SLA	Service Level Agreement
OTP	One-Time Password
UAT	User Acceptance Testing
KPI	Key Performance Indicator

10.2 Glossary of Terms

Term	Definition
Inventory Management	Process of tracking stock levels, movements, and availability.
	.
Batch Number	Unique identifier for a production lot of products.
Expiry Date	The date after which a product is no longer fit for sale or use.
Role-Based Access	System control that restricts access based on user roles.
Order Allocation	The process of assigning an order to a specific plant or warehouse.

Term	Definition
Route Optimization	Process of determining the most efficient delivery route.
Real-Time Tracking	Monitoring order status and location instantly as it moves through the process.
Mobile Application	Software installed on smartphones for customer and staff use.
Dashboard	Visual interface displaying key business metrics and reports.

10.3 Related Documents

- Feasibility Study Report
- Stakeholder Analysis Report
- Use Case Specifications
- Process Flow Diagrams
- Use case diagram and Activity diagram
- Risk Management Plan
- Change Management Plan
- User Training Materials
- UAT Plan and Test Cases

2. Prepare process flow diagram using your imagination.

Process flow diagram :

A **Process Flow Diagram (PFD)** is a **visual representation** of a process that shows the **sequence of steps, decisions, and interactions** in a system or workflow. It uses standard flowchart symbols to illustrate how a process moves from **start to finish**, making it easy to understand, analyze, and improve.

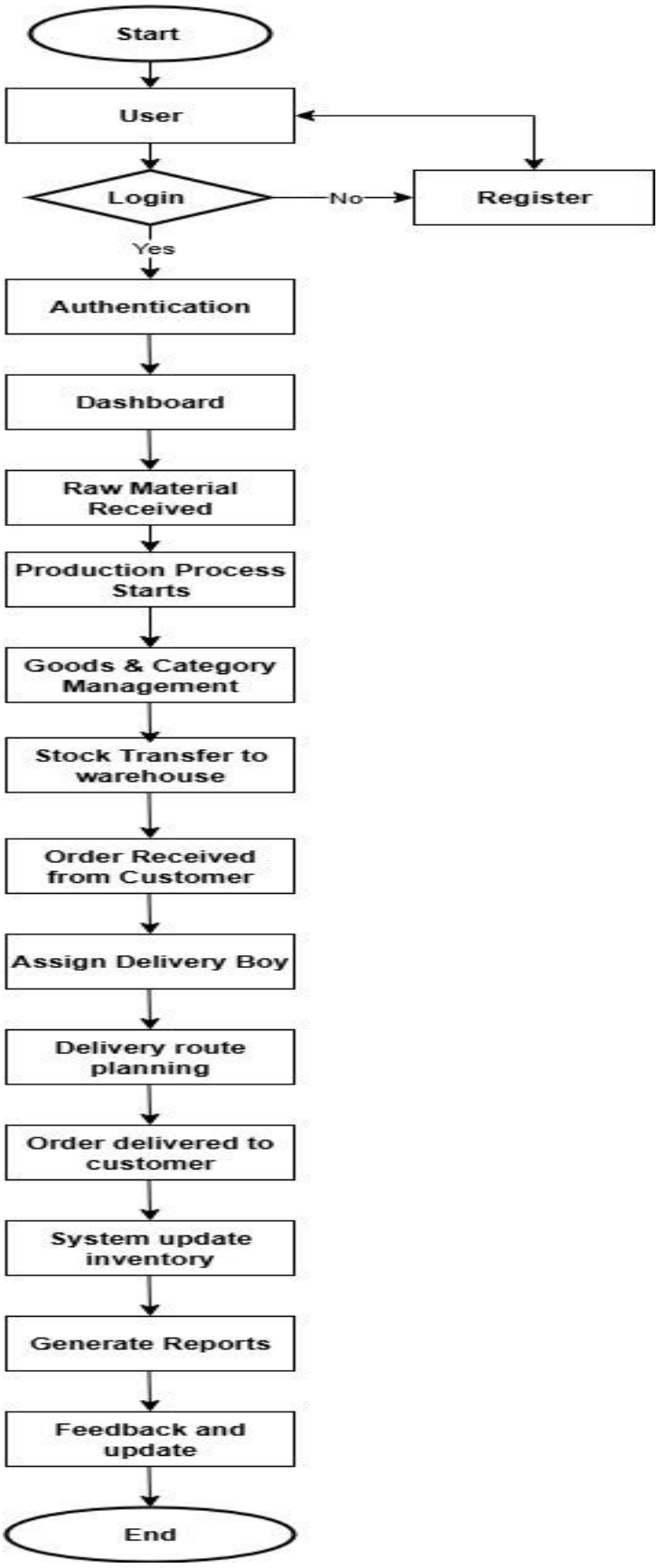
1**. Symbols Used in a Process Flow Diagram**

Each symbol in a **PFD** has a specific meaning:

Symbol	Name	Purpose
Oval	**Start/End**	Represents the beginning or end of a process.

▣ **Rectangle**	**Process Step**	Represents an action, task, or operation.
◆ **Diamond**	**Decision Point**	Represents a Yes/No or True/False decision.
→ **Arrow**	**Flow Connector**	Shows the direction of the process.
▱ **Parallelogram**	**Input/Output**	Represents input (e.g., user entry) or output (e.g., order confirmation).

A **Process Flow Diagram (PFD)** is an essential tool for understanding, analyzing, and improving workflows. It helps businesses optimize processes and ensures **clarity in operations**.


Start
User
Login
No
Register
Yes
Authentication
Dashboard
Raw Material Received
Production Process Starts
Goods & Category Management
Stock Transfer to warehouse
Order Received from Customer
Assign Delivery Boy
Delivery route planning
Order delivered to customer
System update inventory
Generate Reports
Feedback and update
End

Assignment 2:

1. Write an introduction letter to a client introducing yourself as a business analyst in charge of working with the client and his team to start the business understanding process.

Subject: Introduction – Your Business Analyst for Ice-Cream & Dairy Inventory & Delivery Management System

Dear Mr. Rahul Mehra**,**

I hope this message finds you well.

My name is Manisha Tilekar, and I will be working with you as the Business Analyst for your Inventory and Delivery Management System project. I am excited to partner with you and your team to help transform your ideas and business goals into a clear, actionable plan that ensures we deliver a successful solution.

As your Business Analyst, my primary responsibility is to understand your business processes in depth, capture your requirements accurately, and translate them into detailed specifications that our technical team can develop effectively. I will be working closely with you and your stakeholders through discussions, workshops, and reviews to ensure we capture every critical detail and align the solution with your strategic objectives.

In the coming days, I would like to schedule our first kickoff meeting to:

- Understand your current inventory and delivery operations.
- Identify key challenges and improvement areas.
- Discuss and finalize initial goals, timelines, and next steps.

Please feel free to share any initial documents, processes, or insights you think would help us get started. I am here to make this process smooth, collaborative, and transparent.

Looking forward to working with you and your team on this exciting project.

Thank you for your trust and cooperation.

Best regards,
Manisha Tilekar
Business Analyst
K12 Techno Services Private Limted
7350307792
manishatilekar98@K12techno.com

2. Prepare a brief BRD and SRS for a project- online store.(Online Fruits & Vegetables Store)

Project Details

- **Project Name: Fresh Harvest – Online Fruits & Vegetables Store**
- **Project ID: FH-MKT-2025-01**

- **Version ID: 1.0**
- **Author: Manisha Tilekar**
- **Date: 13/07/2025**

1. Document Revisions

Date	Version Number	Document Changes
05/02/2025	0.1	Initial Draft prepared for stakeholder review.
12/02/2025	0.2	Updated Business Objectives and Project Scope based on stakeholder feedback.
20/02/2025	0.3	Added Risk Analysis and Business Process Overview sections.
25/02/2025	0.4	Included detailed Business Requirements and Appendices.
28/02/2025	1	Final version approved and baseline established for development.

2.Approvals:

Approval Table for your Fruits and Vegetables Online Store BRD, using typical example names and titles

Role	Name	Title	Signature	Date
Project Sponsor	Mr. Ramesh Kulkarni	CEO		
Business Owner	Ms. Priya Deshmukh	Director, Fresh Produce		
Project Manager	Mr. Ajay Patil	Senior Project Manager		
Business Analyst	Ms. Manisha Tilekar	Business analyst		
System Architect	Ms. Sneha Joshi	Lead Solution Architect		
Development Lead	Mr. Karan Sharma	Senior Software Developer		
User Experience Lead	Ms. Anjali Verma	UX/UI Designer		
Quality Lead	Mr. Vivek Mehra	QA Lead		
Content Lead	Ms. Neha Pawar	Content Strategist		

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Mr. Ajay Patil	Senior Project Manager	✔	✔	✔	✔
Ms. Sneha Joshi	Lead Solution Architect	✔	✔		
Mr. Karan Sharma	Senior Software Developer (Dev Lead)	✔	✔		
Ms. Anjali Verma	UX/UI Designer (UX Lead)	✔	✔	✔	
Mr. Vivek Mehra	QA Lead	✔		✔	
Ms. Neha Pawar	Content Strategist (Content Lead)	✔		✔	
Ms. Manisha Tilekar	Business Analyst (BA)	✔	✔	✔	✔

4. Introduction

4.1. Business Goals

The organization aims to bridge the gap between local farmers, wholesalers, and end customers by providing a seamless, user-friendly digital platform. The goal is to ensure fresh fruits and vegetables are delivered to customers' doorsteps while supporting local farmers and vendors with better market access.

4.2. Business Objectives

To provide an IT solution for:

- Developing a robust online store for ordering fresh fruits and vegetables.
- Offering a mobile application for Android and iOS platforms.
- Enabling real-time inventory tracking for perishable items.
- Integrating secure online payment gateways (UPI, Credit/Debit Cards, Wallets, COD).
- Implementing an efficient delivery tracking and management system.
- Facilitating farmer onboarding and management.
- Providing order history, repeat orders, and user-friendly customer support.

4.3. Business Rules

- Only registered Farmers can list produce on the platform.
- All transactions must comply with local food safety and e-commerce regulations.
- Delivery slots and areas will be limited to operational zones.
- Refunds for spoiled goods must follow company refund policy.
- Price fluctuations must be updated daily based on market rates.
- Discounts and promotional offers should follow approval workflows.

4.4. Background

The idea for this project emerged due to supply chain challenges faced by local farmers and urban customers who struggle to get fresh produce at fair prices. The current distribution model involves multiple intermediaries, leading to wastage and higher costs. By creating a direct digital channel, the business expects to minimize waste, increase profit margins for farmers, and deliver fresher products to customers.

4.5. Project Objective

The objective of this project is to design and implement a **scalable, secure, and user-friendly online marketplace** for fresh fruits and vegetables, accessible through both **web and mobile platforms**. The solution will:

- Seamlessly **integrate with third-party logistics providers** to ensure timely and efficient delivery.
- Connect with **existing farmer/vendor management systems** for real-time inventory and pricing updates.
- Support **multiple secure payment gateways** for smooth and safe transactions.
- Adhere to **food safety, hygiene, and e-commerce regulatory standards**.

- Offer an intuitive **user interface** for customers, farmers, vendors, and delivery personnel, ensuring ease of navigation and smooth order management.

The end goal is to bridge the gap between farmers and consumers by offering a reliable digital platform that promotes fresh, local produce while supporting sustainable agricultural practices.

4.6. Project Scope

4.6.1. In-Scope Functionality

- User registration and login (Customers & Vendors)
- Product catalog with daily price updates
- Shopping cart and checkout process
- Secure online payment integration
- Order tracking and status updates
- Customer support chatbot & FAQs
- Delivery management integration
- Mobile apps (Android & iOS)
- Vendor portal for inventory and order management
- Notifications via SMS/email

4.6.2. Out-of-Scope Functionality

- International delivery
- B2B wholesale features
- Integration with cold storage management systems
- Loyalty program integration (future phase)
- Advanced AI-based demand forecasting (future phase)
- Only operate in metro cities tier 2 cities are not covered yet.

5. Assumptions

- Customers have reliable internet access.
- Farmers and Vendors are trained to update their stock regularly.
- Delivery partners have GPS-enabled devices for tracking.
- Payment gateway partnerships will be secured before launch.
- Regulatory clearances for selling fresh produce online will be obtained.

6. Constraints

- Limited initial delivery radius (only major cities).
- Seasonal availability of certain fruits and vegetables.
- Budget constraints for marketing and promotions.
- Dependency on third-party delivery partners.

7. Risks

Technological Risks:

- New mobile app performance issues on low-end devices.
- Integration failures with third-party payment gateways or delivery APIs.

Skills Risks:

- Lack of skilled developers or mobile app testers familiar with real-time inventory updates.

Political Risks:

- Policy changes in food supply chain or restrictions on online sales of fresh produce.

Business Risks:

- Low user adoption due to existing local markets or competition from established grocery delivery apps.

Requirements Risks:

- Misunderstood farmer/vendor requirements for onboarding.
- Incomplete documentation for delivery partner integration.

Other Risks:

- Weather conditions affecting the availability of fresh produce.
- Data security and privacy compliance failures.

8. Business Process Overview

8.1. Legacy System (AS-IS)

- Customers buy from local markets, vendors, or supermarkets.
- No digital option for browsing or purchasing.
- Farmers rely on middlemen to sell produce.
- Middlemen take a large share of farmer profits.

- Pricing is not transparent for farmers or customers.
- Delays in transport lead to product spoilage.
- Farmers have limited reach to potential buyers.
- No real-time inventory or demand data.
- Manual transactions with no order tracking.

8.2. Proposed Recommendations (TO-BE)

- Launch a digital store (web and mobile) for direct ordering.
- Enable farmers/vendors to sell directly to customers.
- Provide real-time updates on availability and pricing.
- Integrate with third-party logistics for fast delivery.
- Optimize delivery routes to reduce delays and spoilage.
- Offer secure and flexible digital payment options.
- Ensure better freshness and quality through faster delivery.
- Increase transparency in pricing and sourcing.
- Improve farmer income by cutting out intermediaries.

9. Business Requirements

Requirement ID	Requirement Name	Description	Priority	Category
FR-01	Customer Registration	Customers can register using mobile/email with OTP verification.	High	Functional
FR-02	Vendor Registration	Vendors can apply for onboarding, subject to admin approval.	High	Functional
FR-03	Secure Login	Login using password, with option to recover/reset.	High	Functional
FR-04	Product Catalog	Browse fruits and vegetables with images, price, and descriptions.	High	Functional
FR-05	Search & Filter	Search and filter by name, type, price, availability, or location.	High	Functional
FR-06	Shopping Cart	Add, update, and remove products from cart.	High	Functional
FR-07	Checkout & Payment	Multiple options: UPI, cards, wallets, COD.	High	Functional
FR-08	Order Tracking	Real-time order status and estimated delivery time.	High	Functional
FR-09	Notifications	Email/SMS/app alerts for order updates, promos, and feedback.	Medium	Functional
FR-10	Admin Dashboard	Admin panel to manage users, vendors, products, orders, and payments.	High	Functional
FR-11	Vendor Dashboard	Vendors can manage inventory, pricing, and order status.	High	Functional
FR-12	Product Upload (Vendor)	Vendors can upload product images, price, and stock via dashboard.	High	Functional
FR-13	Inventory Management	Vendors/admin can monitor and update product availability.	High	Functional
FR-14	Review & Ratings	Customers can rate products and provide feedback.	Medium	Functional
FR-15	Delivery Assignment	Assign orders to delivery agents automatically or manually.	High	Functional
FR-16	Delivery Partner Login	Separate login for delivery agents to view assigned orders.	Medium	Functional
FR-17	Refund & Cancellation	Customers can cancel orders and request refunds as per policy.	Medium	Functional
FR-18	Offers & Coupons	Admin can create and manage discount codes and offers.	Medium	Functional

FR-19	Order History	Customers can view previous orders and reorder.	High	Functional
FR-20	Multi-language Support (UI)	UI can be displayed in local languages.	Low	Functional
NFR-01	Performance	Support 5000+ concurrent users with <3s response time.	High	Non-Functional
NFR-02	Security	HTTPS, data encryption, secure authentication and authorization.	High	Non-Functional
NFR-03	Availability	99.5% uptime with monitoring and alerting.	High	Non-Functional
NFR-04	Backup	Daily backups and disaster recovery within 4 hours.	Medium	Non-Functional
NFR-05	Usability	Intuitive, responsive UI with accessibility standards.	High	Non-Functional
NFR-06	Scalability	Should handle growth in users, vendors, and transactions.	Medium	Non-Functional
NFR-07	Compatibility	Works across major browsers (Chrome, Firefox, Safari) and mobile OS.	Medium	Non-Functional
NFR-08	Localization Support	Support multi-region, multi-currency, and regional product info.	Low	Non-Functional
NFR-09	Logging & Audit Trail	Record user/vendor/admin activities for security and debugging.	High	Non-Functional
NFR-10	Load Testing & Monitoring	Regular testing and real-time system health monitoring.	Medium	Non-Functional

10. Appendices

10.1. List of Acronyms

- UPI: Unified Payments Interface
- COD: Cash on Delivery
- API: Application Programming Interface

10.2. Glossary of Terms

- Vendor: Farmer or seller who supplies produce.
- Customer: End-user purchasing fruits & vegetables.

- Delivery Partner: Third-party logistics service.

10.3. Related Documents

- Use Case Specifications
- User Stories
- Data Privacy Policy
- Integration Contracts with Payment Gateways

Software Requirements Specification (SRS)

Project: Online Fruits and Vegetables Store
Prepared By: Manish Tilekar
Date: 13 /07/2025
Version: 1.0

1. Introduction

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) is to define the requirements for developing an online platform for selling fresh fruits and vegetables directly to customers through a website and mobile application. It will serve as the formal agreement between stakeholders and the development team.

1.2 Scope

The system will enable:

- Customers to browse, search, and order fresh produce online.
- Vendors (farmers/local sellers) to list products and manage inventory.
- An admin to manage the overall platform, users, vendors, and transactions.
- Integration with secure payment gateways and delivery partners for smooth transactions and tracking.

1.3 References

- Business Requirements Document (BRD)
- Use Case Diagrams
- Stakeholder Interviews and Elicitation Notes
- Applicable Food Safety and E-Commerce Regulations

1.4 Overview

This SRS outlines the system features, functional and non-functional requirements, external interfaces, constraints, and assumptions.

2. Overall Description

2.1 Product Perspective

This is a standalone platform with third-party integrations for payments, delivery tracking, and notifications. It will replace manual order-taking and enable better reach for local vendors.

2.2 Product Functions

- Customer registration, login, and profile management
- Vendor registration, approval, and product management
- Product catalog with search and filter options
- Shopping cart, checkout, and secure payment processing
- Order history and real-time delivery tracking
- Notifications via email/SMS
- Admin panel for platform management

2.3 User Classes and Characteristics

- Customer: End-users buying produce; minimal technical expertise expected.
- Vendor: Local farmers/vendors with basic digital literacy.
- Admin: Internal team responsible for system configuration and issue resolution.
- Delivery Partner: Integrated through APIs.

3. Specific Requirements

Requirement ID	Requirement Name	Description	Priority	Category
FR-01	Customer Registration	Customers can register using mobile/email with OTP verification.	High	Functional
FR-02	Vendor Registration	Vendors can apply for onboarding, subject to admin approval.	High	Functional
FR-03	Secure Login	Login using password, with option to recover/reset.	High	Functional

FR-04	Product Catalog	Browse fruits and vegetables with images, price, and descriptions.	High	Functional
FR-05	Search & Filter	Search and filter by name, type, price, availability, or location.	High	Functional
FR-06	Shopping Cart	Add, update, and remove products from cart.	High	Functional
FR-07	Checkout & Payment	Multiple options: UPI, cards, wallets, COD.	High	Functional
FR-08	Order Tracking	Real-time order status and estimated delivery time.	High	Functional
FR-09	Notifications	Email/SMS/app alerts for order updates, promos, and feedback.	Medium	Functional
FR-10	Admin Dashboard	Admin panel to manage users, vendors, products, orders, and payments.	High	Functional
FR-11	Vendor Dashboard	Vendors can manage inventory, pricing, and order status.	High	Functional
FR-12	Product Upload (Vendor)	Vendors can upload product images, price, and stock via dashboard.	High	Functional
FR-13	Inventory Management	Vendors/admin can monitor and update product availability.	High	Functional
FR-14	Review & Ratings	Customers can rate products and provide feedback.	Medium	Functional
FR-15	Delivery Assignment	Assign orders to delivery agents automatically or manually.	High	Functional
FR-16	Delivery Partner Login	Separate login for delivery agents to view assigned orders.	Medium	Functional
FR-17	Refund & Cancellation	Customers can cancel orders and request refunds as per policy.	Medium	Functional
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NFR-09	Logging & Audit Trail	Record user/vendor/admin activities for security and debugging.	High	Non-Functional
NFR-10	Load Testing & Monitoring	Regular testing and real-time system health monitoring.	Medium	Non-Functional

3.Make an ERD of creating a support ticket/Ticketing life cycle.

The Support Ticket / Ticketing Life Cycle refers to the end-to-end process of how a customer support issue (called a "ticket") is created, managed, resolved, and closed within a service desk or helpdesk system.

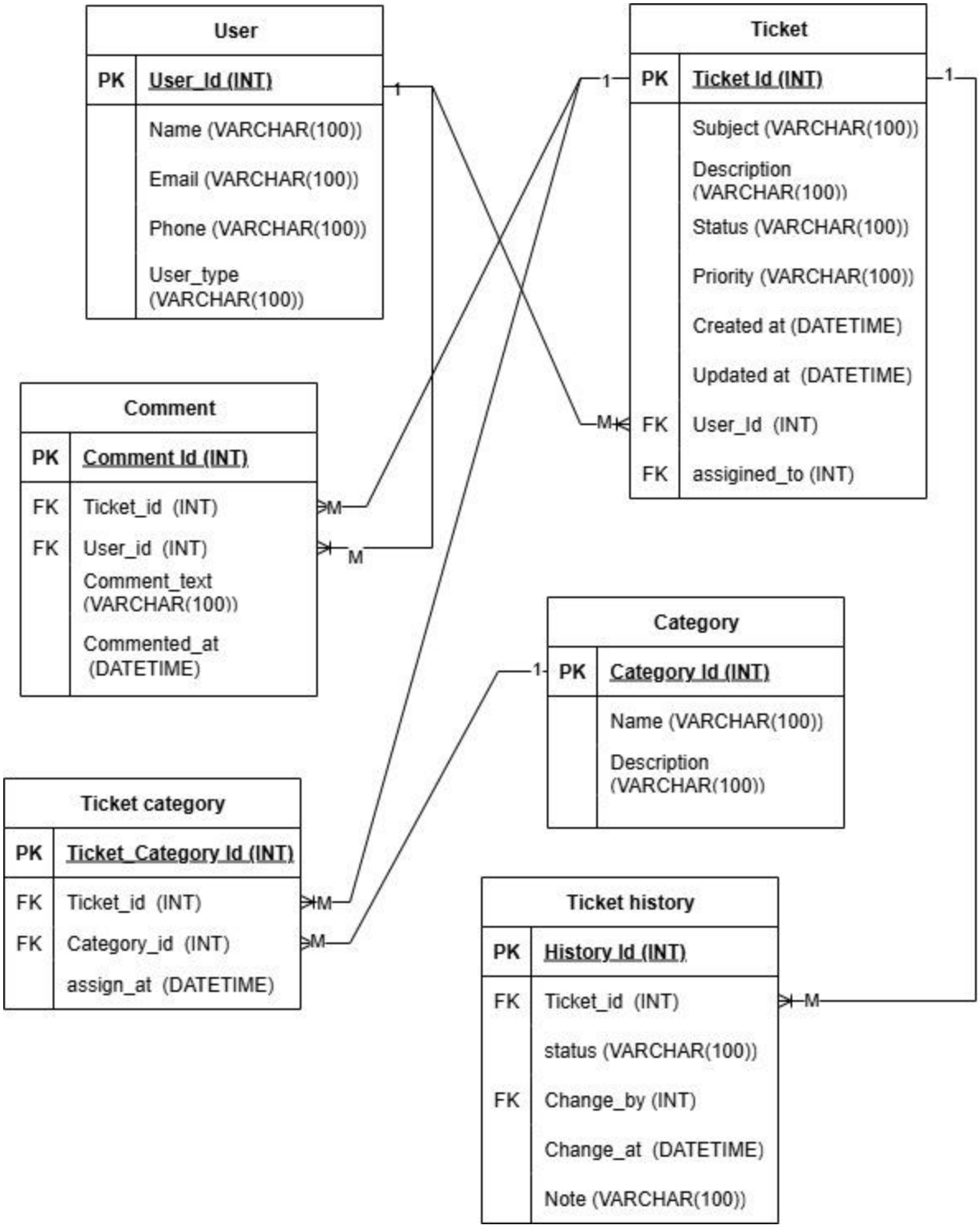
An **Entity-Relationship (ER) Diagram** is a visual representation of a database's structure that shows how entities (tables) in a database are related to one another. It is commonly used in database design to outline the entities, their attributes, and the relationships between them, making it easier for developers and stakeholders to understand and design the database.

Key Components of an ER Diagram

1. **Entities**
    - Entities represent objects or concepts within the system, such as User, Product, Order, etc.
    - Each entity has attributes that describe its properties. For example, a User entity might have attributes like UserID, Name, and Email.
2. **Attributes**
    - Attributes describe the details of an entity.

- **Types of Attributes**:
  - **Primary Key**: A unique identifier for each entity instance, underlined in ER diagrams.
  - **Foreign Key**: An attribute that links one entity to another.
  - **Composite Attribute**: An attribute that can be divided into smaller sub-attributes (e.g., Full Name could be divided into First Name and Last Name).
  - **Derived Attribute**: An attribute that can be derived from other attributes (e.g., Age can be derived from Date of Birth).

3. **Relationships**
   - Relationships describe how entities are connected and interact with one another.
   - **Types of Relationships**:
     - **One-to-One**: One instance of an entity relates to only one instance of another entity.
     - **One-to-Many** : One instance of an entity can relate to multiple instances of another entity.
     - **Many-to-Many**: Multiple instances of one entity can relate to multiple instances of another entity.
4. **Cardinality**
   - **Cardinality** defines the numerical relationship between two entities and specifies how many instances of one entity relate to instances of another.
   - Cardinality is represented as symbols or numbers on the relationship lines:
   - 1 (one), N (many), or a specific range (e.g., 1..N).


User
PK
User_Id (INT)
Name (VARCHAR(100))
Email (VARCHAR(100))
Phone (VARCHAR(100))
User_type (VARCHAR(100))
Ticket
PK
Ticket Id (INT)
Subject (VARCHAR(100))
Description (VARCHAR(100))
Status (VARCHAR(100))
Priority (VARCHAR(100))
Created at (DATETIME)
Updated at (DATETIME)
FK
User_Id (INT)
FK
assigined_to (INT)
Comment
PK
Comment Id (INT)
FK
Ticket_id (INT)
FK
User_id (INT)
Comment_text (VARCHAR(100))
Commented_at (DATETIME)
Category
PK
Category Id (INT)
Name (VARCHAR(100))
Description (VARCHAR(100))
Ticket category
PK
Ticket_Category Id (INT)
FK
Ticket_id (INT)
FK
Category_id (INT)
assign_at (DATETIME)
Ticket history
PK
History Id (INT)
FK
Ticket_id (INT)
status (VARCHAR(100))
FK
Change_by (INT)
Change_at (DATETIME)
Note (VARCHAR(100))
1
M

1. User Table

- **Purpose: Stores users who raise or manage tickets (could be customers, agents, admins).**
- **Key Attributes:**
  - **User_Id (Primary Key)**
  - **Name, Email, Phone**
  - **User_type (e.g., "customer", "agent", "admin")**

2. Ticket Table

- **Purpose: Stores ticket details raised by users.**
- **Key Attributes:**
  - **Ticket_Id (Primary Key)**
  - **Subject, Description**
  - **Status (e.g., Open, In Progress, Closed)**
  - **Priority (e.g., Low, Medium, High)**
  - **Created_at, Updated_at**
  - **User_Id (FK: who created the ticket)**
  - **assigned_to (FK: user assigned to handle the ticket)**
- **Relationships:**
  - **One user can raise many tickets (1:M)**
  - **One ticket is assigned to one user (M:1)**

3. Comment Table

- **Purpose: Tracks user comments on tickets.**
- **Key Attributes:**
  - **Comment_Id (Primary Key)**
  - **Ticket_id (FK)**
  - **User_id (FK)**
  - **Comment_text, Commented_at**
- **Relationships:**
  - **Many users can comment on many tickets (M:M)**

4. Category Table

- **Purpose: Defines categories to classify tickets (e.g., Technical Issue, Billing).**
- **Key Attributes:**
  - **Category_Id (Primary Key)**
  - **Name, Description**

5. Ticket_Category Table

- **Purpose: Maps tickets to categories (many-to-many relationship).**
- **Key Attributes:**
    - **Ticket_Category_Id (Primary Key)**
    - **Ticket_id (FK)**
    - **Category_id (FK)**
    - **assign_at (date of assignment)**
- **Relationships:**
    - **One ticket can belong to many categories and vice versa (M:M)**

6. Ticket_History Table

- **Purpose: Logs changes made to ticket status over time.**

Overall Flow:

- **User creates a Ticket.**
- **Tickets may belong to one or more Categories.**
- **Users can comment on tickets.**
- **Tickets can be assigned to other Users.**
- **All status changes are logged in Ticket_History.**

Key Relationships

- **User ↔ Ticket**: 1 user can create many tickets or be assigned to many
- **Ticket ↔ Comment**: 1 ticket can have many comments
- **User ↔ Comment**: 1 user can post many comments
- **Ticket ↔ Category**: many-to-many (via Ticket Category)
- **Ticket ↔ Ticket History**: 1 ticket can have many history records

4.User story of shopping from ecommerce.

A **user story** is a simple, concise description of a feature or requirement written from the perspective of the end user. It captures **what the user wants** and **why they want it** without specifying technical details. User stories are fundamental to Agile development and help teams understand and deliver user-centric solutions.

"As a [type of user], I want [some goal or functionality] so that [reason or benefit]."

Components of a User Story:

1. **Title:**

- A short, descriptive name for the user story.
- Example: "User Registration."

2. **Description:**

    - The detailed statement of what the user wants.
    - Example: "As a new customer, I want to register in the application so that I can place orders."

3. **Acceptance Criteria:**

    - Specific, measurable conditions that must be met for the story to be considered complete.
    - Example:

        - A registration form with fields for name, email, and password.
        - User receives a confirmation email upon successful registration.

4. **Priority:**

    - Indicates the importance of the story (e.g., High, Medium, Low).
    - Helps the team decide the order of implementation.

5. **Business Value (BV):**

    - How valuable the story is to the business or stakeholders.
    - Example: 500 Scrum currency points.

6. **Complexity Points (CP) / Story Points:**

    - Effort required to implement the story, often estimated by the development team.
    - Example: 5 points.

7. **Tasks:**

    - Sub-tasks or steps required to complete the user story.
    - Example: Design the UI, code the backend, test the feature.

8. **User Role:**

    - Defines who the user is (e.g., Customer, Admin, Delivery Boy).
    - Example: "As a **Customer**..."

User Story No:1	Tasks:2	Priority: Highest
AS A CUSTOMER, I WANT TO REGISTER ON THE PLATFORM SO THAT I CAN LOGIN TO MAKE PURCHASES		
BV:2000	**CP:5**	
ACCEPTANCE CRITERIA: 1. User can register using a valid email and mobile number. 2. On successful registration, a confirmation email is sent. 3. If user already exists, system displays 'User already registered'..		

User Story No:2	Tasks:1	Priority: High
AS A CUSTOMER, I WANT TO BROWSE PRODUCTS BY CATEGORY SO THAT I CAN FIND ITEMS EASILY		
BV:500	**CP:3**	
ACCEPTANCE CRITERIA: 1. Homepage displays clear product categories and subcategories. 2. User can click on any category and view related items. 3. Filtering and sorting options are available per category.		

User Story No:3	Tasks:2	Priority: Highest
AS A CUSTOMER, I WANT TO ADD ITEMS TO CART SO THAT I CAN BUY MULTIPLE PRODUCTS		
BV:500	**CP:3**	
ACCEPTANCE CRITERIA: 1. User can add products to cart from product listing or details page. 2. Cart dynamically updates quantity and price. 3. Items in cart are saved across sessions (for logged-in users).		

User Story No:4	Tasks:3	Priority: Highest
AS A CUSTOMER, I WANT TO MAKE PAYMENT SECURELY SO THAT I CAN COMPLETE MY ORDER		

BV:2000	CP:5
ACCEPTANCE CRITERIA: 1. System supports multiple payment options (credit/debit/UPI). 2. On successful payment, order summary and receipt are shown. 3. User receives confirmation by email and SMS.	

User Story No:5	Tasks:1	Priority: Medium
AS A CUSTOMER, I WANT TO TRACK MY ORDER SO THAT I CAN KNOW THE STATUS		
BV:500	**CP:2**	
ACCEPTANCE CRITERIA: 1. Order status page shows status like 'Shipped', 'In Transit'. 2. Delivery date estimate is shown based on PIN code. 3. User gets notifications for key status changes.		

User Story No:6	Tasks:2	Priority: Medium
AS A CUSTOMER, I WANT TO CANCEL AN ORDER BEFORE SHIPPING SO THAT I AVOID UNNECESSARY CHARGES.		
BV:100	**CP:3**	
ACCEPTANCE CRITERIA: 1. User can cancel an order from the order history page. 2. Cancel button is disabled if order is already shipped. 3. Refund (if paid) is auto-initiated to the original payment method.		

User Story No:7	Tasks:2	Priority: High
AS AN ADMIN, I WANT TO APPROVE SELLER ACCOUNTS SO THAT ONLY VERIFIED VENDORS SELL.		
BV:200	**CP:3**	
ACCEPTANCE CRITERIA: 1. Admin sees a list of new seller registration requests. 2. Each request can be approved or rejected with a reason.		

3. Seller receives notification upon approval or rejection

User Story No:8	Tasks:2	Priority: High
AS AN ADMIN, I WANT TO MONITOR SALES REPORTS SO THAT I CAN TRACK PLATFORM PERFORMANCE.		
BV:200	**CP:3**	
ACCEPTANCE CRITERIA: 1. Admin dashboard displays real-time sales data. 2. Sales can be filtered by date range, category, vendor. 3. Reports can be exported to Excel or PDF.		

User Story No:9	Tasks:1	Priority: Medium
AS AN ADMIN, I WANT TO MANAGE PRODUCT CATEGORIES SO THAT USERS CAN BROWSE EASILY		
BV:200	**CP:2**	
ACCEPTANCE CRITERIA: 1. Admin can create, update, and delete categories. 2. Categories display correctly on customer UI. 3. Changes reflect in real-time on the storefront.		

User Story No:10	Tasks:2	Priority: Medium
AS AN ADMIN, I WANT TO MONITOR COMPLAINTS SO THAT I CAN RESOLVE ISSUES QUICKLY		
BV:500	**CP:3**	
ACCEPTANCE CRITERIA: 1. Admin panel lists open customer complaints. 2. Complaints can be filtered by date, type, or status. 3. Admin can assign complaints to support team.		

User Story No:11	Tasks:3	Priority: Medium
AS AN ADMIN,		

I WANT TO APPROVE PRODUCT LISTINGS SO THAT INAPPROPRIATE ITEMS ARE BLOCKED	
BV:100	**CP:2**
ACCEPTANCE CRITERIA: 1. Admin is notified when a vendor adds a new product. 2. Admin reviews product details and images. 3. Listing goes live only after approval.	

User Story No:12	**Tasks:2**	**Priority: low**
AS AN ADMIN, I WANT TO POST PROMOTIONAL BANNERS SO THAT USERS ARE AWARE OF OFFERS		
BV:50	**CP:1**	
ACCEPTANCE CRITERIA: 1. Admin can upload banner image and set start/end dates. 2. Banners appear on homepage during active period. 3. Expired banners are auto-remove		

User Story No:13	**Tasks:2**	**Priority: High**
AS A VENDOR, I WANT TO REGISTER AS A SELLER SO THAT I CAN SELL MY PRODUCTS		
BV:200	**CP:2**	
ACCEPTANCE CRITERIA: 1. Vendor can sign up with business and banking info. 2. Vendor receives email verification for approval. 3. Account status is shown as Pending/Approved.		

User Story No:14	**Tasks:1**	**Priority: High**
AS A VENDOR, I WANT TO ADD PRODUCTS SO THAT CUSTOMERS CAN SEE AND BUY		
BV:200	**CP:5**	
ACCEPTANCE CRITERIA: 1. Vendor can add product details, images, price, and stock.		

2. All fields are validated before submission.
3. Product remains in draft until approved by admin.

User Story No:15	**Tasks:2**	**Priority: Medium**
AS A VENDOR, I WANT TO VIEW MY ORDERS SO THAT I CAN FULFILL THEM QUICKLY		
BV:100	**CP:2**	
ACCEPTANCE CRITERIA: 1. Vendor dashboard shows all placed orders with details. 2. Vendor can change status to 'Processing', 'Shipped'. 3. Filters available by status and date.		

User Story No:16	**Tasks:1**	**Priority: Medium**
AS A VENDOR, I WANT TO UPDATE STOCK SO THAT OUT-OF-STOCK ITEMS AREN'T DISPLAYED		
BV:200	**CP:5**	
ACCEPTANCE CRITERIA: 1. Vendor can manually adjust stock quantity. 2. Stock can be updated via bulk upload. 3. Products with 0 quantity show as 'Out of Stock'.		

User Story No:17	**Tasks:2**	**Priority: Low**
AS A VENDOR, I WANT TO RESPOND TO REVIEWS SO THAT I CAN MAINTAIN GOOD FEEDBACK.		
BV:50	**CP:2**	
ACCEPTANCE CRITERIA: 1. Vendor can reply to customer reviews publicly. 2. Replies are moderated by admin before publishing. 3. Vendor is notified when a new review is posted.		

User Story No:18	**Tasks:2**	**Priority: Low**

AS A VENDOR, I WANT TO VIEW PAYOUT REPORTS SO THAT I KNOW MY EARNINGS	
BV:50	**CP:1**
ACCEPTANCE CRITERIA: 1. Reports show completed orders and revenue. 2. Vendor can filter by date or payment status. 3. Downloadable CSV or PDF report format.	

User Story No:19	**Tasks:2**	**Priority: High**
AS A DELIVERY PARTNER, I WANT TO VIEW MY ASSIGNED DELIVERIES SO THAT I CAN PLAN MY DAY		
BV:500	**CP:2**	
ACCEPTANCE CRITERIA: 1. Delivery dashboard lists all active assignments. 2. Each assignment includes pickup/drop address and contact info. 3. Display expected delivery time for each task.		

User Story No:20	**Tasks:1**	**Priority: High**
AS A DELIVERY PARTNER, I WANT TO UPDATE DELIVERY STATUS SO THAT THE SYSTEM STAYS UP-TO-DATE.		
BV:200	**CP:5**	
ACCEPTANCE CRITERIA: 1. Partner can mark status as ‘Out for Delivery’, ‘Delivered’, or ‘Failed’. 2. Updates reflect in real time on customer side. 3. System logs timestamp of each status changes.		

User Story No:21	**Tasks:1**	**Priority: Medium**
AS A DELIVERY PARTNER, I WANT TO CONTACT CUSTOMERS SO THAT I CAN CLARIFY ADDRESS ISSUES.		
BV:200	**CP:3**	
ACCEPTANCE CRITERIA:		

1. Call or SMS button is available after pickup.
2. Customer contact number is masked for privacy.
3. Support number available in case of escalation.

User Story No:22	Tasks:2	Priority: Medium
AS A DELIVERY PARTNER, I WANT TO RECEIVE ROUTE OPTIMIZATION SUGGESTIONS SO THAT I SAVE TIME		
BV:100	**CP:1**	
ACCEPTANCE CRITERIA: 1. System integrates Google Maps or similar APIs. 2. Shows shortest delivery route with traffic updates. 3. Option to reorder deliveries based on location.		

User Story No:23	Tasks:1	Priority: Low
AS A DELIVERY PARTNER, I WANT TO MARK DELIVERIES AS FAILED SO THAT I CAN REPORT UNSUCCESSFUL ATTEMPTS		
BV:50	**CP:1**	
ACCEPTANCE CRITERIA: 1. System allows marking an order as ‘Failed’. 2. Requires reason (e.g., no answer, wrong address). 3. Failed deliveries are logged and visible to admin.		

User Story No:24	Tasks:2	Priority: High
AS A SUPPORT AGENT, I WANT TO VIEW CUSTOMER ORDERS SO THAT I CAN RESOLVE ISSUES		
BV:500	**CP:5**	
ACCEPTANCE CRITERIA: 1. Agent dashboard allows search by order ID or customer info. 2. Detailed view includes payment, product, and shipping data. 3. Notes section available for internal updates.		

User Story No:25	Tasks:2	Priority: High
AS A SUPPORT AGENT, I WANT TO ESCALATE COMPLAINTS SO THAT THEY ARE HANDLED QUICKLY		
BV:500	**CP:2**	
ACCEPTANCE CRITERIA: 1. Agent can assign tickets to higher-tier support. 2. Status updates automatically when escalated. 3. Notification sent to both customer and escalated agent.		

User Story No:26	Tasks:3	Priority: Medium
AS A SUPPORT AGENT, I WANT TO ISSUE REFUNDS SO THAT CUSTOMERS ARE COMPENSATED		
BV:200	**CP:2**	
ACCEPTANCE CRITERIA: 1. Refund initiated from order details screen. 2. Requires reason and approval from supervisor. 3. Refund status tracked and visible to customer.		