IDMS

Project #: Inventory and Delivery Management System for Ice Cream and Milk Products Manufacturing

Business Requirements Document (BRD)

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Project Sponsor:
Client Acceptor:
Project Manager:

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Table of Contents

1. Introduction

1.1. Document Purpose

This document outlines the business requirements for developing an Inventory and Delivery Management System for a company that manufactures and distributes ice cream and milk products. The system will enable effective inventory management and ensure the quickest delivery to customers.

1.2. Intended Audience

- Business owners and stakeholders
- Project sponsors
- Developers, data architects, and application architects
- End users and logistics managers

of the system should be able to comprehend the requirements fairly easily from this document.

1.3. Project Background

The company operates multiple manufacturing plants and warehouses across the country, facing challenges in managing stock levels and optimizing delivery routes. The new system will streamline inventory control and facilitate efficient customer order fulfillment.

1.4. Purpose of the Business Requirements

This section describes the purpose of the Business Requirements.

☐ Business requirements for new application development.

1.5. Business Goals/Objectives to be achieved

- Optimize inventory management at manufacturing plants and warehouses.
- Automate stock tracking and reduce wastage.
- Implement a real-time order processing system.
- Ensure the quickest delivery to customers through route optimization.
- Improve customer satisfaction through timely deliveries.
- Enhance reporting and analytics capabilities.

1.6. Benefits/Rationale

- **Tangible Benefits:** Reduced storage costs, lower wastage, increased delivery efficiency.
- **Intangible Benefits:** Improved customer satisfaction, better decision-making through real-time data, streamlined logistics operations.

1.7. Stakeholders

- Business Owners
- Logistics Managers
- Warehouse Managers
- IT Development Team
- Delivery Personnel
- Customers
- Suppliers

1.8. Dependencies on existing systems

- Integration with existing ERP systems
- API support for third-party logistics partners
- Compatibility with current order management tools

1.9. References

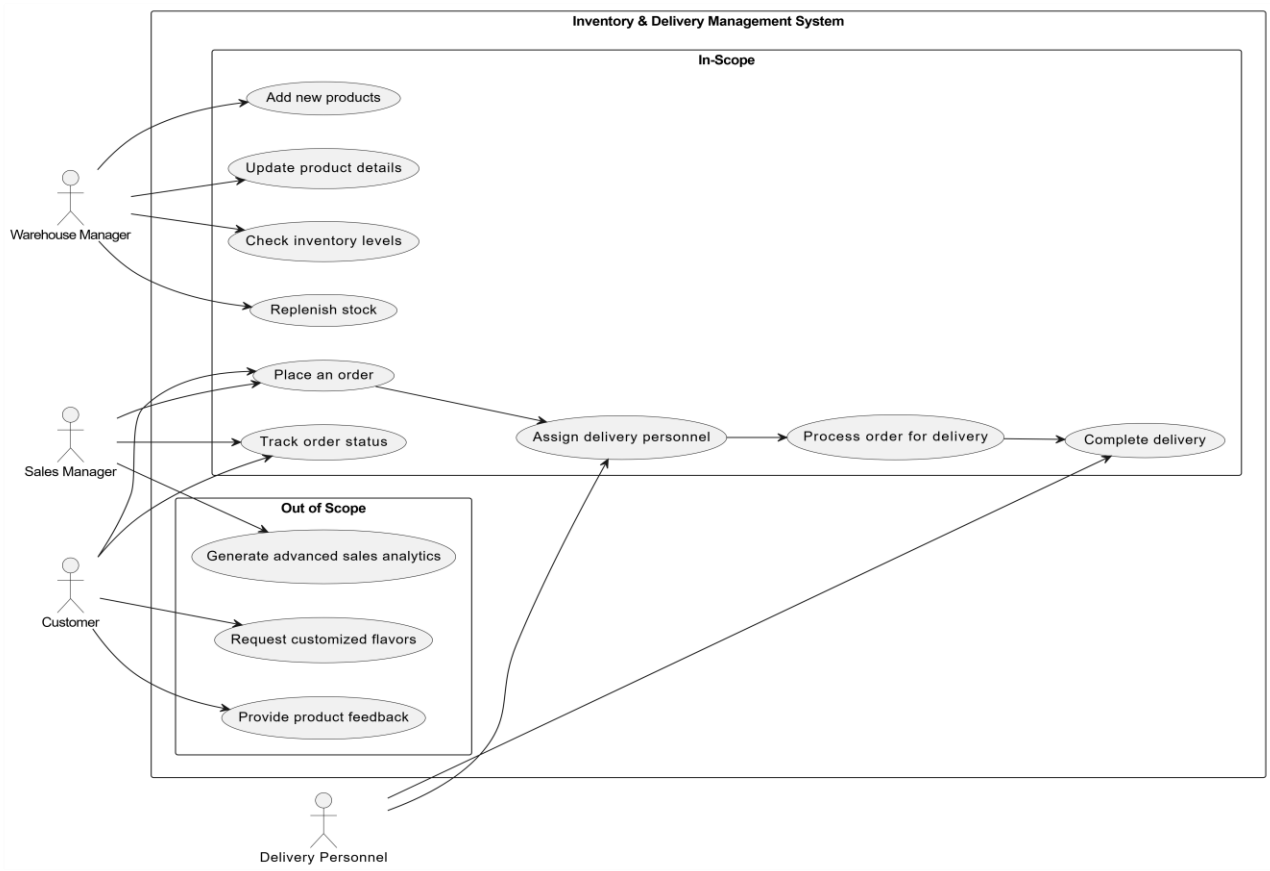
- Client's existing supply chain reports
- Current logistics and inventory management best practices
- Industry standards for inventory and logistics management

1.10. Assumptions

- The company will provide access to current inventory and delivery data.
- Internet connectivity will be available at all locations.
- Adequate infrastructure will be available for system implementation.

2. Requirements Scope

This section shows what business functionality is in scope and out of scope for Implementation. In Use case approach, the out of scope Use cases are indicated in a separate boundary box.



2.1. In Scope

- *Warehouse and manufacturing plant inventory tracking*
- *Automated order processing and stock updates*
- *Delivery route optimization*
- *Customer order tracking portal*
- *Integration with third-party logistics providers*
- *Reporting and analytics dashboard*

2.2. Out of Scope

- *Direct financial transactions or payment processing*
- *In-house fleet management (third-party logistics is used)*
- *HR and payroll management*

3. Functional Requirements

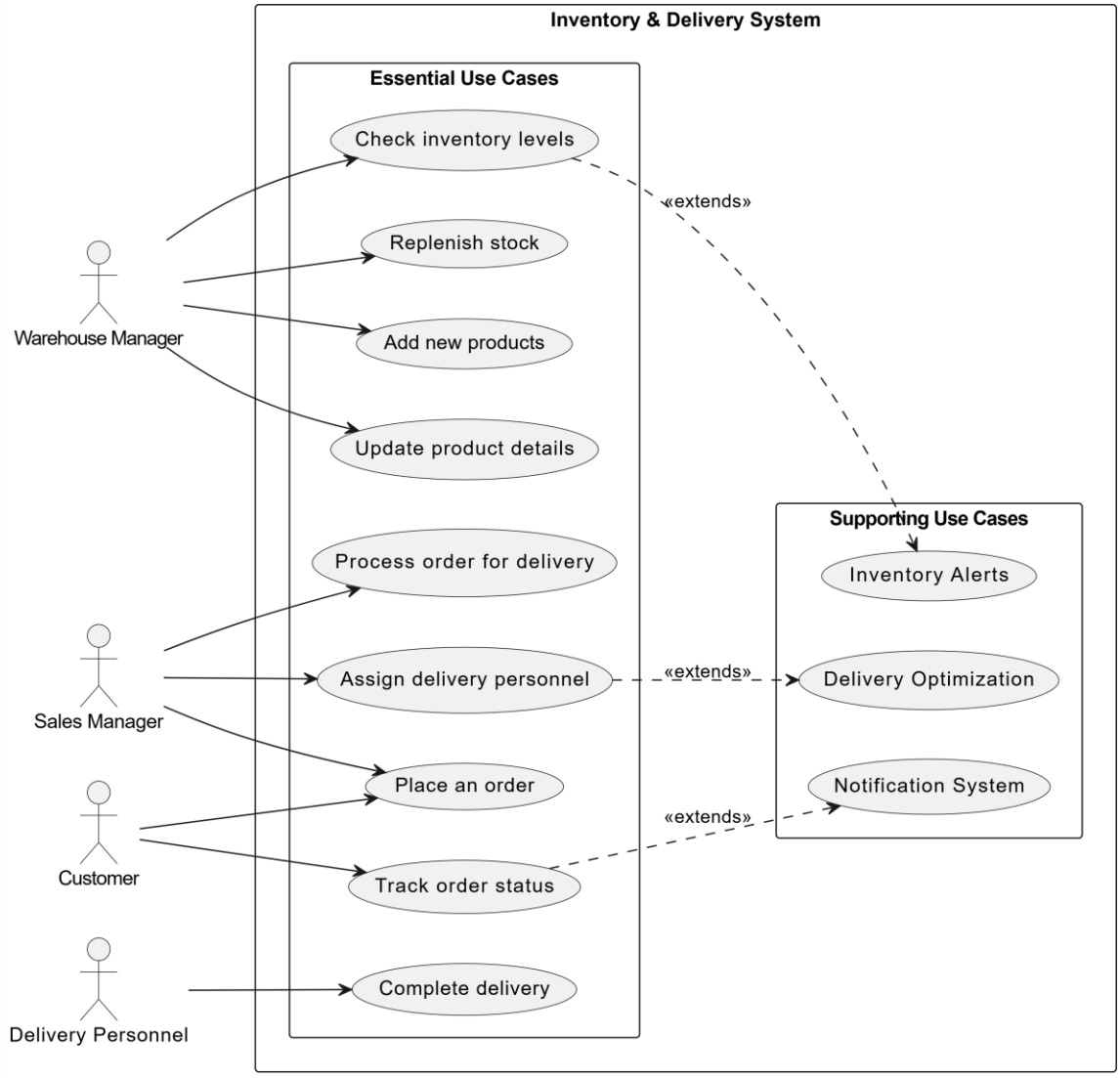
This section describes the *Functional requirements* part of the Business Requirements. In Use case approach, the *Functional Requirements* comprises of Actor Profile Specification, Essential Use case diagram and Essential Use case specification in narrative text form. In Oracle Designer approach the *Functional Requirements* comprises of Business Unit Definition Report, Function Hierarchy Diagram and Function Definition Report.

3.1. Actor Profiles Specification

- **Warehouse Manager:** Monitors and updates inventory.
- **Logistics Manager:** Assigns delivery routes and tracks shipments.
- **Customer:** Places and tracks orders.
- **Admin:** Manages user roles and permissions.
- **Supplier:** Updates stock availability and manages procurement.

3.2. Essential Use Case Diagram

This section depicts the Business Requirements in the form of Essential Use case diagram. In the Use case approach, the Functional Requirements are decomposed into a number of Essential Use cases. Essential use cases are of primary importance early in a project's requirements/analysis phase. Their purpose is to document the business process that the Application must support without bias to technology and implementation.



3.3. Essential Use Case Specifications

This section describes each Essential Use case in narrative text form. A use case typically has one basic course of action and one or more alternate courses of actions. The basic course of action is the main start-to-finish path that the use case will follow, where as the alternate courses represent the infrequently used paths and exceptions, error conditions etc. The complete business logic of a use case such as basic course of action, alternate course of action, pre-condition, post-condition etc is not depicted in the Use case diagram. Rather they are documented in narrative style in use case specifications.

Here is a detailed use case specification table for the Inventory & Delivery Management System, following your requested format.

Use Case Specifications Table

Use Case Name	Description
Manage Inventory	Allows the warehouse manager to add, update, and track inventory to ensure stock availability.
Order Processing	Handles order placement, assignment to delivery personnel, and processing for fulfillment.
Order Tracking	Enables customers and sales managers to track the status of orders.
Notification System	Sends automated updates about order status to customers.
Delivery Optimization	Suggests the best delivery routes for assigned orders.
Inventory Alerts	Notifies the warehouse manager when stock levels are low.

Detailed Use Case Specifications

1. Manage Inventory

Field	Details
Actors	Warehouse Manager
Business Rules	BR-101: Inventory data must be updated in real-time. BR-102: Alerts should trigger when stock is below a threshold.
Basic Flow	1. Warehouse Manager logs in. 2. Adds or updates inventory details. 3. System updates the inventory records. 4. If stock is low, an alert is triggered.
Alternate Flows	- If product details are incorrect, the system prompts an error message.
Non-Functional Requirements	System should update inventory within **2 seconds** after an action.
Pre-Conditions	User must be authenticated as a Warehouse Manager.
Post-Conditions	Inventory is updated, and alerts (if applicable) are generated.
Extension Points	**Extension Condition:** Low stock alert **Extending Use Case:** Inventory Alerts
List of <> use cases	-
List of <> use cases	Inventory Alerts
List of “inherited from (parent)” use cases	-

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2. Order Processing

Field	Details
Actors	Sales Manager, Delivery Personnel
Business Rules	BR-201: Orders must be assigned within 5 minutes. BR-202: Only available inventory can be allocated to an order.
Basic Flow	1. Customer places an order. 2. Sales Manager assigns a delivery personnel. 3. Order is processed for delivery.
Alternate Flows	- If stock is unavailable, system notifies the Sales Manager. - If no delivery personnel is available, order is queued.
Non-Functional Requirements	Orders should be assigned within **5 minutes** after placement.
Pre-Conditions	Valid customer order exists.
Post-Conditions	Order is assigned and ready for delivery.
Extension Points	**Extension Condition:** Delivery optimization required **Extending Use Case:** Delivery Optimization
List of <> use cases	-
List of <> use cases	Delivery Optimization
List of "inherited from (parent)" use cases	-

3. Order Tracking

Field	Details
Actors	Customer, Sales Manager
Business Rules	BR-301: Customers should receive status updates in real-time.
Basic Flow	1. Customer logs in and checks order status. 2. System retrieves real-time order status.
Alternate Flows	- If order is delayed, system notifies the customer.
Non-Functional Requirements	Status updates must be displayed within **3 seconds** of a request.
Pre-Conditions	A valid order exists in the system.
Post-Conditions	Order status is displayed and updated in real-time.
Extension Points	**Extension Condition:** Notify customer of order status **Extending Use Case:** Notification System
List of <> use cases	-
List of <> use cases	Notification System

Field	Details
List of “inherited from (parent)” use cases	-

4. Notification System

Field	Details
Actors	System, Customer
Business Rules	BR-401: Notifications must be sent within 10 seconds of an order update.
Basic Flow	1. System detects an order status change. 2. Sends a notification to the customer.
Alternate Flows	- If customer opts out, notifications are disabled.
Non-Functional Requirements	Notifications should be sent within **10 seconds** of a status change.
Pre-Conditions	Order exists, and the customer has notifications enabled.
Post-Conditions	Customer is notified about order status.
Extension Points	-
List of <> use cases	-
List of <> use cases	-
List of “inherited from (parent)” use cases	-

5. Delivery Optimization

Field	Details
Actors	System, Delivery Personnel
Business Rules	BR-501: Routes should be optimized based on delivery time and traffic.
Basic Flow	1. System calculates the best delivery route. 2. Suggests route to Delivery Personnel.
Alternate Flows	- If route is congested, system recalculates the path.
Non-Functional Requirements	Route calculation must be completed within **5 seconds**.
Pre-Conditions	A delivery task is assigned.
Post-Conditions	Optimized delivery route is displayed.
Extension Points	-
List of <> use cases	-
List of <> use cases	-

Field	Details
List of “inherited from (parent)” use cases	-

6. Inventory Alerts

Field	Details
Actors	Warehouse Manager
Business Rules	BR-601: Alerts must be triggered if stock is below a threshold.
Basic Flow	1. System detects low stock. 2. Sends an alert to the Warehouse Manager.
Alternate Flows	- If alert is ignored, system re-sends after 1 hour.
Non-Functional Requirements	Alerts should be triggered **immediately** when stock is low.
Pre-Conditions	Stock level is below the defined threshold.
Post-Conditions	Warehouse Manager is notified.
Extension Points	-
List of <> use cases	-
List of <> use cases	-
List of “inherited from (parent)” use cases	-

3.4. Business Rules

- Orders must be processed within 5 minutes of placement.
- Expiring products should be prioritized for delivery.
- Low-stock alerts should be triggered when inventory falls below a threshold.

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4. Data Requirements

This section describes the Data requirements part of the Business Requirements.

4.1. Data Architecture

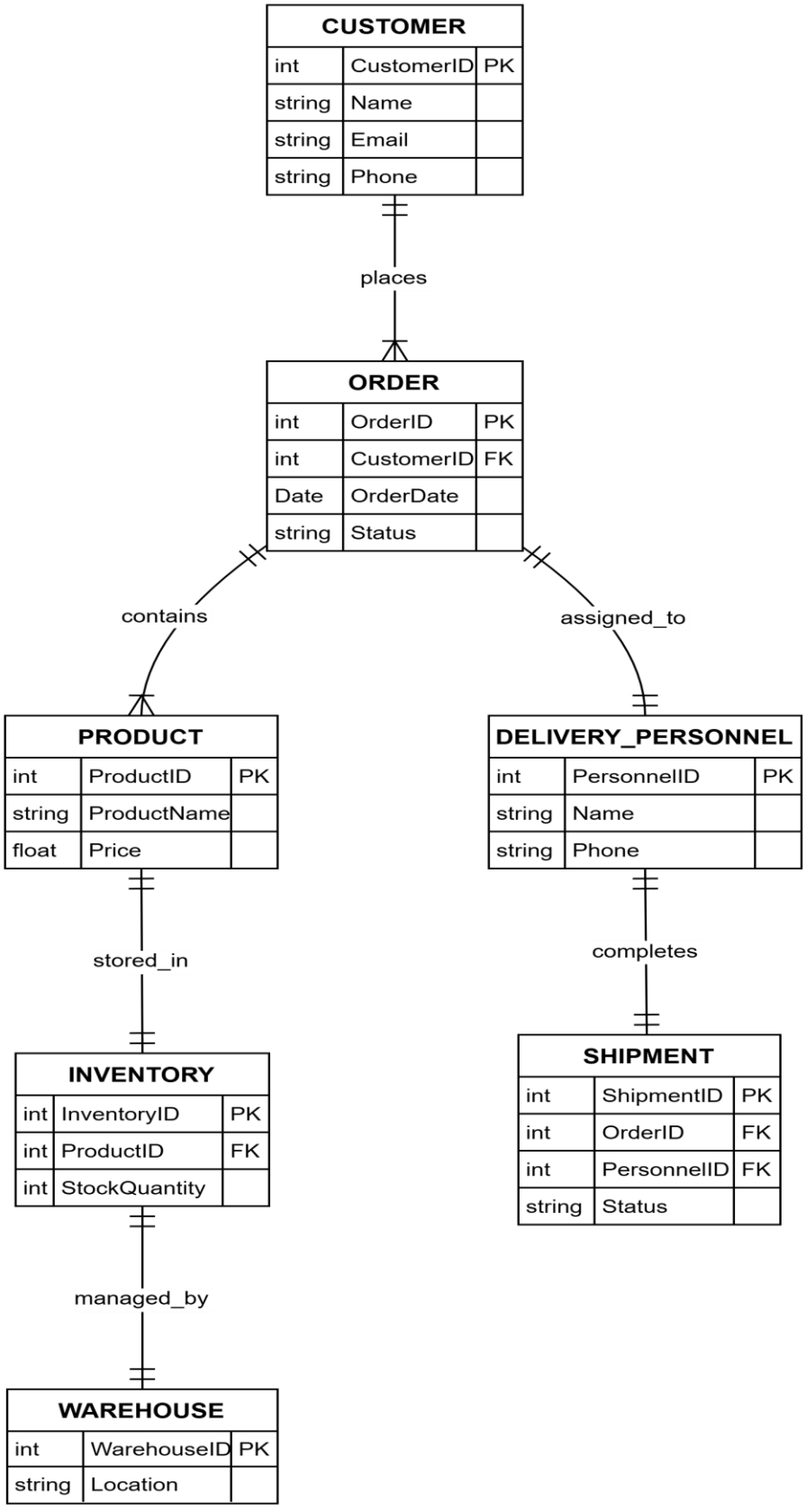
- Entity-relationship diagram to define product, stock, and order entities.
- Data flow diagrams for inventory updates and order processing.

4.1.1. Domain Class Diagram

This section is applicable only to Use case approach. This section depicts the Data Architecture in the form of Domain Class Diagram. In the Use case approach, the conceptual data architecture (structural aspects) for the Business Requirements is modeled using Domain Class Diagram. The Domain Class Diagram is used to model the conceptual classes, its attributes (fields) and operations (methods) and also the interrelationships (association, composition, aggregation and generalization) between the classes. Domain model is a representation of real world conceptual classes, not of software components.

4.1.2. Entity Relationship Diagram

This section is applicable only to Oracle Designer approach. This section depicts the Data Architecture in the form of Entity Relationship Diagram (ERD). In the Oracle Designer approach, the conceptual data architecture (structural aspects) for the Business Requirements is modeled using Entity Relationship Diagram (ERD).


CUSTOMER
int CustomerID PK
string Name
string Email
string Phone
places
ORDER
int OrderID PK
int CustomerID FK
Date OrderDate
string Status
contains
assigned_to
PRODUCT
int ProductID PK
string ProductName
float Price
DELIVERY_PERSONNEL
int PersonnelID PK
string Name
string Phone
stored_in
completes
INVENTORY
int InventoryID PK
int ProductID FK
int StockQuantity
SHIPMENT
int ShipmentID PK
int OrderID FK
int PersonnelID FK
string Status
managed_by
WAREHOUSE
int WarehouseID PK
string Location

4.2. Data Volumes

- ***Initial Stock Records:*** *100,000+ entries.*
- ***Order Processing:*** *5,000+ daily transactions.*
- ***Warehouse Transactions:*** *10,000+ daily updates.*
- ***Supplier Transactions:*** *3,000+ daily updates.*
- ***Customer Orders:*** *8,000+ orders per day.*

4.3. Data Conversion

- **Data Sources:** Existing inventory and logistics databases.
- **Data Migration Strategy:**
    - Extract data from legacy systems.
    - Transform data to meet new system requirements.
    - Load cleaned and structured data into the new system.
- **Data Validation:** Ensure consistency, accuracy, and completeness during migration.
- **Compliance Considerations:** Follow industry standards for data security and integrity.

4.4. Data Retention and Archiving

- *Transaction data retained for 5 years.*
- *Archived data must be accessible for audits.*

4.5. FOI/Privacy Implications

- Compliance with data protection regulations such as GDPR.
- Ensuring secure storage and restricted access to sensitive customer and supplier information.
- Implementing encryption for confidential data to prevent unauthorized access.
- Defining data retention policies in accordance with legal and business requirements.

4.6. Data Definition Reports

- **Domain Class Definition Report:**
  - Listing of all entity attributes with descriptions and data types.
  - Identification of primary and foreign keys for database relationships.
- **Entity Definition Report:**
  - Detailed explanation of entity relationships and constraints.
  - Summary of indexing strategies to optimize database performance.

5. Non-Functional requirements

This section describes the non-functional requirements part of the Business Requirements. A non-functional requirement is typically a special requirement that is not easily or naturally specified in the text of the use case's or function's event flow. Examples of non-functional requirements include legal and regulatory requirements, application standards, and quality attributes of the system to be built including usability, reliability, performance or supportability requirements.

5.1. Security Requirements

- **Authentication:** Role-based access for different users.
- **Authorization:** Secure API for external access.
- **Encryption:** Secure transmission of sensitive data..

5.2. Availability Requirements

- **System must be available 24/7.**
- **Downtime should not exceed 2 hours per month.**

5.3. Usability Requirements

- Intuitive web and mobile interface for easy access.
- Multi-language support for diverse users.

5.4. System Help Requirements

- Online knowledge base.
- Chat support for troubleshooting.

5.5. Performance Requirements

- System response time should be under 2 seconds for inventory queries.
- Order processing should be completed within 10 seconds.

5.6. Scalability Requirements

5.6.1 User Scalability

- The system must support a growing user base, starting from 500 users and scaling up to 10,000 users over the next five years.
- The system should accommodate simultaneous access by at least 2,000 concurrent users during peak hours.
- Load balancing mechanisms should be implemented to distribute traffic efficiently.
- The system should allow role-based access management to handle an increasing number of warehouse managers, logistics personnel, and customers.

5.6.2 Application Scalability

- The architecture should be modular, allowing for future enhancements without major system overhauls.
- Cloud-based deployment should be considered for flexibility and ease of scaling resources as demand increases.
- The database should be optimized to handle up to 10 million records efficiently, with indexing and partitioning strategies in place.
- API endpoints should be designed to manage high request volumes from external logistics providers and customer applications.
- The system should support seamless integration with additional third-party tools such as new ERP modules, analytics platforms, and customer engagement systems.

5.6.3 Data Scalability

- The system should be capable of handling increasing data volumes, from 1TB of initial storage to 50TB over the next five years.
- Data archiving mechanisms should be in place to manage historical records without impacting real-time performance.
- The database should support automatic scaling, ensuring efficient query execution as transaction volumes grow.
- The system should support batch and real-time data processing to ensure timely inventory updates and analytics insights.

6. Interface Requirements

This section describes User and System Interface requirements for the proposed system.

6.1. User Interface Requirements

- The system should have an intuitive and responsive web-based dashboard for warehouse managers, logistics personnel, and administrators.
- A dedicated mobile application should be provided for delivery tracking and inventory monitoring.
- User interfaces should be accessible on desktop, tablet, and mobile devices.
- Multi-language support should be available for users in different regions.
- The UI should include features such as dark mode and customizable dashboard widgets.

6.2. System Interface Requirements

- *The system must integrate with external logistics providers via secure API connections.*
- *It should support real-time data synchronization with ERP and CRM systems.*
- *API endpoints should be available for third-party applications to retrieve and update order statuses.*
- *The system should have an export functionality to generate reports in CSV, Excel, and PDF formats.*
- *It should support automated email and SMS notifications for order updates and stock alerts.*

7. Business Glossary

- ***Inventory Management:*** *Tracking and controlling stock levels across multiple warehouses and manufacturing plants.*
- ***Route Optimization:*** *The process of determining the most efficient delivery routes to minimize time and cost.*
- ***ERP (Enterprise Resource Planning):*** *A business management software that integrates various operational processes.*
- ***Order Processing:*** *The complete workflow from order creation to fulfillment and delivery.*
- ***Third-Party Logistics (3PL):*** *External service providers that manage storage, transportation, and distribution of goods.*
- ***Real-Time Tracking:*** *A feature that allows monitoring of inventory and deliveries in real-time.*
- ***Scalability:*** *The ability of the system to handle increasing data, users, and transaction volumes.*

Approval

This document has been reviewed and approved as the official Business Requirements Document for the **Inventory and Delivery Management System for Ice Cream and Milk Products Manufacturing** project.

Following approval of this document, changes will be governed by the project's change management process, including impact analysis, appropriate reviews, and approvals, under the general control of the Master Project Plan and according to Project Support Office policy.

Prepared by	***Signature***	***Date***
Author's Name [Title] [Organization]		
Approved by	***Signature***	***Date***
[Client Acceptor's Name] [Title] [Organization]		

Assignment 1.2: Process Flow Diagram

Assignment 2: Business Analyst Introduction Letter

Introduction Letter to the Client

This section provides a formal introduction of the Business Analyst (BA) to the client. The letter highlights the BA's role in requirement gathering and collaboration with the client to ensure a smooth project implementation.

Nikhil Sharma
Business Analyst
7222949115
04/02/2025

To: [Client Name]
[Client Company Name]

Subject: Introduction as Business Analyst for Project Initiation

Dear Sir/Mam,

I hope this letter finds you well. My name is Nikhil, and I am pleased to introduce myself as the Business Analyst assigned to your project. My primary role is to work closely with you and your team to gather requirements, understand your business objectives, and translate them into actionable solutions.

I look forward to collaborating with you to ensure a seamless and efficient implementation of the project. Please let me know a convenient time to discuss your requirements in detail.

Best regards,
Nikhil Sharma
Business Analyst

Assignment 3: Business Requirement Document (BRD) for an Online Store

1. Introduction:

This section provides an overview of the online store project, outlining the main objectives and business goals.

- **Project Name:** Online Store
- **Objective:** Develop an e-commerce platform for seamless online shopping.

2. Business Goals:

Defines the key business objectives that the online store aims to achieve.

- **Enhance user experience:** Ensure smooth navigation and user-friendly interface.
- **Secure payment integration:** Implement reliable and encrypted payment gateways.
- **Streamlined order management:** Automate order processing and inventory tracking.

3. Functional Requirements:

Lists the core features required in the system.

- **User Registration and Login:** Secure user authentication and account management.
- **Product Browsing and Search:** Intuitive search and filter options for easy navigation.
- **Shopping Cart and Checkout:** Smooth checkout process with multiple payment options.
- **Order Management:** Order tracking and status updates for customers.
- **Payment Gateway Integration:** Secure and multiple payment options.
- **Order Tracking:** Live updates and delivery notifications for customers.

4. Non-Functional Requirements:

Details the performance and security expectations.

- **Security measures:** Data encryption and secure transactions.

- **Scalability and performance optimization:** Ability to handle high traffic and product expansion.

5. Assumptions & Constraints:

Identifies the external dependencies and project constraints.

- **Availability of required technologies:** Ensuring compatibility with existing systems.
- **Compliance with legal regulations:** Adhering to data protection and e-commerce laws.

Software Requirements Specification (SRS) for an Online Store

1.0 Introduction

Provides a structured overview of the SRS document.

- **Overview:** Project summary and purpose.
- **Acronyms and definitions:** Technical terminology explained.
- **Operational Requirements:** Technical and business constraints.

2.0 System Overview

Explains the system's current state and proposed improvements.

- **Current System:** Analysis of existing processes.
- **Proposed System:** Overview of the new solution.
- **Benefits of the Proposed System:** Expected improvements in efficiency and user experience.

3.0 UI Requirements

Specifies the user interface elements.

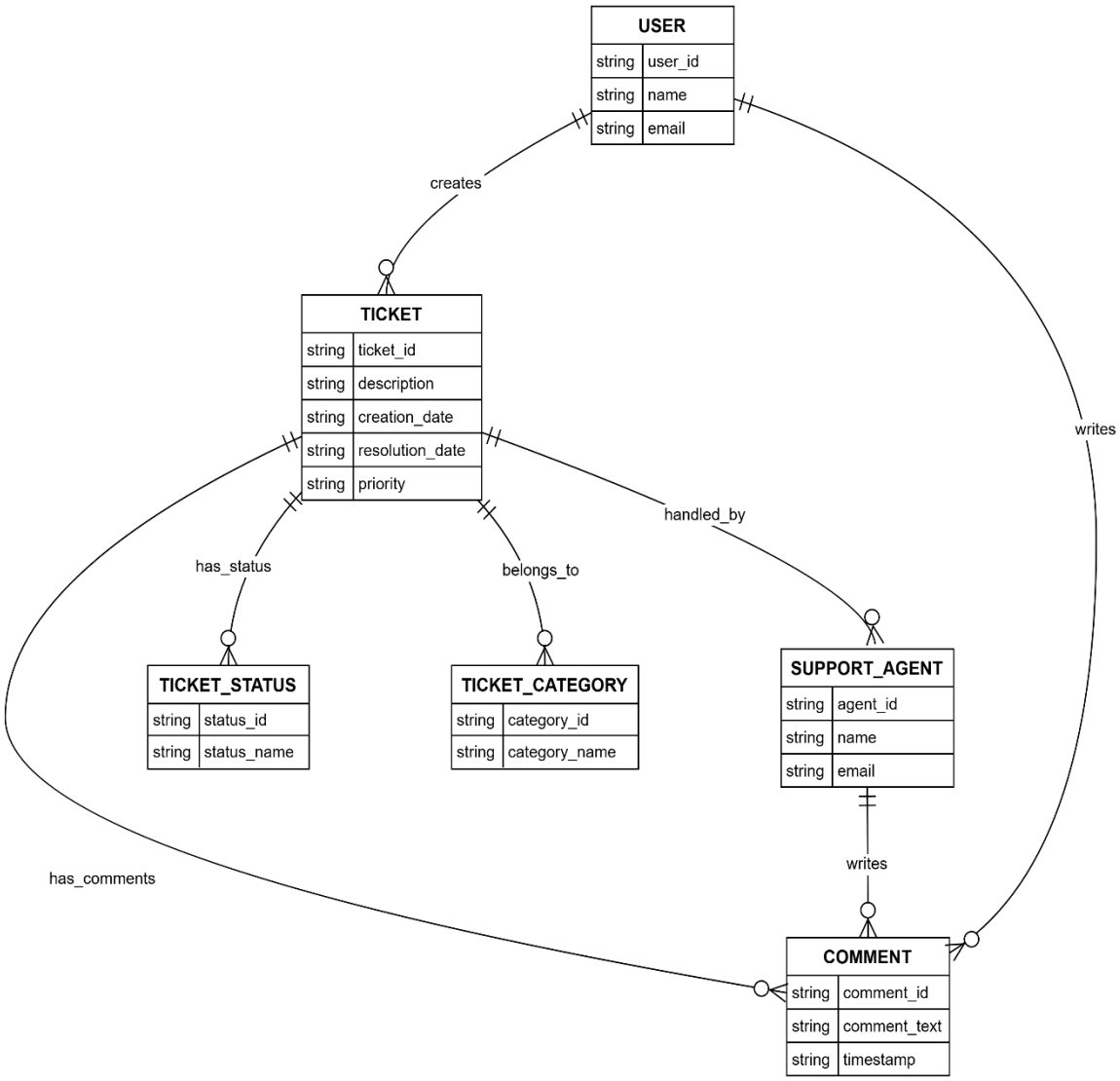
- **Project contents:** Breakdown of functionalities and modules.

4.0 Other Parameters

Outlines project deliverables and acceptance criteria.

- **Acceptance criteria:** Criteria for client approval.

ERD for Ticketing System



User Story for E-Commerce Shopping

User Story for Online Shopping Experience

As a customer, I want to browse products, add them to the cart, and complete a secure checkout so that I can purchase items conveniently online.

Acceptance Criteria:

1. Customers can search and filter products.
2. Customers can add products to the cart.

3. Customers can complete the purchase using a payment gateway.
4. Customers receive an order confirmation.