



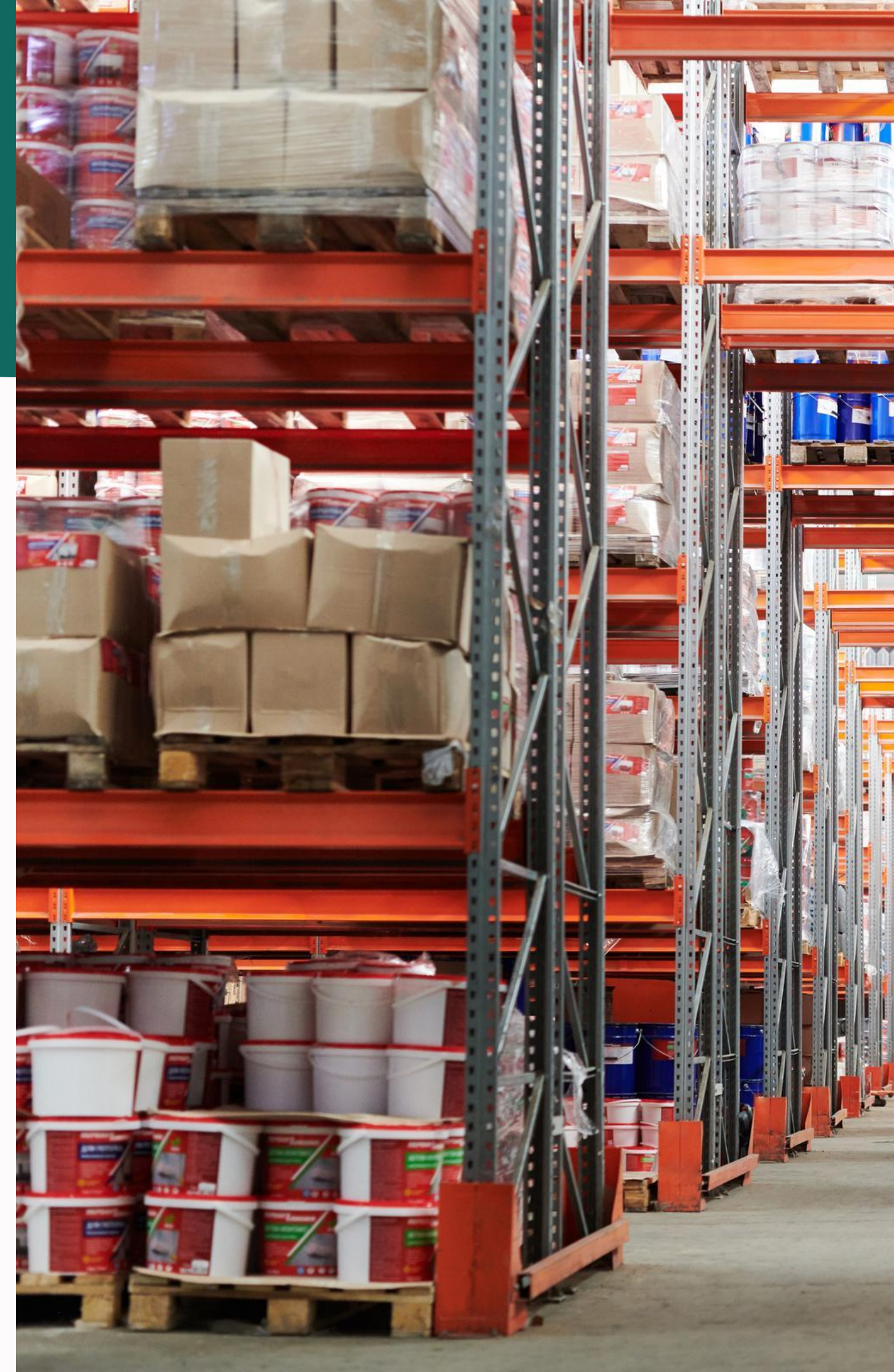
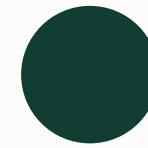
Inventory Management Project

Bangladesh University of Business and Technology



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Our Team

We are a dynamic team of five, working on an Inventory Management System to simplify stock tracking and enhance efficiency. With expertise in software development, database management, and UI/UX design, we aim to create a seamless and scalable solution for inventory management.

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Introduction

Our Inventory Management System is designed to streamline stock tracking, optimize inventory control, and improve operational efficiency. It ensures accurate record-keeping, reduces manual errors, and enhances decision-making with real-time data insights. Scalable and user-friendly, this system simplifies inventory handling for businesses of all sizes.





Current System Analysis

The existing inventory management system relies on manual stock tracking and basic software tools. Inventory updates are entered manually, and stock counts are performed regularly by staff. Warehouse management operates independently at different locations, with no real-time synchronization. Bill of Materials (BOM) and quality control are managed manually, and reporting is done using basic, periodic checks. While functional, the system lacks automation and integration for more efficient operations.

Problem Statement

The current system relies on manual tracking and lacks integration for key processes like BOM and quality control. Distribution is inefficient, with area managers manually handling finished goods. We aim to automate and streamline these operations for better efficiency.



Tracking

Stock updates are manual, leading to discrepancies, overstocking, and stockouts.



Integration

No integration for BOM and quality control, causing errors and delays.



Distribution

Area managers manually take finished goods from inventory, causing delays and inefficiencies in the distribution process.

Objectives

The primary objectives of this project are:

- Automate Inventory Processes – Develop an advanced system to automate inventory management, reducing manual tasks.
- Real-Time Tracking – Enable real-time tracking of raw materials, work-in-progress, and finished goods for better accuracy.
- Seamless Production Planning Integration – Integrate production planning processes directly into the system to optimize manufacturing operations.
- Advanced Reporting & Analytics – Provide advanced reporting tools for informed decision-making.
- Scalability & Flexibility – Design the system to be scalable and flexible, supporting future growth and evolving business needs.






Feasibility



Technical Feasibility:

- The system can be developed using free and open-source technologies like ASP.NET Core Web API, Angular, and SQL Server Express.
 - Manual Data Entry: Manual data entry requires strong form validation and optimized SQL queries for performance.
 - Deployment: The system can be deployed on free cloud tiers (Azure or AWS) or hosted locally, ensuring minimal costs.
 - This technical approach makes the system feasible for small to medium-sized businesses, utilizing free tools and keeping costs low.
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Economic Feasibility:

In-house Development: Developing the system with a small team of 1-2 developers will cost between 25,000 BDT and 40,000 BDT.

SQL Server Express: It is free to use, so no additional database costs are incurred.

Cloud Hosting: Cloud hosting on low-tier plans (Azure or AWS) will cost between 2,500 BDT and 5,000 BDT per month.

Security & Backup: Security and backup services will cost around 4,000 BDT to 8,000 BDT per month.

Maintenance: Maintenance costs will be around 20,000 BDT to 40,000 BDT annually if handled internally.



Operational Feasibility:

- **Streamlined Operations:** Automates inventory tracking, reducing manual effort and minimizing errors.
- **User Training:** Comprehensive training will be provided to employees, ensuring a smooth transition to the new system and maximizing user adoption.
- **Scalability:** The system is scalable and can grow with the business, accommodating increased data and user demands without significant additional costs.
- **User-Friendly Interface:** The Angular-based frontend ensures an intuitive and responsive user experience, making it easy for employees to learn and use the system effectively.

Requirements

Hardware Requirements:

Client Devices: Desktop computers

Network: Stable internet or intranet connection for seamless communication

Server: local server system

Software Requirements:

Operating System: Windows

Database: SQL Server Express

Backend: ASP.NET

Frontend: Angular

Hosting: AWS

Use Case Diagram:

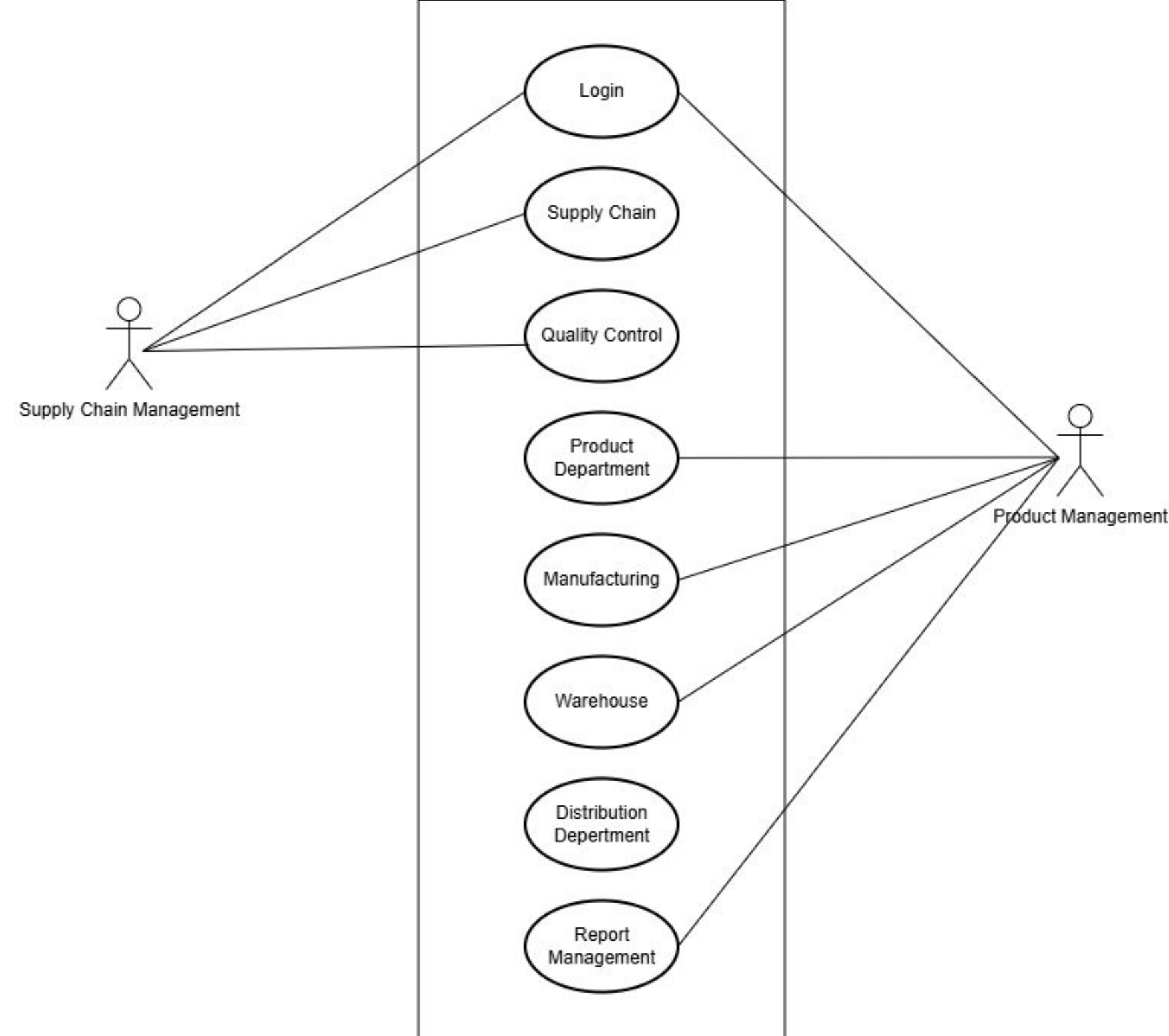


Fig: Inventory Manegment System Usercase Diagram

The Inventory Management System Use Case Diagram outlines how users and departments interact with the system. Key functions include logging in, managing supply chain activities, overseeing quality control, handling product details, coordinating manufacturing, storing inventory in the warehouse, distributing products, and generating reports. Each department works together to efficiently manage the flow of goods and inventory.

Context Level Diagram:

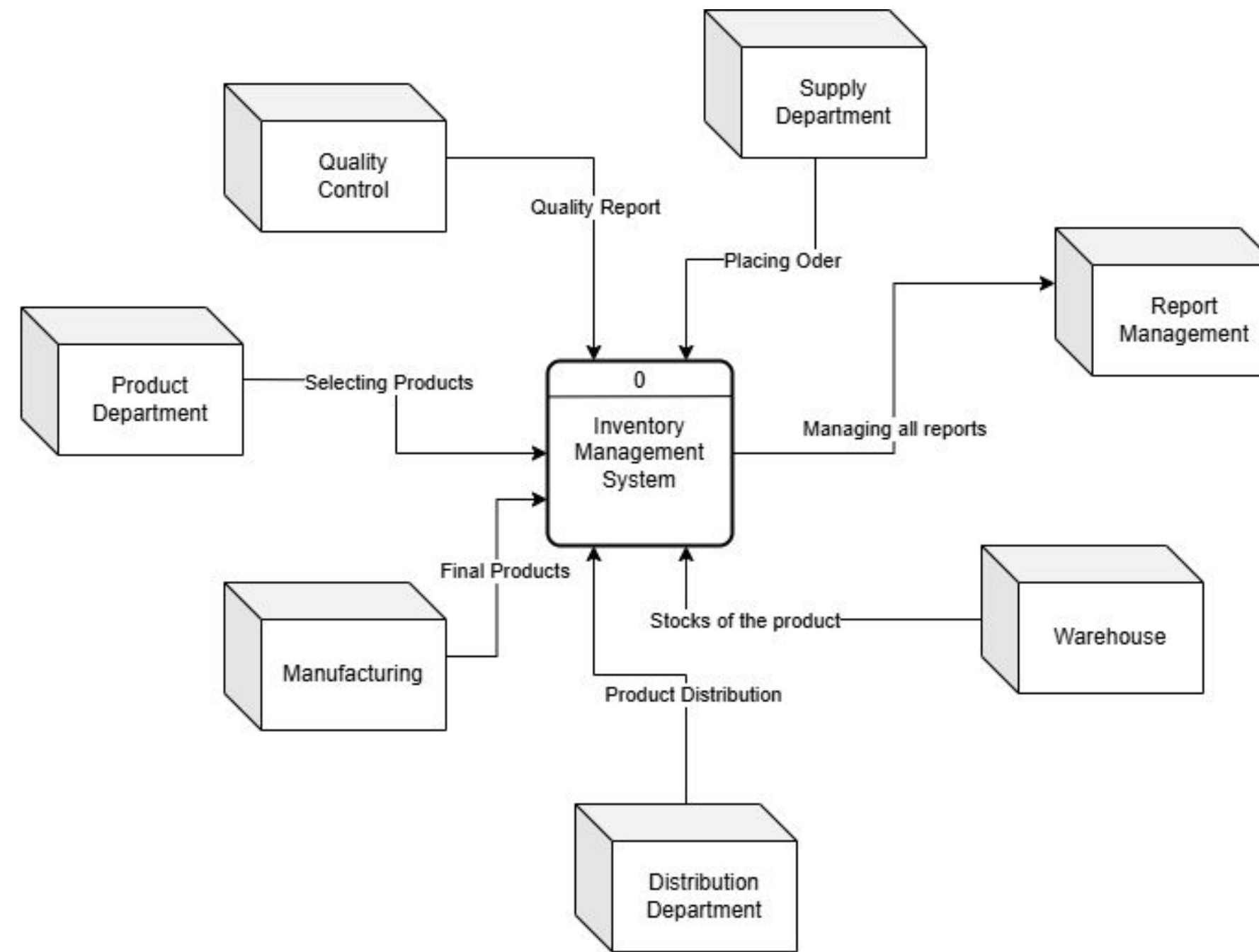
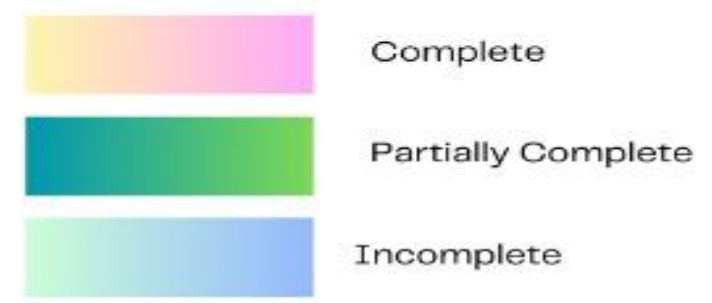
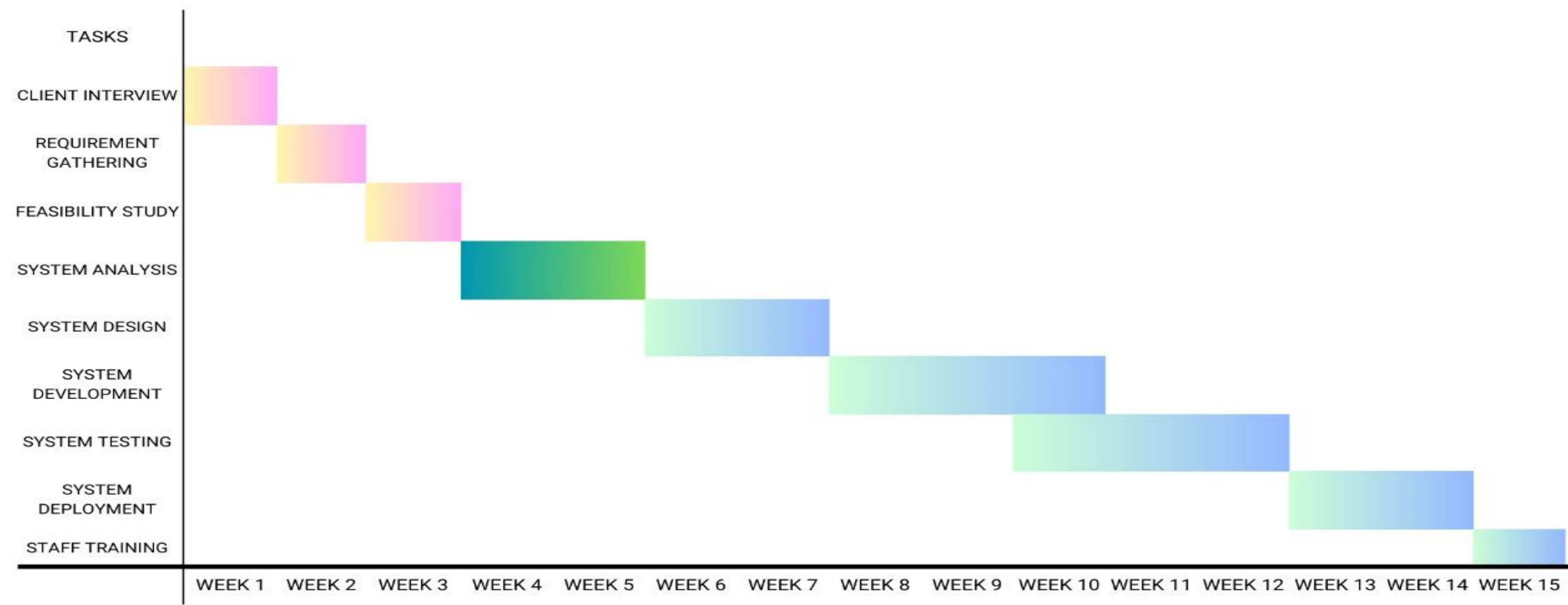


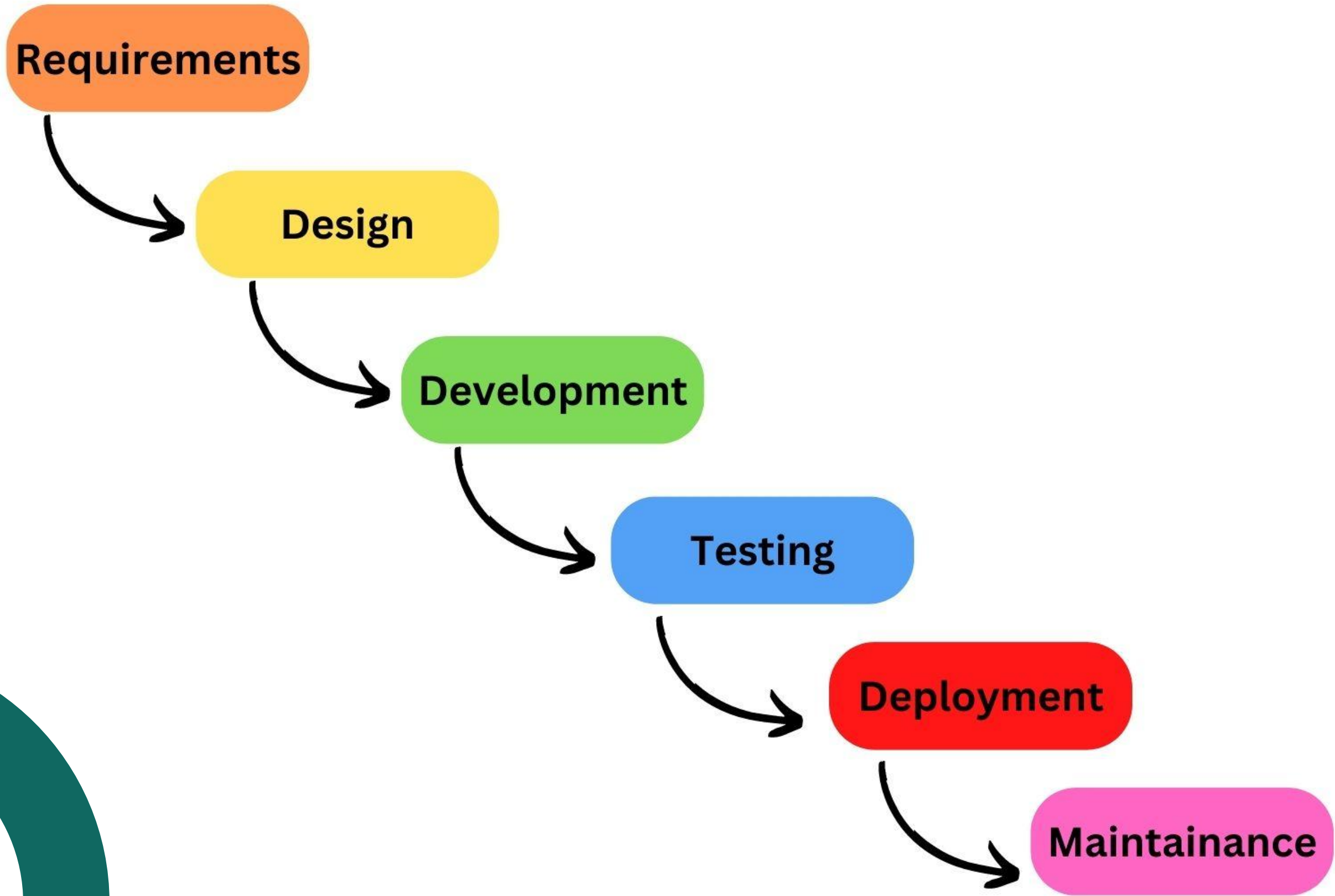
Fig: Inventory Management System User case Diagram Context Level Diagram

The Context Level Diagram outlines how the Inventory Management System connects with various departments. It shows interactions where the Supply Department places orders, Manufacturing creates products, Quality Control inspects them, the Warehouse stores inventory, the Distribution Department delivers products, and Report Management handles reporting. This diagram highlights the key processes and their flow within the system.

Activity and Time Schedule:



Waterfall Model



Cost Breakdown

Category	Estimated Cost (BDT)
Hardware	60,000 – 90,000 (PCs, Router, Backup Server)
Software	5,000 – 15,000 (Hosting, Security, Backup)
Development	25,000 – 40,000 (In-house development)
Maintenance	20,000 – 40,000 (Annual support, updates)
Training & Misc.	5,000 – 10,000 (User training, documentation)
Total Estimated Cost	115,000 – 195,000 BDT

Payment Schedule and Milestones



Milestone	Timeframe	Payment (%)
Phase 1: System Design	week 6 - 7	20%
Phase 2: Development Start	week 8 - 10	30%
Phase 3: Testing & Debugging	week 10 - 12	20%
Phase 4: Deployment	week 13 - 14	20%
Phase 5: Maintenance & Support	Ongoing (Post-Launch)	10%



Our inventory management system is designed to enhance stock tracking, production planning, and distribution of raw materials and finished goods. By providing real-time data and improved visibility, it ensures better efficiency, accuracy, and informed decision-making, ultimately supporting smoother operations and future growth.



