

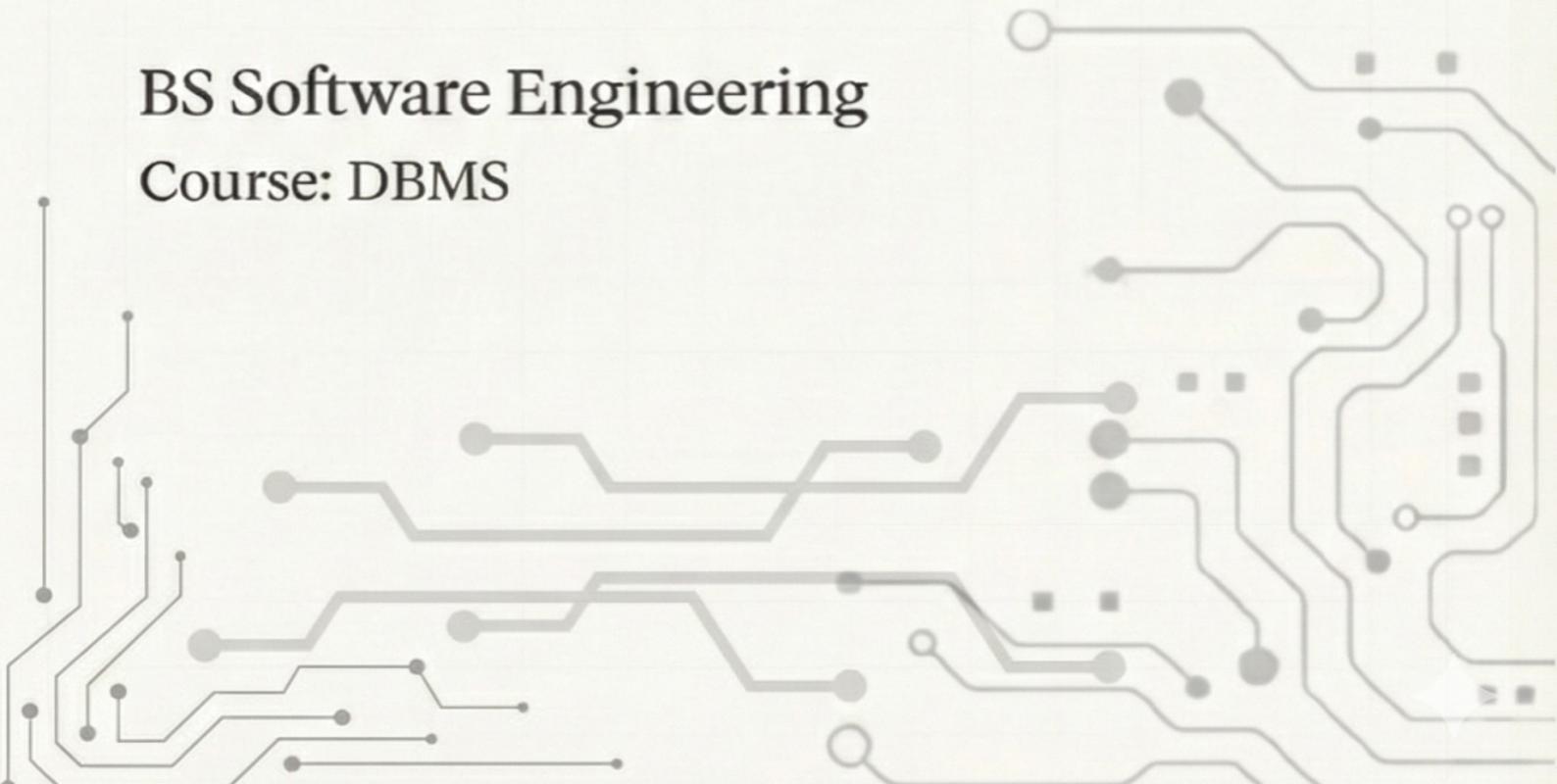


Mohammad Ali Jinnah University
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Inventory Management System Project Report

BS Software Engineering

Course: DBMS



PROJECT REPORT

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Semester: Fall 2025	Section:
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Project Title: Inventory Management System (IMS)	AM

Abstract

Effective inventory management is essential for business sustainability. This report presents a condensed overview of the Inventory Management System developed using the Django framework. The system provides functionalities such as inventory tracking, Point of Sale (POS) operations, and business analytics through an interactive dashboard. SQLite is used as the backend database to ensure data integrity and consistency. The project follows a layered architecture and incorporates requirement analysis, system design, and testing.

Introduction

The Inventory Management System (IMS) is a web-based application developed to automate inventory control and sales management for small to medium-sized retail businesses. Traditional manual inventory systems are inefficient, error-prone, and lack real-time visibility.

The proposed system digitizes inventory operations, enabling businesses to manage products, monitor stock levels, process sales transactions, and generate analytical reports from a centralized platform. The system is designed using modern web technologies and follows standard software engineering principles to ensure reliability, scalability, and ease of use for non-technical users.

Problem Statement

Small retail businesses often rely on manual record-keeping, which leads to data inconsistency, stock mismanagement, calculation errors, and a lack of business insights. There is a need for a low-cost, reliable, and easy-to-use digital solution that can automate inventory operations and support informed decision-making.

Objectives of the System

- To implement secure user authentication and authorization
- To provide complete inventory management using CRUD operations
- To enable Point of Sale (POS) functionality with automatic calculations
- To generate real-time sales analytics and reports
- To ensure data accuracy, integrity, and system reliability

Tools & Technologies Used

- **Programming Language:** Python 3
- **Web Framework:** Django

- **Database:** SQLite
- **Frontend Technologies:** HTML, CSS, Bootstrap 5, JavaScript
- **Development Tools:** Visual Studio Code, Git, GitHub

System Design

The Inventory Management System is developed using a layered architecture consisting of:

- **Presentation Layer**
- **Business Logic Layer**
- **Data Access Layer**

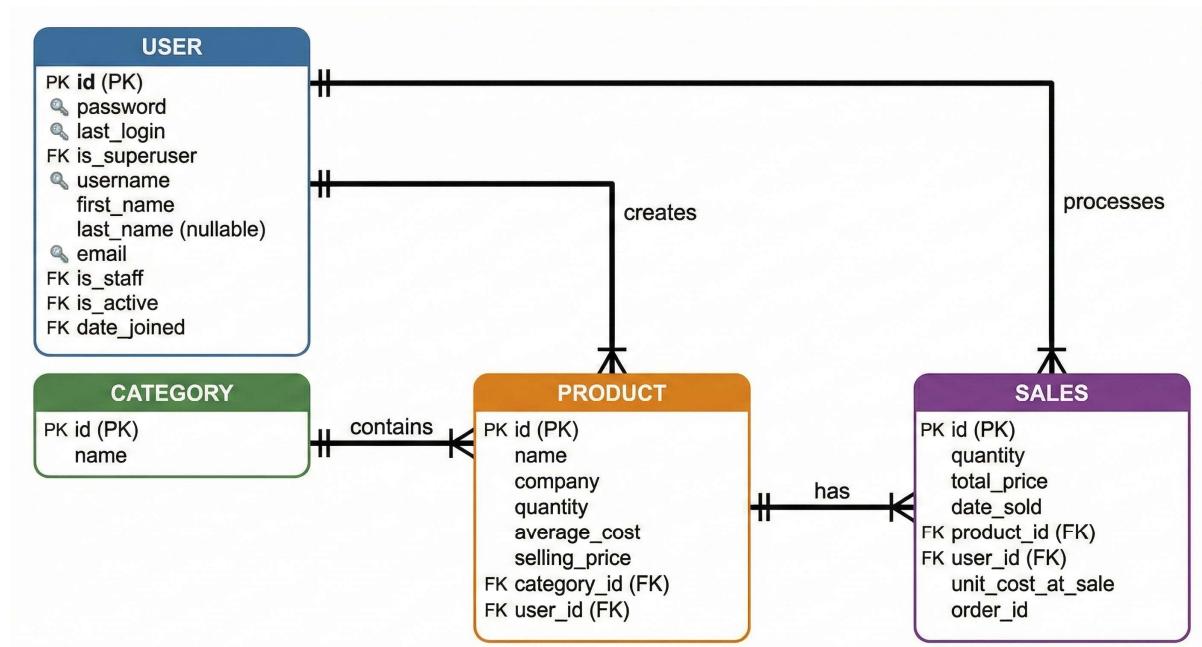
This architectural approach enhances maintainability, scalability, and separation of concerns.

Entity Relationship Diagram (ERD)

The ERD represents the logical structure of the database and defines relationships among entities. The system consists of four primary entities:

- **User:** Manages authentication and system access
- **Category:** Represents product classification
- **Product:** Stores inventory details such as price and quantity
- **Sales:** Records transaction details and updates stock levels

The relationships between entities are primarily one-to-many, ensuring proper data normalization and efficient inventory tracking.



Conclusion

The Inventory Management System provides an effective solution to common inventory challenges faced by small retail businesses. By automating inventory control, sales processing, and reporting, the system reduces human error and improves operational efficiency.

The structured design, secure implementation, and successful testing demonstrate that the system is stable and suitable for real-world deployment. Future enhancements may include multi-store support, advanced analytics, and integration with external accounting systems.