📄 Inventory Management System – Documentation

Developer: Mohd Meraaz
Date: May 2025
Type: Command Line Application (Python)

✅ Overview

The Inventory Management System is a command-line based Python application designed for small-scale retailers or shopkeepers. It helps manage product stock, perform billing operations, apply automated discounts, and generate PDF receipts.

🧠 Key Features

- Multi-product purchase support

- Real-time stock updates

- Automatic 10% discount on bills over ₹5000

- PDF receipt generation using FPDF

- Data stored in JSON format

- Simple CLI interface for usability

🛠️ Technologies Used

Core Language:

- Python

Data Handling:

- JSON

- File Handling

Libraries & Tools:

- FPDF (for generating receipts)

- Git (version control)

- Command-Line Interface

🧑‍💻 My Role & Responsibilities

- Designed and developed the entire application

- Created and structured product and transaction logic

- Handled conditional discount application

- Integrated FPDF for automatic receipt generation

- Managed persistent storage using JSON and file operations

- Tested for edge cases and ensured input validation

⚙️ Application Flow

1. **Welcome Screen:** Display options like "Buy Product", "View Stock", "Exit"

2. **Product Selection:** User enters product ID and quantity

3. **Stock Check:** App checks available stock and updates accordingly

4. **Billing:** Total is calculated; 10% discount applied if total > ₹5000

5. **Receipt Generation:** A detailed receipt is printed and saved as a PDF

6. **Logging:** Transaction is recorded in a JSON file for history

💡 Challenges & Solutions

1. Handling Multiple Product Purchases
Solution: Used dictionaries and lists to allow looped item selection and cart creation.

2. Discount Logic Implementation
Solution: Applied conditional statements with rounding functions to ensure accurate totals.

3. PDF Receipt Formatting
Solution: Leveraged the FPDF library to build clear, professional receipts automatically after each transaction.

🧪 Testing & Validation

- Handled invalid product IDs and quantities

- Checked edge cases like empty carts or duplicate entries

- Verified receipt content and formatting

- Ensured stock persists after program restart