Introduction

The **Smart Inventory Management System** is a web-based application designed to streamline inventory operations and improve resource management for organizations. The system ensures secure, role-based access for Admins and Employees to manage inventory and supplier information effectively. Built using **JSP, Servlets**, and **MySQL**, and deployed on the **GlassFish Server**, the project offers a robust and efficient platform tailored to business needs.

Objectives

The system aims to provide an efficient, user-friendly solution for inventory management, focusing on:

- Role-based access control for secure operations.

- Real-time tracking and management of inventory and supplier data.

- Automated low-stock alerts to optimize stock levels.

- Comprehensive reporting for informed decision-making.

Technology Stack

Technology	Details
Programming	Java
Web Framework	JSP (Java Server Pages) and Servlets
Database	MySQL
Server	GlassFish Server
Development Tools	NetBeans IDE
Frontend	HTML, CSS, JavaScript

Features and Modules

The system offers several key modules and features, tailored to specific user roles:

Role-Based Access

- **Admin**:
  - Manage employees, suppliers, and inventory.
  - Perform CRUD operations on all entities.

o Generate reports for inventory insights.

- **Employee**:

    o Update inventory details, issue items, and reorder low-stock products.

Inventory Management

- Real-time CRUD operations for inventory data, including item details, prices, and quantities.

- Low-stock alert notifications to avoid stockouts.

Supplier Management

- Maintain and manage supplier records.

Reports and Alerts

- Generate and view reports on stock status.

- Display low-stock alerts for efficient reordering.

Secure Authentication

- Role-based login to ensure secure data access.

System Design

The database design is optimized to handle inventory and user-related data efficiently.

Database Schema

- **Reports Table**: Stores information about the issued and reordered stocks.

- **Inventory Table**: Captures item details, quantities, and prices.

- **Suppliers Table**: Maintains supplier contact information.

- **Employees Table**: Contains employee details for admin management.

Workflow

1. Users log in with credentials, and role-based access redirects them to the relevant dashboard.

2. CRUD operations and other actions are processed and stored in the database.

3. Automated alerts for low stock are triggered and displayed.

4. Reports and data visualizations are rendered for users based on their permissions.

Implementation Details

Backend Development
The system uses Servlets as the controller layer to handle HTTP requests and responses. JSP files dynamically render the content based on user actions.
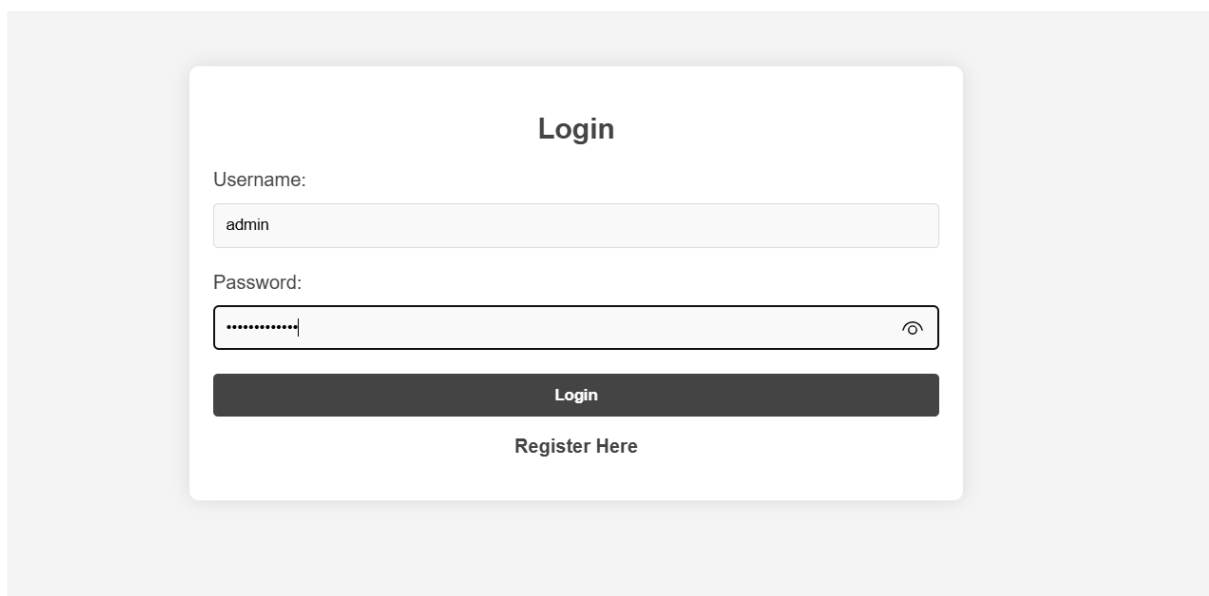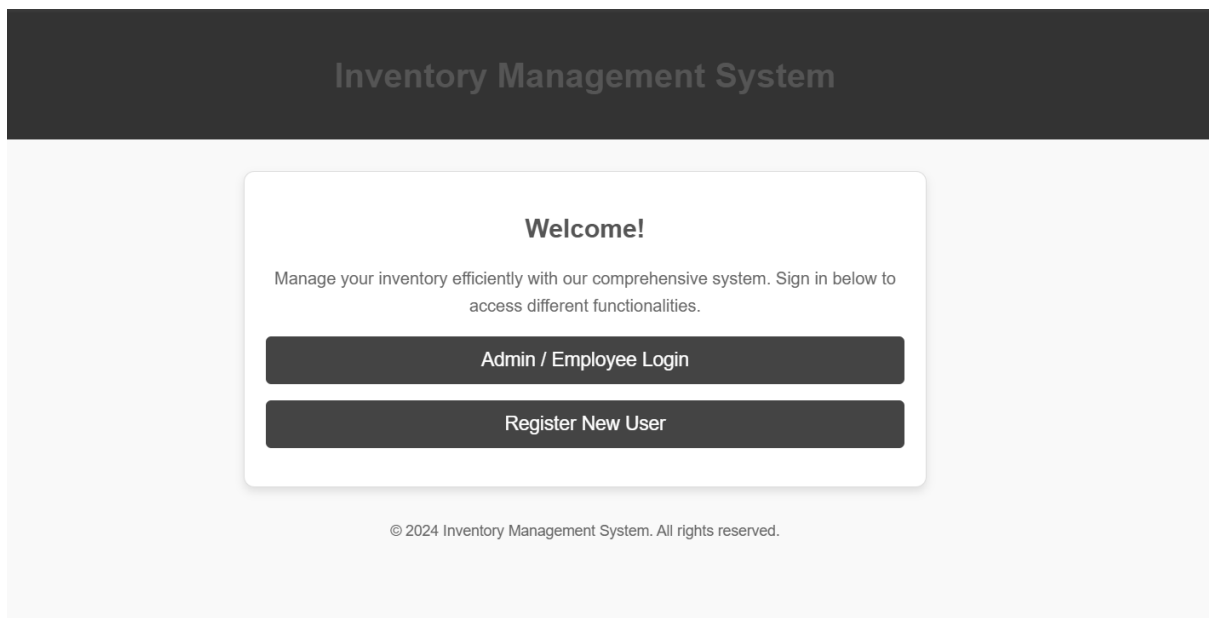
Frontend Design
A responsive and consistent design is implemented using HTML, CSS, and JavaScript for an intuitive user experience.

Deployment
The application is deployed on the **GlassFish Server**, configured for optimal performance and secure database connections.

Screenshots

Login Page

Admin Dashboard

Admin Dashboard

Welcome, Admin! Use the links below to manage the system.

| Manage Employees | View Inventory | View Reports | View Suppliers | Earnings Analysis | Logout |

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Employee Dashboard

Employee Dashboard

Welcome, Employee! Select an action below:

View Inventory

Reorder Items

View Reorder Details

Issue Items

View Issued Items

Logout

View Inventory Page with Stock Alert Notification

Inventory List

Item Id 3 (Item C) is very low on stock. Please reorder.

Item ID	Item Name	Quantity	Price
1	Item A	50	10.50
2	Item B	100	15.00
3	Item C	10	20.00
4	Item D	25	15.00
5	Item E	35	25.00
6	Item F	48	20.50
7	Item G	92	15.00

Back to Dashboard | Logout

View Earnings Analysis

Earnings Analysis

Legend:
- Item A
- Item B
- Item C
- Item D
- Item E
- Item F
- Item G
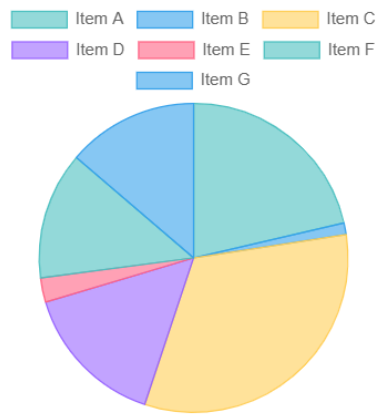
Back to Dashboard

View Suppliers Page

Supplier Details

ID	Supplier Name	Contact Name	Phone	Email
1	Supplier A	Akash	9025671235	akash12@gmail.com
2	Supplier B	Guhan	8569412356	guhan23@gmail.com
3	Supplier C	Rawin	1596324856	rawin17@gmail.com

Back to Dashboard

View Employees Page (Admin Only)

Manage Employees

ID	Username	Role	First Name	Last Name	Email	Actions
1	admin	admin	Prasanth	S	prasanth1511@example.com	Edit | Delete
2	employee1	employee	Subramanian	S	subu12@example.com	Edit | Delete
3	employee2	employee	Vel	Murugan	vels19@example.com	Edit | Delete
4	employee3	employee	Divakar	S	diva@gmail.com	Edit | Delete
5	employee4	employee	Prasanna	Kumar	prasanna04@gmail.com	Edit | Delete
6	employee5	employee	Arun	Kishore	rak11@gmail.com	Edit | Delete
7	employee6	employee	Nithish	Kumar	nk11@gmail.com	Edit | Delete
8	employee7	employee	Ram	Kumar	ram123@gmail.com	Edit | Delete
18	employee8	employee	Karthi	Keyan	karthi17@gmail.com	Edit | Delete

Add Employee

Back to Dashboard | Logout

Add New Employee Form

Register

Username:

employee9

Password:

••••••••••••••••

Role:

Employee ⌄

First Name:

som

Last Name:

S

Email:

som7@gmail.com

Register

Already have an account? **Login here**

Edit Employee Details Form

Username:

employee9

Password:

••••••••••••••••

Role:

Employee

First Name:

somasundharam

Last Name:

S

Email:

som7@gmail.com

Update

Inventory Reports Page

Reports

Report Type	Report Date	Report Data
issue items	2024-12-07	Issued 4 units of Item C
Reorder	2024-12-07	Reordered 3 units of Item C
issue items	2024-12-07	Issued 9 units of Item C
issue items	2024-12-07	Issued 10 units of Item C
Issued items	2024-12-07	Issued 70 units of Item C
Issued items	2024-12-07	Issued 95 units of Item A
Reordered items	2024-12-07	Reordered 2 units of Item B
Issued items	2024-12-07	Issued 2 units of Item B
Reordered items	2024-12-07	Reordered 2 units of Item B
Issued items	2024-12-07	Issued 2 units of Item B
Reordered items	2024-12-08	Reordered 50 units of Item A
Issued items	2024-12-08	Issued 5 units of Item A

Back to Dashboard | Logout

Download Report

Successful Logout Screen

You have successfully logged out!

Thank you for using our system.

Log in again or **Go to Homepage**

Challenges Faced

The project encountered several challenges during implementation, including:

- Optimizing database queries for large datasets to maintain performance.

- Implementing role-based access control for secure operations.

- Configuring the GlassFish Server for seamless deployment and execution.

Future Enhancements

To further enhance the system, the following improvements are planned:

- Add advanced analytics with graphical reports for better decision-making.

- Develop a mobile-responsive design to improve accessibility.

- Integrate external APIs for additional functionalities like payment systems or third-party ERP tools.

Conclusion

The **Smart Inventory Management System** successfully addresses the challenges of inventory management with its robust design and efficient functionalities. Leveraging the **GlassFish Server** and modern web technologies, the system provides a secure and scalable platform that meets organizational needs. It demonstrates the effective application of software development principles to solve practical business problems.