AISSMS
COLLEGE OF ENGINEERING
ज्ञानम् सकलजनहिताय

Approved by AICTE, New Delhi, Recognized by Government of Maharashtra
Affiliated to Savitribai Phule Pune University and recognized 2(f) and 12(B) by UGC
(Id.No. PU/PN/Engg./093 (1992)
Accredited by NAAC with "A+" Grade | NBA - 7 UG Programmes

Department of Computer Engineering

"WT Mini-project Report"

Submitted in partial fulfillment of the requirements for the degree of

BACHELOR OF ENGINEERING

In

COMPUTER ENGINEERING

Submitted By

Name of the Student: Piyusha Rajendra Supe

Roll No: 23CO315

Under the Guidance of

Dr. S. F. Sayyad

ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S COLLEGE OF ENGINEERING PUNE-411001

Academic Year: 2024-25(Term-II)

Savitribai Phule Pune University

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Department of Computer Engineering

CERTIFICATE

This is to certify that **Piyusha Rajendra Supe** from **Third Year Computer Engineering** has successfully completed her work titled **"Web Technology Mini-project**" at AISSMS College of Engineering, Pune in the partial fulfillment of the Bachelor's Degree in Engineering.

Dr. S. F. Sayyad	**Dr. S. V. Athawale**	**Dr. D. S. Bormane**
(Faculty Guide)	(Head of Department)	(Principal)
Computer Engineering	Computer Engineering	AISSMSCOE, Pune

ACKNOWLEDGEMENT

It is with immense gratitude and deep respect that I take this opportunity to acknowledge the invaluable support and guidance I have received throughout the course of my Web Technology project. This endeavour has been a truly enriching experience—both intellectually and personally—and has significantly enhanced my understanding of web development tools, technologies, and real-world implementation strategies. First and foremost, I would like to express my heartfelt thanks to **Dr. S.F. Sayyad** for her expert guidance, unwavering support, and insightful feedback. Her encouragement and mentorship were instrumental in shaping the direction, depth, and quality of this project. I extend my sincere gratitude to the Head of the Department, whose leadership and commitment to academic excellence have fostered an environment of continuous learning and innovation. I am truly thankful for the resources, support, and opportunities provided under their stewardship. A special note of appreciation goes to the staff, whose timely assistance and cooperation ensured a smooth and efficient workflow during the development phase. Most importantly, I would like to express my deepest gratitude to my parents, whose unconditional love, patience, and constant encouragement have been my greatest source of strength. Their belief in my potential and their continuous emotional and moral support played a vital role in helping me stay focused and motivated throughout this journey. This project has not only strengthened my technical skills but has also taught me the value of perseverance, and continuous learning. I remain sincerely thankful to everyone who contributed to the successful completion of this project.

Academic Year: 2024-2025

Piyusha Rajendra Supe (23CO315)

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ABSTRACT

This Web Technology project presents the design and implementation of a dynamic and interactive web-based application utilizing a combination of client-side and server-side technologies. The objective of this project is to gain hands-on experience in building a complete web solution by integrating frontend and backend technologies effectively. The technologies used include **HTML**, **CSS**, and **JavaScript** for the frontend development, while **PHP**, **MySQL**, **Java**, and **JSP (JavaServer Pages)** are employed in the backend to manage logic, server communication, and data operations.

The frontend of the application is designed using HTML and CSS to structure and style the content, ensuring that the interface is user-friendly and responsive. JavaScript is used to enhance interactivity and provide a seamless user experience by enabling client-side validation and dynamic behaviour without the need to reload the page. The frontend serves as the primary interface through which users interact with the system, and careful attention is given to layout, accessibility, and responsive design.

On the server side, **PHP** is used for handling requests and processing data submitted from the client side. It acts as the bridge between the frontend and the database, managing essential functionalities such as form submission, data validation, and retrieval. **MySQL** is used as the relational database management system for storing and managing structured data securely and efficiently. Data such as user information, form inputs, or system configurations are stored in tables, with structured queries used for retrieval and manipulation.

To further enhance the scope of the project, **Java** and **JSP (JavaServer Pages)** are incorporated into the backend to demonstrate the integration of Java-based server-side technologies with the overall web application. JSP enables the creation of dynamic web content, allowing server-side Java code to be embedded within HTML pages. This hybrid approach facilitates real-time data rendering from the server and supports robust backend functionality using Java classes and servlet logic. The use of Java and JSP ensures scalability and platform independence, making the project extensible for future enhancements.

Security measures are considered throughout the development process, with input validation implemented at both client and server levels to minimize vulnerabilities such as SQL injection and unauthorized access. The system architecture follows a modular and layered approach, separating concerns between presentation, logic, and data layers. This structure not only improves maintainability but also aligns with good software engineering practices.

In conclusion, this project demonstrates a comprehensive understanding of web development using a diverse yet coherent set of technologies. It has provided an opportunity to build a fully functional web application by integrating HTML, CSS, JavaScript, PHP, MySQL, Java, and JSP effectively. The project has strengthened practical skills in both frontend and backend development, fostering a deeper appreciation for how modern web applications are designed, implemented, and maintained. It also opens avenues for future work involving full-stack development, advanced security, and cloud-based deployment strategies.

INTRODUCTION

Web development has become a cornerstone of modern software engineering, enabling interactive, user-centric, and platform-independent solutions accessible from anywhere in the world. As organizations increasingly rely on digital interfaces for communication, data processing, and service delivery, the demand for robust and dynamic web applications continues to grow. This project focuses on the development of a full-fledged web-based system using a well-defined combination of frontend and backend technologies, offering both practical knowledge and technical proficiency in web application architecture.

The core objective of this project is to design and implement a web application that showcases the seamless integration of both the client-side and server-side components. It enables the user to interact with a structured interface and perform meaningful operations such as data entry, retrieval, display, and validation, all while ensuring smooth communication with the backend systems. The technologies used in this project are industry-standard, providing a strong foundation for real-world development environments.

Technologies Used

Frontend:

- **HTML (Hypertext Mark-up Language)**: Defines the basic structure and content of web pages.
- **CSS (Cascading Style Sheets)**: Styles the application with layouts, colours, fonts, and ensures responsiveness across devices.
- **JavaScript**: Adds interactivity and dynamic behaviour, such as client-side validation, content updates without page reloads, and DOM manipulation.

Backend:

- **PHP (Hypertext Pre-processor)**: Handles server-side scripting, form processing, session management, and basic logic handling.
- **MySQL**: Acts as the database system to store, retrieve, and manage structured data efficiently using SQL queries.
- **Java**: Powers backend components, enabling scalable logic execution and integration with web services.
- **JSP (JavaServer Pages)**: Used for dynamically generating HTML content on the server side and handling server-side rendering using embedded Java code.

PROBLEM STATEMENT

Title: Inventory Management System

Description:

In any organization, effectively managing inventory and delegating tasks to responsible personnel are essential operations. Manual methods often lead to miscommunication, redundancy, inventory misplacement, or task delays. These inefficiencies can impact productivity, accuracy, and transparency. There is a pressing need for a digital solution that automates user role management, inventory tracking, and task assignments — ensuring that every user, whether admin, employee, or worker, can perform their role seamlessly in a secure and structured environment.

The goal of this project is to design and implement a web-based **Inventory Management System** that enables different types of users (admin, employee, worker) to interact with the system according to their roles. It supports functions such as user registration, role-based login, inventory addition and monitoring, task assignments, and completion tracking. The system is built using **HTML, CSS, JavaScript** for the frontend and **PHP, MySQL, Java, JSP** for the backend, ensuring both interactivity and robustness.

To address these issues, there is a critical need for a **centralized, digital Inventory Management System** that integrates all user roles into a unified platform. Such a system should allow:

- **Admins** to approve users and oversee the entire system.
- **Employees** to manage inventory and assign operational tasks.
- **Workers** to receive tasks and report completion.

By providing role-based access, secure authentication, and structured data handling, this system ensures smooth collaboration and real-time visibility into the organization's operations. Built using **HTML, CSS, JavaScript** for the frontend and **PHP, MySQL, Java, JSP** on the backend, the solution supports a modern, efficient, and scalable workflow that can be adapted to small or medium-sized enterprises.

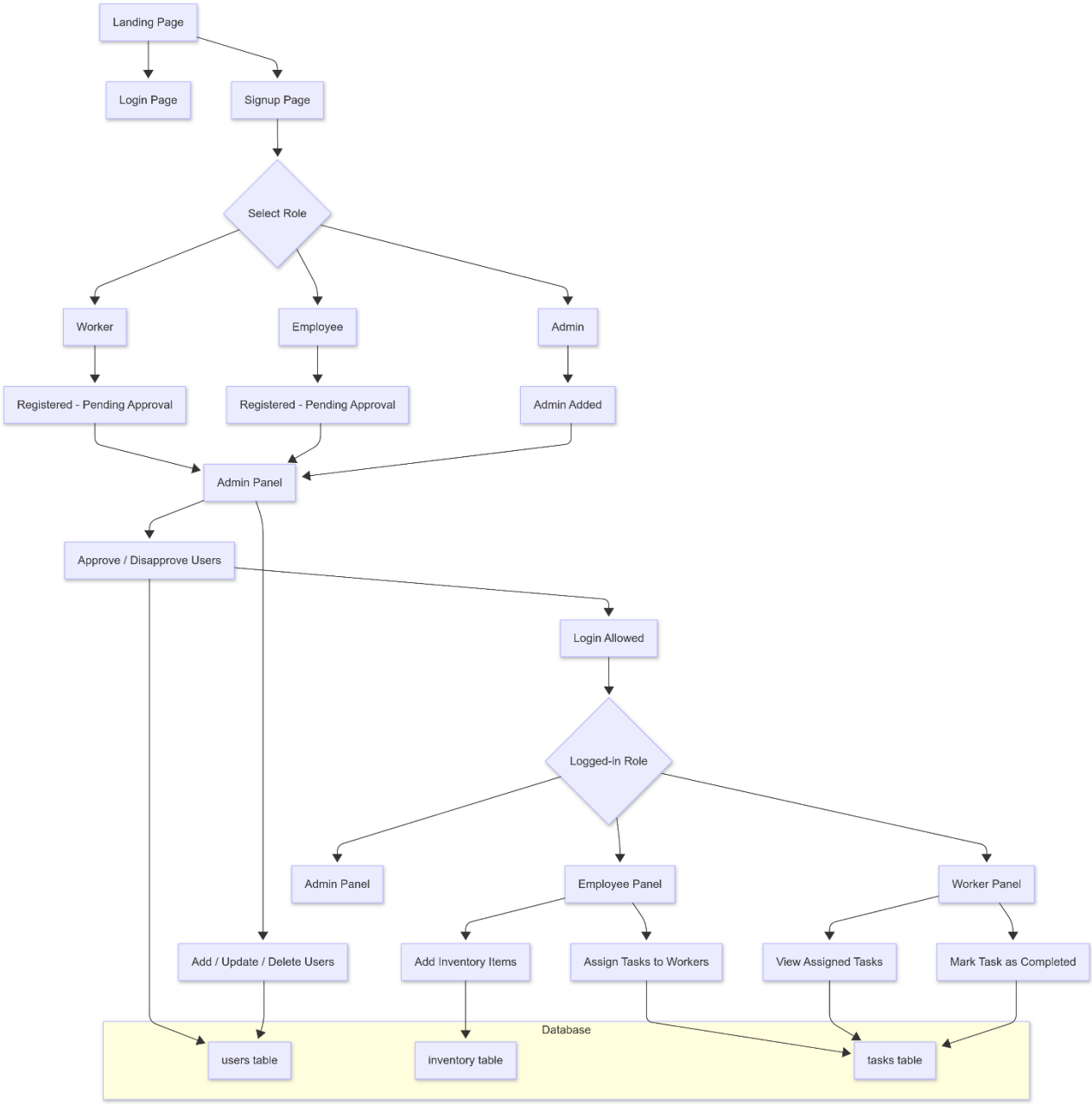
OVERVIEW

Flow of the Project

The project follows a logical and modular flow from landing to role-based operations. Below is a simplified summary of the system's workflow:

- **Landing Page**: Acts as the entry point of the application, offering navigation to login and signup pages.
- **User Registration**:
  - New users access the **Signup Page**.
  - During signup, users choose their role: **Admin**, **Employee**, or **Worker**.
  - Workers and employees are **registered with pending approval**.
  - Admin accounts are added directly or via admin backend.
- **Admin Dashboard**:
  - Admins can **approve or disapprove** pending users.
  - They can **add, update, or delete users** from the system.
  - Once approved, users can log in and access their respective panels.
- **Role-Based Panels**:
  - **Admin Panel**: Manages user permissions and oversees system activity.
  - **Employee Panel**:
    - Can **add inventory items** into the system.
    - Can **assign tasks** to workers.
  - **Worker Panel**:
    - Can **view assigned tasks**.
    - Can **mark tasks as completed**, updating the system in real time.
- **Database Design**:
  - users table: Stores all registered users and their roles/status.
  - inventory table: Stores inventory items and their details.
  - tasks table: Tracks task details, assignments, and completion statuses.

This structured flow ensures that every function is processed through proper authentication and data validation, ensuring integrity and role-based access control throughout the system.



Learning Outcomes

Through this project, the following practical and theoretical skills were developed:

- Designing structured and responsive web interfaces.
- Writing and maintaining clean client-side and server-side code.
- Implementing CRUD (Create, Read, Update, Delete) operations through PHP and JSP.
- Developing backend logic using Java and connecting it with frontend components.
- Managing database schemas, relationships, and queries using MySQL.
- Understanding the complete lifecycle of a web application—from design and development to deployment.

SYSTEM REQUIREMENTS

System Requirements for Inventory Management System Project

Below are the **hardware and software requirements** for developing and running the Inventory Management System effectively. This includes all necessary tools for frontend, backend, database, and server-side functionalities.

1. Hardware Requirements

- **Processor**: Intel Core i3 or higher
- **RAM**: Minimum 4 GB (8 GB recommended)
- **Hard Disk**: Minimum 500 GB (SSD preferred for faster processing)
- **Display**: Minimum resolution 1366x768
- **Network**: Internet connection for live testing and deployment

2. Software Requirements

Frontend Technologies

- **HTML5**: Mark-up language for webpage structure.
- **CSS3**: Styling the user interface.
- **JavaScript**: Interactivity and client-side validation.

Backend Technologies

- **PHP (≥ 7.x)**: Used for backend logic, user sessions, inventory and task management.
- **Java (≥ 8)**: Used along with JSP for the blog section of the website.
- **JSP (JavaServer Pages)**: For dynamic blog content display.
- **Apache Tomcat (≥ 9.x)**: Required to deploy and run the JSP and Java components.
- **Apache HTTP Server (≥ 2.4.x)**: To host and serve PHP applications.

Database

- **MySQL (≥ 5.7 or 8.x)**: Used to store and manage user data, inventory, and task records.
- **phpMyAdmin**: GUI tool for managing MySQL database conveniently.

3. Development & Deployment Tools

- **XAMPP** or **WAMP**: Bundled software package including Apache, MySQL, and PHP for local development.
- **NetBeans IDE (≥ 12.x)**: Preferred for Java and JSP development.
- **VS Code / Sublime Text**: For editing frontend and PHP files.
- **Browser (Chrome, Firefox)**: For testing and accessing the web application.

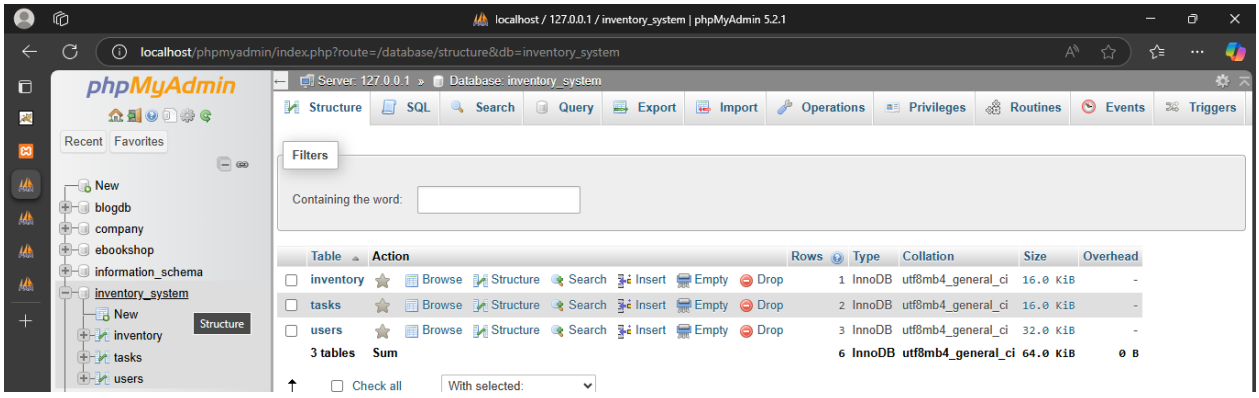
IMPLEMENTATION

Technology Distribution for the Inventory Management System

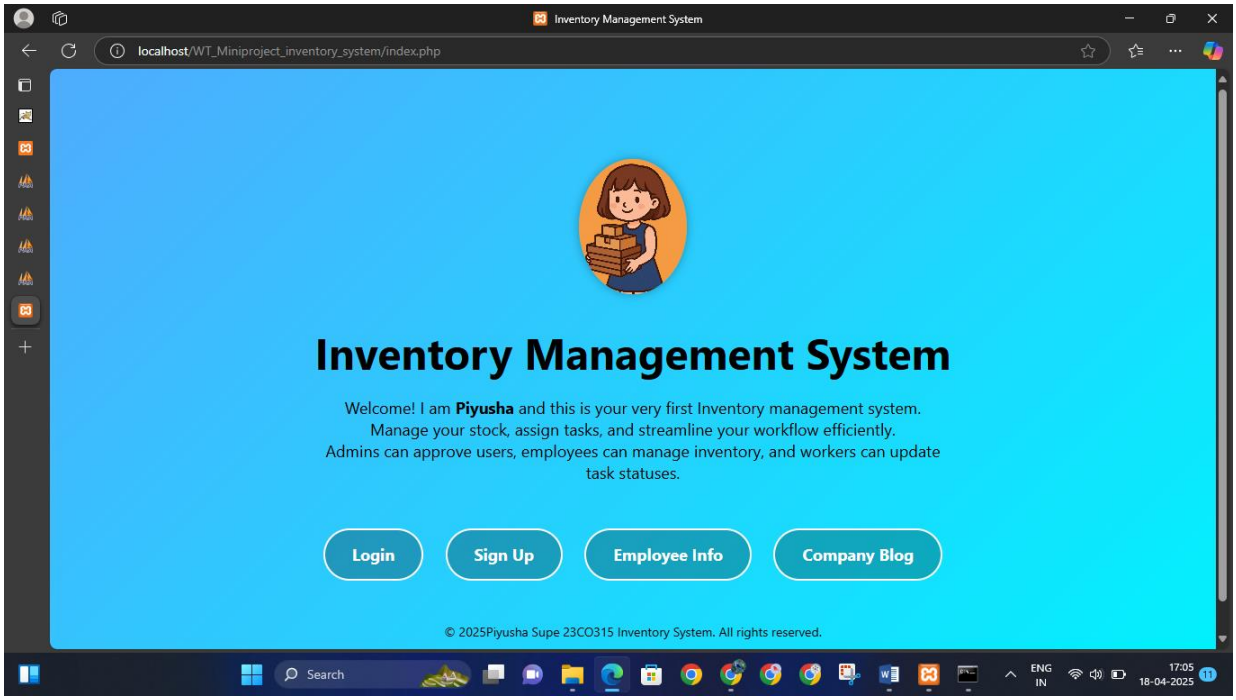
- **Frontend Technologies** (used throughout the entire application interface):
  - **HTML**: Provides the structural layout for all web pages.
  - **CSS**: Handles styling, responsiveness, and visual aesthetics.
  - **JavaScript**: Adds interactivity, form validation, and dynamic content behaviour.
- **Backend Technologies**:
  - **PHP**:
    - Core backend scripting language used for handling user authentication, form processing, inventory operations, and task management.
    - Interacts with the database to perform CRUD operations.
  - **MySQL**:
    - Relational database used to store and manage data related to users, inventory, and tasks.
    - Integrated with PHP for backend functionalities.
- **Blog Section (Company Blog Page Only)**:
  - **JSP (JavaServer Pages)**: Used for rendering the blog content dynamically.
  - **Java**: Implements server-side logic and interacts with JSP to manage blog data.
  - **MySQL**: Stores blog posts (title, content, date) and integrates with Java/JSP to retrieve and display blog content.

The implementation of the project is as follows:

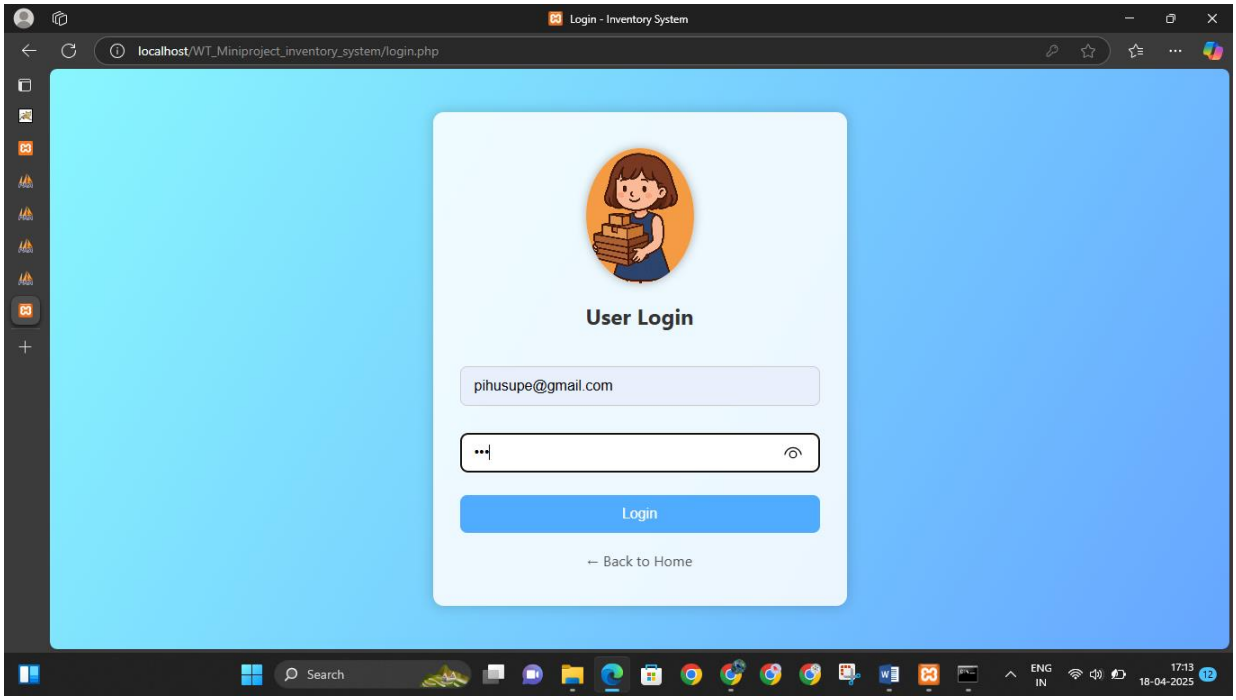
The database structure is



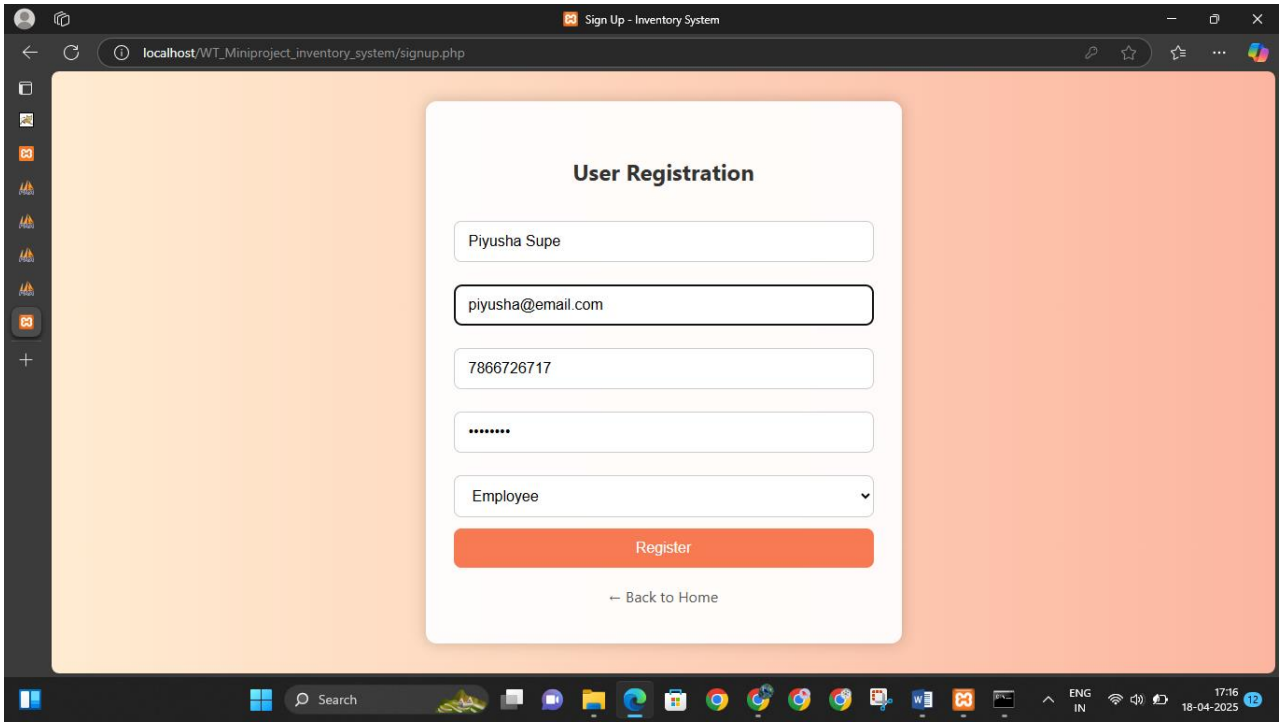
Landing page

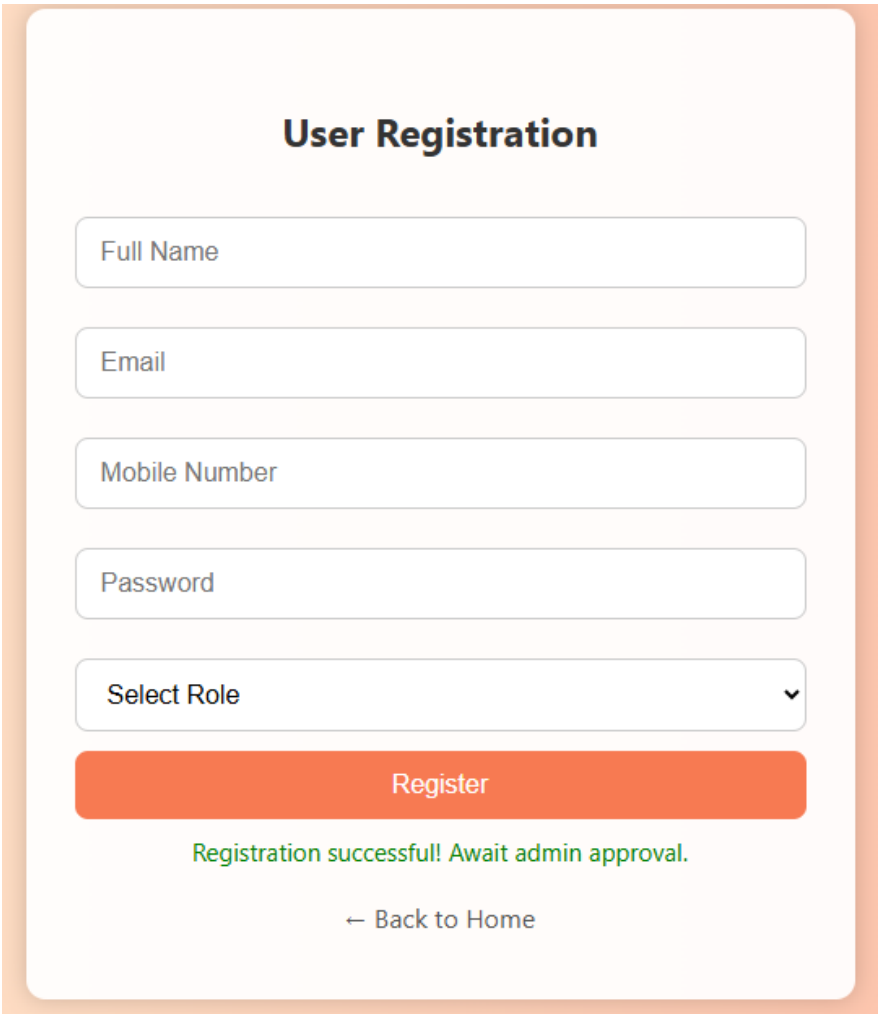


Login Page

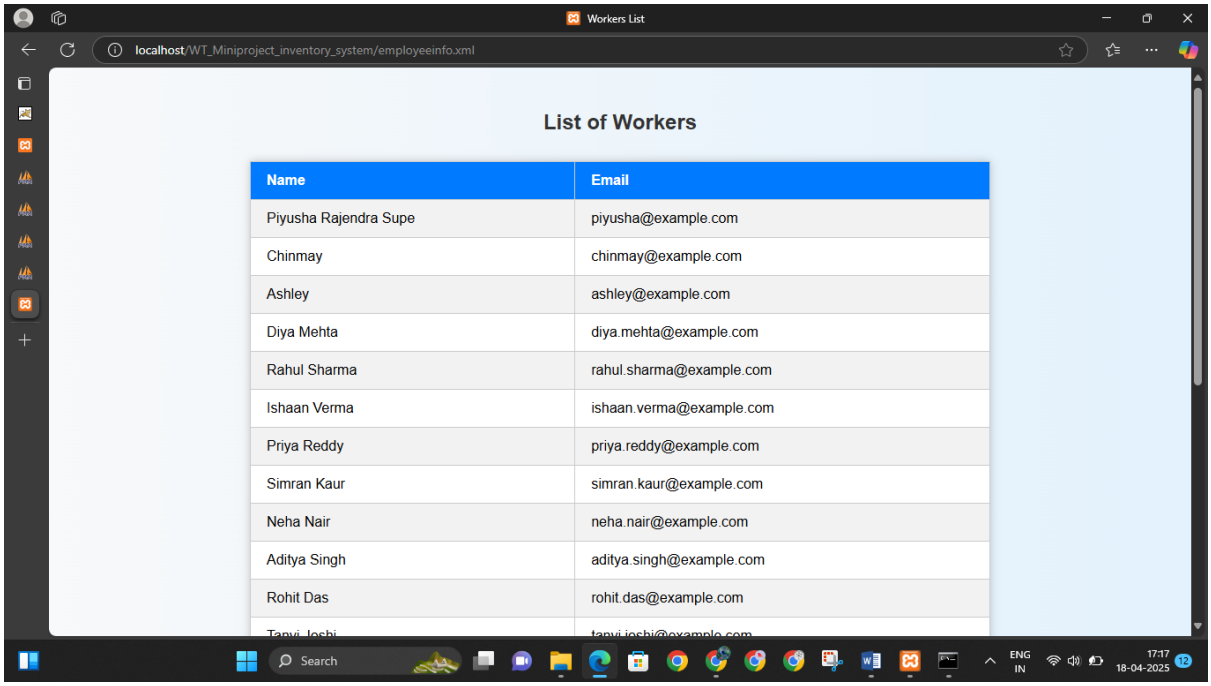


Sign up

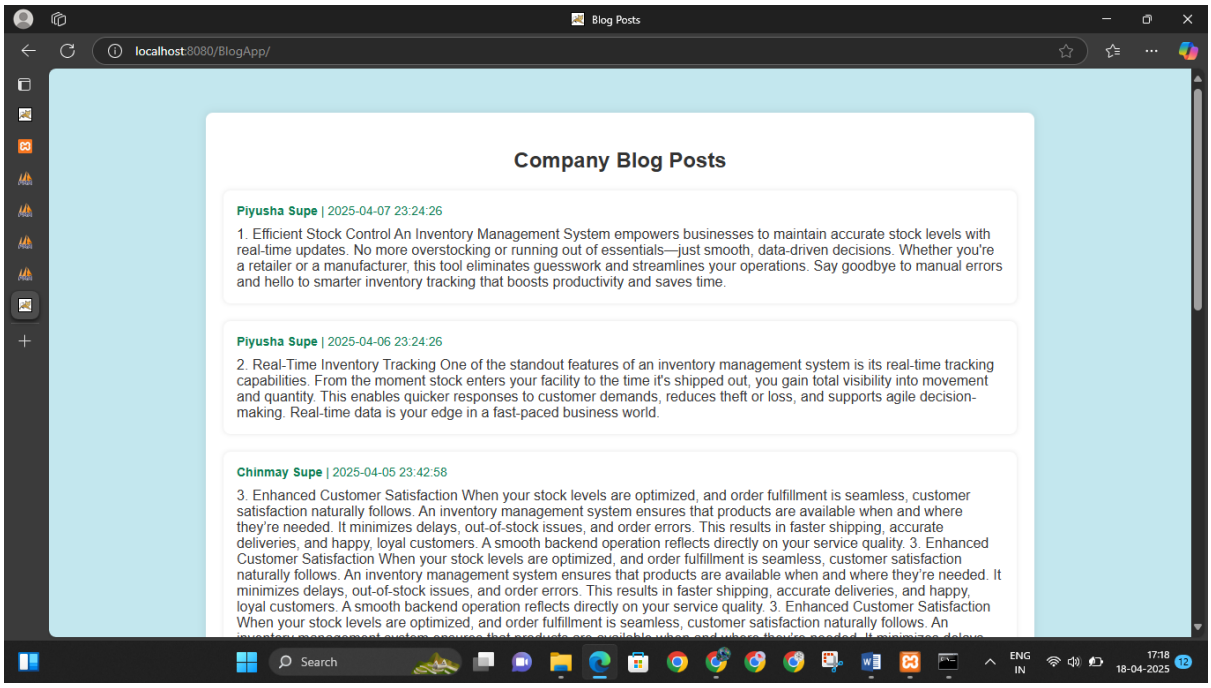

Sign Up - Inventory System
localhost/WT_Miniproject_inventory_system/signup.php
User Registration
Piyusha Supe
piyusha@email.com
7866726717
Employee
Register
← Back to Home


User Registration
Full Name
Email
Mobile Number
Password
Select Role
Register
Registration successful! Await admin approval.
← Back to Home

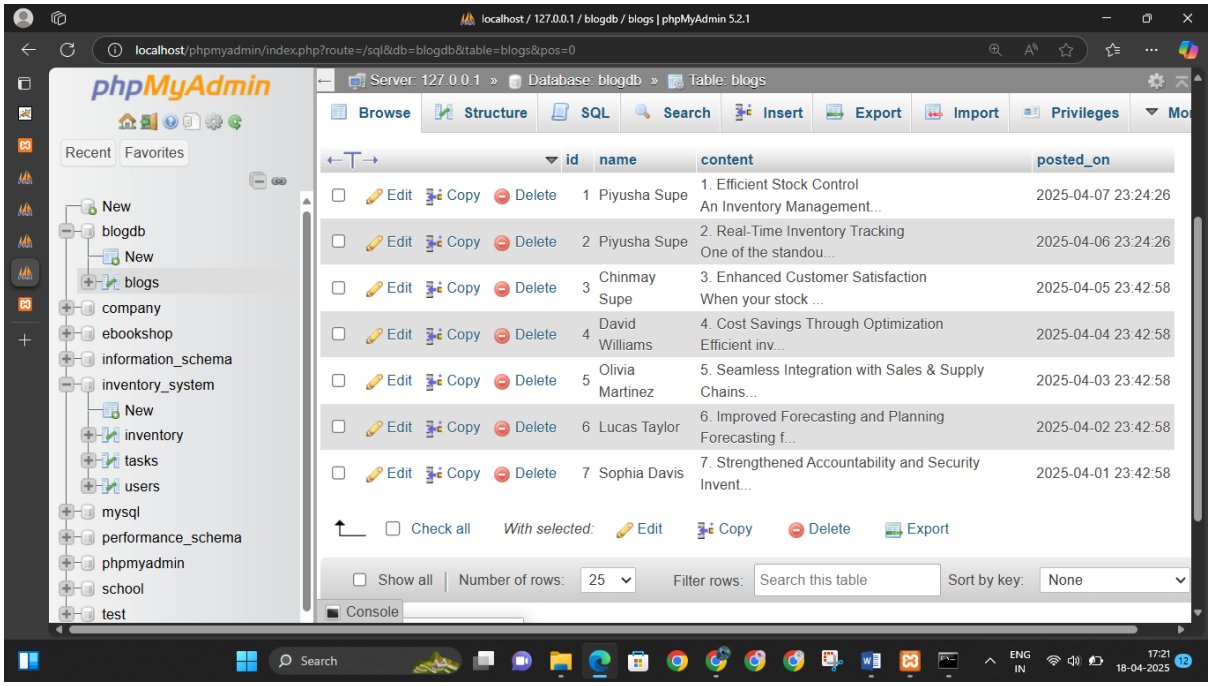
Use of XML for employee information representation and styled through XSL



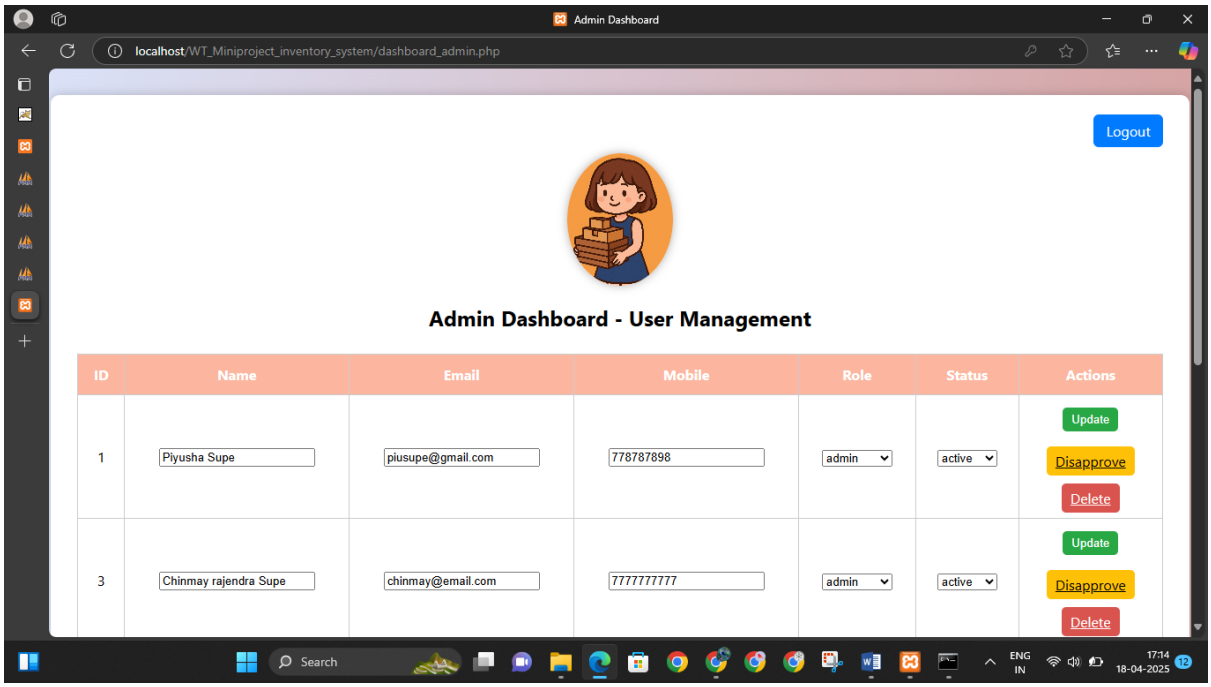
JSP for blog posts of company

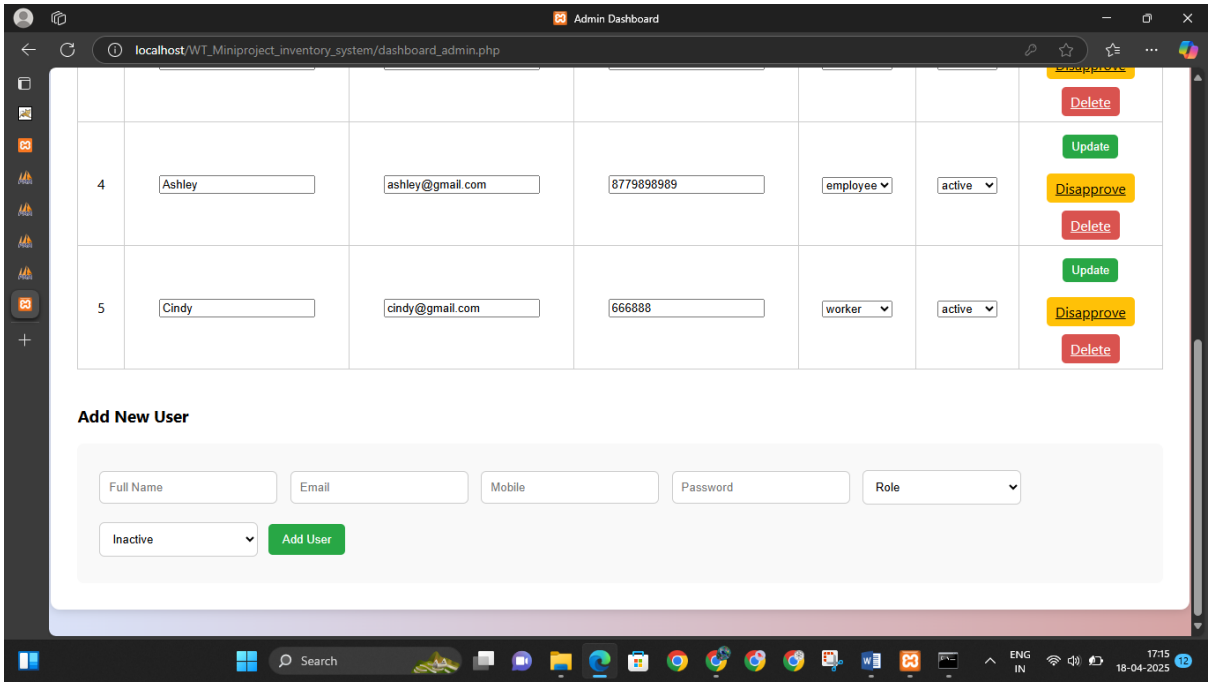


Database of Blogs (used by the JSP logic)

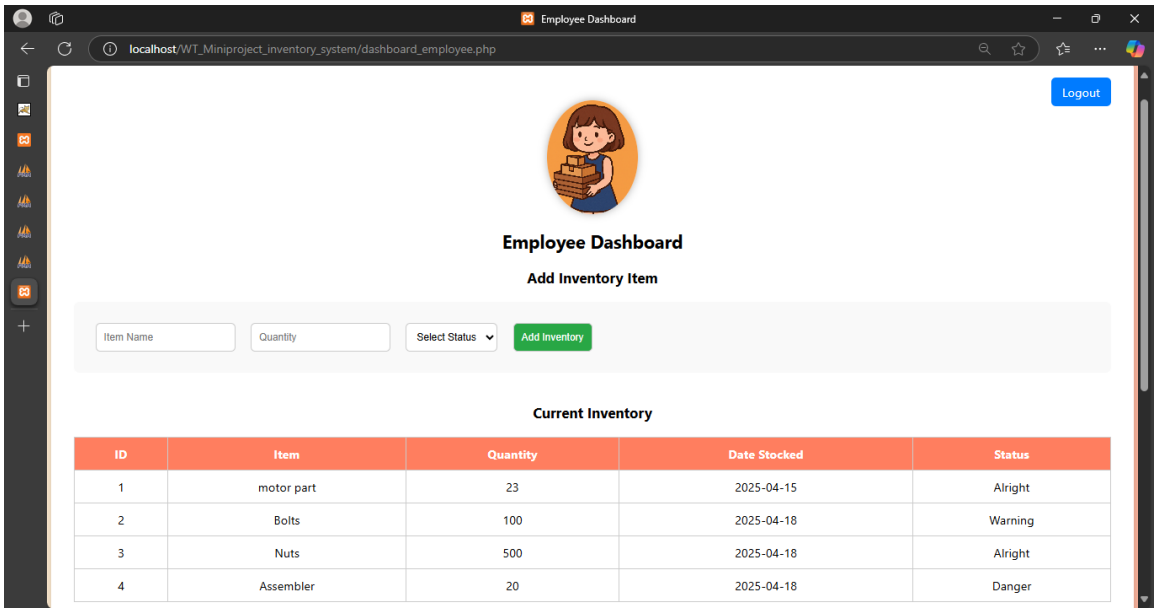


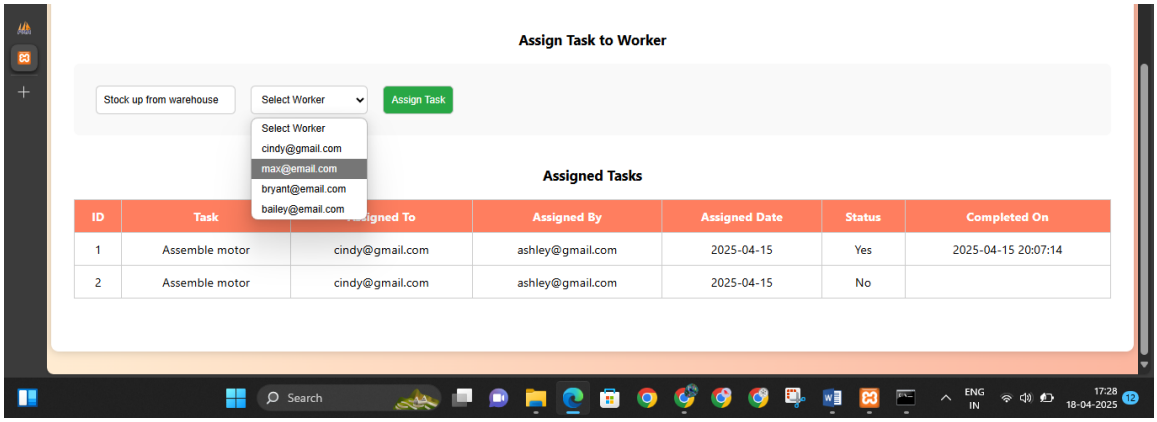
Admin dashboard





Employee dashboard

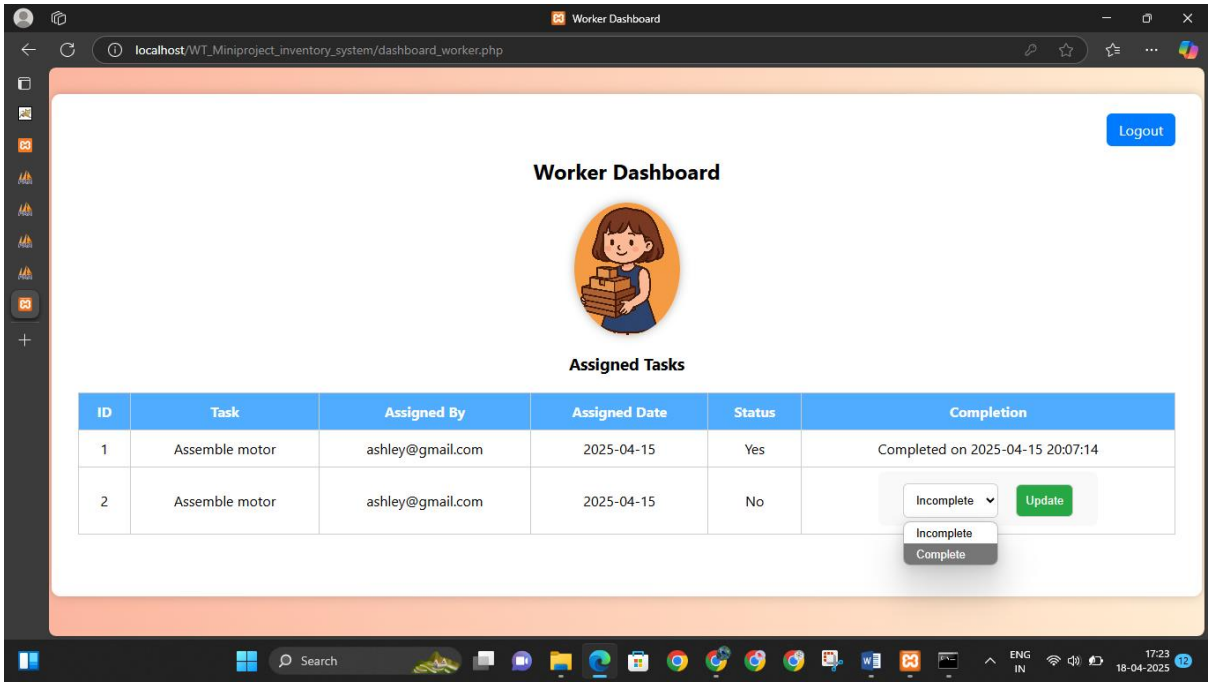


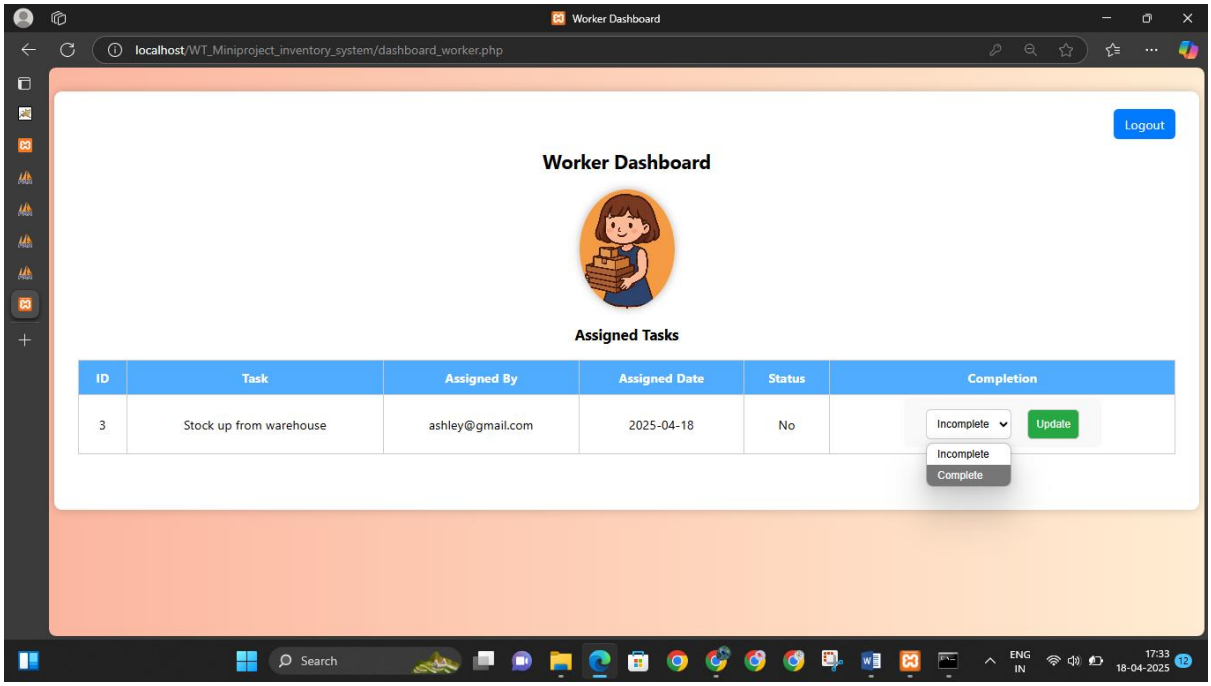


Assigned Tasks

ID	Task	Assigned To	Assigned By	Assigned Date	Status	Completed On
1	Assemble motor	cindy@gmail.com	ashley@gmail.com	2025-04-15	Yes	2025-04-15 20:07:14
2	Assemble motor	cindy@gmail.com	ashley@gmail.com	2025-04-15	No	
3	Stock up from warehouse	max@email.com	ashley@gmail.com	2025-04-18	No	

Worker dashboard





FUNCTIONALITY AND ADVANTAGE

Functionality of the Inventory Management System

The **Inventory Management System** offers a structured platform to manage users, inventory, and tasks with the following core features:

- **User Registration & Role Management**: Users register with a role (Admin, Employee, Worker) and access the system accordingly.
- **Admin Panel**: Admins manage user roles, approve registrations, and have full access to inventory and task data.
- **Employee Panel**: Employees can add and manage inventory, and assign tasks to workers.
- **Worker Panel**: Workers can view their assigned tasks, mark them as completed, and access inventory details.
- **Database Management**: MySQL database stores user, inventory, and task data, ensuring integrity and security.

Advantages of the Inventory Management System

- **Efficiency & Productivity**: Automates tasks like inventory tracking and task assignments, reducing manual effort and time.
- **Real-Time Monitoring**: Enables real-time updates for inventory levels and task status, allowing quicker decisions and actions.
- **Role-Based Access**: Ensures that each user has access only to the features relevant to their role, improving security and streamlining operations.
- **Centralized Data Management**: Consolidates all data into one system, simplifying management and reporting.
- **Scalability**: The system can be expanded to accommodate more users, inventory items, and functionalities as the business grows.
- **Enhanced Security**: Secure login, session management, and backend validation protect sensitive data from unauthorized access.
- **Cost & Time Efficiency**: Reduces errors and manual tracking, saving time and resources for better operational focus.
- **User-Friendly Interface**: A responsive frontend built with HTML, CSS, and JavaScript ensures a smooth user experience

CONCLUSION

The **Inventory Management System** developed for this project provides a comprehensive solution to the challenges businesses face in managing inventory, user roles, and task assignments. By integrating a web-based platform with role-based access, it ensures that each user—whether an admin, employee, or worker—has the appropriate tools and permissions to manage their responsibilities effectively.

With the use of **HTML, CSS, JavaScript**, the frontend of the system is designed to be user-friendly, responsive, and interactive. This allows for a seamless user experience, enabling quick navigation and real-time updates. On the backend, **PHP** and **MySQL** work together to securely handle user registrations, inventory management, and task assignments, ensuring data integrity and secure transactions.

The system's **role-based access control** helps maintain security, ensuring that users only access the features relevant to their roles. Admins have complete control, while employees can manage inventory and assign tasks, and workers can focus on completing tasks efficiently. This structure not only enhances security but also streamlines operations, reducing manual errors and improving overall workflow.

Additionally, the use of **JSP, Java**, and **MySQL** for the blog page section adds a dynamic feature, allowing the company to share important updates, news, or announcements with ease.

Overall, this **Inventory Management System** streamlines inventory tracking, task management, and user role handling, making it a powerful tool for organizations aiming to improve operational efficiency, reduce costs, and enhance real-time decision-making. The system's scalability ensures it can grow with the business, making it a long-term, adaptable solution.

- **The entire project demonstration is uploaded on the following YouTube link recorded by me:** https://youtu.be/YpT4w1UhkuA
- **The source code is available in my personal Git-hub repository:** https://github.com/PiyushaSupe/web_technology_miniproject/

REFERENCES

- https://www.geeksforgeeks.org/introduction-to-jsp/
- https://www.tutorialspoint.com/jsp/index.htm
- https://docs.oracle.com/javaee/5/tutorial/doc/bnagx.html
- https://www.apachefriends.org/download.html
- https://www.php.net/
- https://www.php.net/manual/en/language.basic-syntax.php
- https://www.php.net/manual/en/refs.database.php
- https://www.php.net/manual/en/set.mysqlinfo.php
- https://www.php.net/manual/en/debugger.php
- https://www.microfocus.com/documentation/enterprise-developer/30pu12/ED-Eclipse/GUID-D075B3ED-BC49-4E73-A4BD-E3CBC0C1B696.html
- https://www.cs.virginia.edu/~up3f/cs4640/supplement/jsp-deployment.html