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Furniture and Construction Management System

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ABSTRACT : Managing furniture inventory and construction projects efficiently is often delayed by manual processes, data inconsistencies, and lack of real-time collaboration. This paper proposes a web-based Furniture and Construction Management System (FCMS) that addresses these issues through automation, centralized data storage, and real-time tracking. Developed using Java Spring Boot and MySQL, the system supports features such as real-time inventory monitoring, task scheduling using Critical Path Method (CPM), and automated order management. The platform also incorporates role-based access control for administrators, vendors, and clients, ensuring secure and streamlined operations.Initial testing demonstrates a 20% reduction in project delays and a 30% improvement in inventory accuracy, leading to enhanced resource utilization and improved client satisfaction.For environments with limited digital infrastructure, a simplified manual version of the system is also proposed. This version enables structured tracking of tasks, materials, and deadlines through paper-based documentation, helping small-scale businesses maintain productivity and reduce operational confusion.Future developments will explore mobile application integration and AI-driven predictive analytics to further enhance planning, decision-making, and project performance.

KEY WORDS : Furniture Management, Construction Scheduling, Spring Boot, CPM, RBAC, Web Application, MySQL.

INTRODUCTION : The The furniture and construction industries often struggle with outdated manual processes, resulting in delays, miscommunication, and increased operational costs. To address these issues, a web-based Furniture and Construction Management System has been developed using Java Spring Boot and MySQL. This system aims to streamline operations by centralizing inventory tracking, project scheduling, and order processing, while also offering role-based access for different users. The solution improves project efficiency, reduces human errors, and enhances collaboration, ultimately supporting better management practices and customer satisfaction. The system forms the foundation for better management practices in the furniture and construction industry

METHODOLOGY

The development of the Furniture and Construction Management System follows a structured approach to ensure efficient design, implementation, and testing. The methodology consists of the following key phases:

1 Requirement Analysis

A thorough study was conducted to identify the core needs of furniture retailers and construction project managers. Key requirements include inventory tracking, project scheduling, order management, user roles, and reporting features. Stakeholder inputs were gathered through interviews and questionnaires to finalize functional specifications.

2 System Design

Based on the requirements, the system architecture was designed using a modular approach to separate concerns such as inventory management, project scheduling, and user authentication. The design incorporates role-based access control to ensure data security and proper authorization. UML diagrams, including use case and class diagrams, were developed to visualize system components and interactions.

3 Technology Stack

The backend was developed using Java Spring Boot to leverage its scalability and robustness. MySQL was chosen for database management due to its reliability and efficient data handling capabilities. The frontend was designed with responsive web technologies to enable accessibility across devices.

4 Implementation

The system was developed iteratively with continuous integration and testing. Core modules, such as inventory management and project scheduling, were implemented first, followed by user authentication and reporting features. RESTful APIs were used to facilitate communication between the frontend and backend.

5 Testing and Validation

Unit testing, integration testing, and user acceptance testing were performed to ensure the system meets functional and performance requirements. Feedback from pilot users was incorporated to refine usability and fix issues. Performance metrics such as project delay reduction and inventory accuracy improvement were recorded.

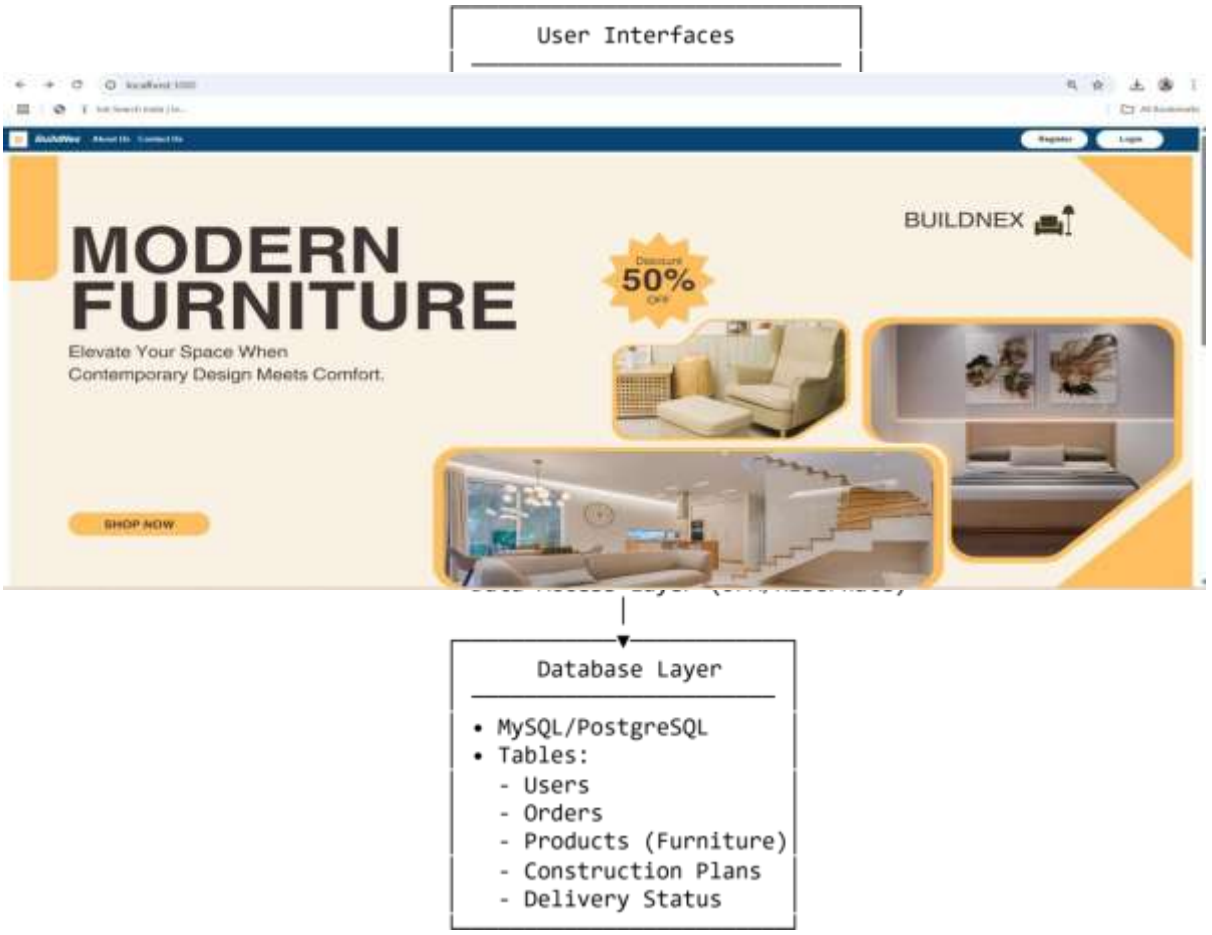
6 Deployment and Maintenance

The final system was deployed on a web server, with provisions for future updates and scalability. Documentation was prepared to guide users and administrators. A maintenance plan was established to handle bug fixes and feature enhancements based on user feedback.

TECHNOLOGIES USED

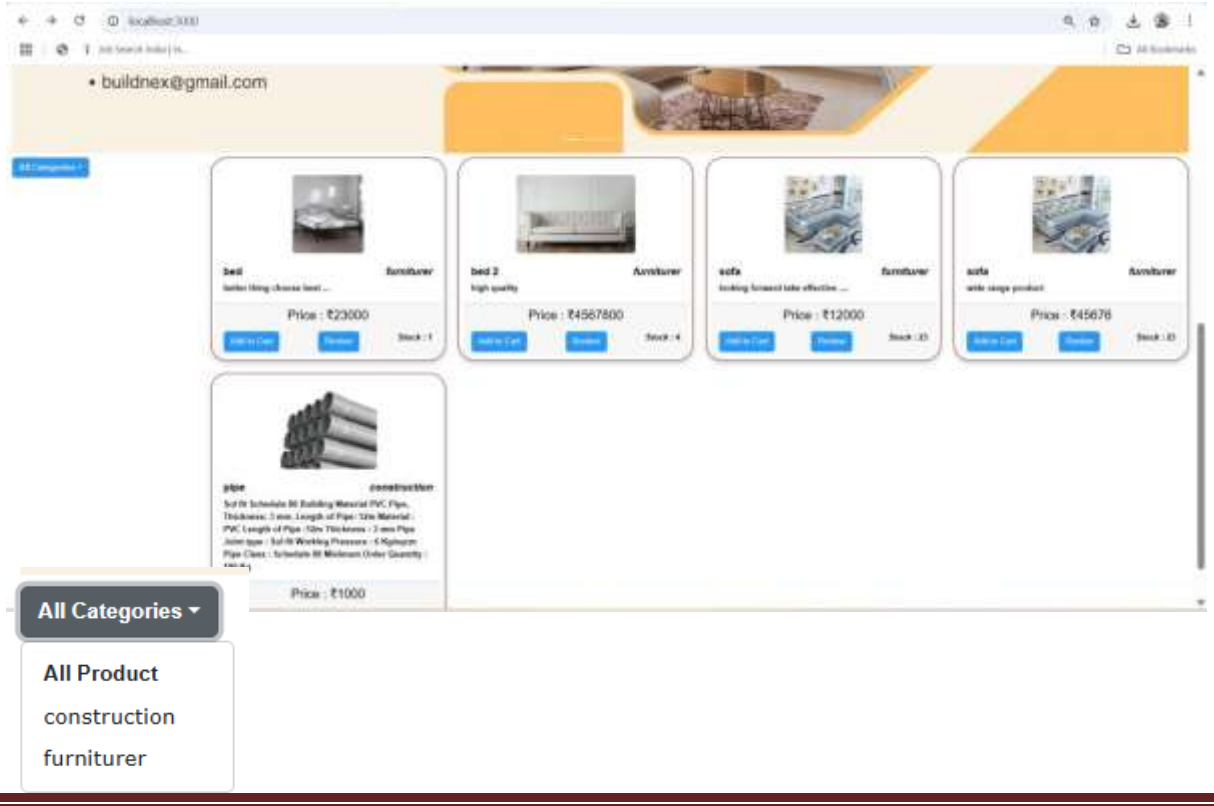
Category	Technology/Tool	Purpose
Backend	Java Spring Boot	Server-side logic, REST APIs
Security	Spring Security	Authentication & Role-based Access
Frontend	HTML5, CSS3, JavaScript	Web interface and responsiveness
Template Engine	Thymeleaf (or JSP)	Dynamic web content rendering
Database	MySQL	Data storage and management
IDE	Spring Tool Suite (STS) / IntelliJ IDEA	Development environment
Database Tool	MySQL Workbench	Database design and management
Server	Apache Tomcat	Application deployment and testing
API Testing	Postman	Testing RESTful services
Version Control	Git & GitHub	Source code management and collaboration

ARCHITECTURE DIAGRAM:

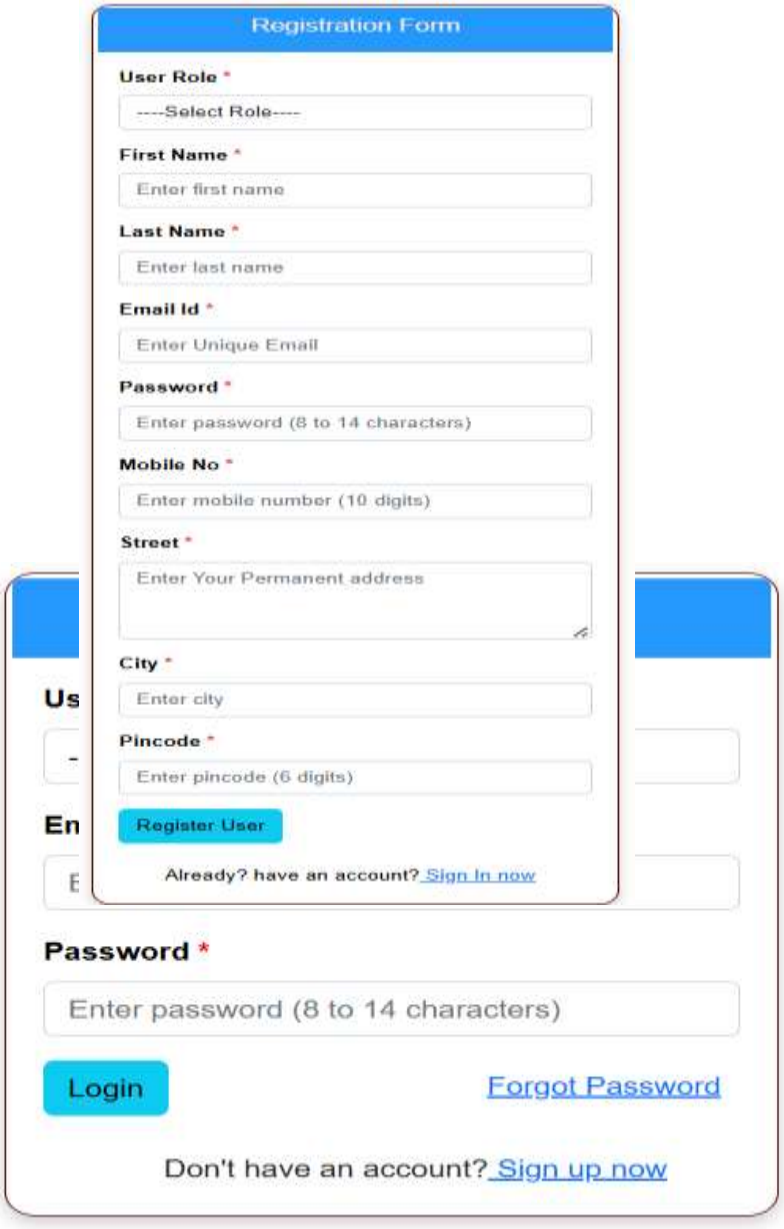


RESULTS:

2) All Category :



3) Login page :



4) Register page :

Pannel : 1) Admin pannel

2) Customer pannel

I) my cart option:

II) My Order:

3) Delivery person:

IMPLEMENTATION :

Development involved:

1. Requirement Analysis: Interviewing stakeholders to gather system expectations.
2. Design: Wireframes, database schema, and API endpoints were planned.

3. Development: Implemented modules using Spring Boot (Java), React.js (JSX), and MySQL.
4. Testing: Automated and manual testing processes ensured stability.
5. Deployment: Final deployment on a cloud server using Docker containers and CI/CD pipelines.

DESCRIPTION:

The Furniture and Construction Management System (FCMS) is a comprehensive web-based application designed to streamline the workflow of construction projects and furniture supply operations.It addresses the inefficiencies and fragmentation found in traditional management processes by integrating inventory tracking, order processing, and project scheduling into one unified platform.Developed using Spring Boot for backend services and HTML/CSS/JavaScript for the frontend, the system ensures responsive, secure, and scalable operations.It employs MySQL as the database layer to manage structured data such as users, materials, and project schedules efficiently.A critical aspect of the system is Spring Security with Role-Based Access Control (RBAC), which ensures secure access for different user roles including administrators, inventory managers, and project coordinators.

CONCLUSION :

The proposed furniture and construction management system enhances operational efficiency, provides intuitive UX, and supports secure online transactions. Spring Boot's robust backend paired with React.js's frontend interactivity ensures a scalable and maintainable application. Future work may include mobile app integration and AI-based inventory predictions.

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