

# Design and Implementation of a Web Application for Home Decor

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**Abstract** - This study presents the design and development of a dynamic web application for browsing, buying, and selling home decor items using the Angular framework. The primary objective of the project is to provide a user-friendly platform where users can explore and purchase both new and pre-owned home decor products such as furniture, wall art, lighting, and decorative accessories. The system accommodates multiple user roles, including admin, seller, and buyer, each equipped with role-specific functionalities such as product management, order tracking, and account management. Key features include user authentication, product categorization, image uploads, shopping cart functionality, order history, and seller listings. The backend is powered by a MySQL database to ensure efficient data storage and retrieval, while Angular and Bootstrap are utilized for a responsive and interactive user interface. This project demonstrates the effective use of a modern front-end framework in building a full-stack web application with modular architecture, seamless data handling, and intuitive navigation. The proposed system is particularly useful for individuals, interior designers, and businesses looking to buy or sell home decor items online.

**Key Words:** Home Decor Marketplace, Angular, MySQL, Web Application, Online Shopping, Product Management, E-commerce Platform, Bootstrap

## 1.INTRODUCTION

The demand for online platforms that enable users to buy and sell products has surged with the advancement of web technologies. This project focuses on the development of a web-based application that allows users to list, browse, and purchase new and pre-owned home decor items. Built using the Angular framework, the system ensures efficient handling of user interactions, product data management, and secure order processing. The application supports multiple user roles—admin, seller, and buyer—each with customized access to features such as product uploads, order history, and account management. By integrating a MySQL database and employing a modular architecture, the project emphasizes data integrity, scalability, and user convenience. Angular, along with Bootstrap and JavaScript, enhances the frontend experience, ensuring the platform is fully responsive and intuitive across various devices. This implementation provides a centralized and accessible solution for home decor shopping, catering to individuals, interior designers, and small businesses alike.

## 2. Methodology

### 2.1 Web Interface Design

The user interface was developed using Angular in combination with HTML, CSS, Bootstrap, and JavaScript to create a responsive and user-friendly experience for buyers,

sellers, and admins. The design ensures smooth navigation, real-time data binding, dynamic content rendering, and a consistent layout across various modules.

### 2.2 Backend Implementation

The backend logic is integrated with RESTful APIs to handle HTTP requests, control application flow, and manage database operations. The application follows a component-based architecture in Angular, while the backend (e.g., Node.js/Express or any other stack in use) adheres to modular design principles to separate business logic, presentation, and data access.

### 2.3 Database Design and Connectivity

The backend utilizes a MySQL database to store user details, home decor item information, order history, and transaction records. API endpoints are used to ensure smooth and secure communication between the frontend and backend layers.

### 2.4 User Role Management

The system supports three user roles—admin, seller, and buyer. Admins manage platform users and content, sellers can upload and manage their home decor listings, and buyers can browse items, add them to the cart, and place orders.

### 2.5 Product Listing and Categorization

Home decor items are categorized by type (e.g., furniture, wall art, lighting, accessories) with advanced filtering options based on price range, condition (new or pre-owned), style, and material to enhance product discoverability.

### 2.6 Security and Validation

Input validation is implemented on both client and server sides to prevent invalid or malicious data. Angular provides reactive forms for validation, while backend authentication mechanisms and session/token handling ensure secure login/logout functionality. Sensitive data such as passwords are encrypted and securely managed.

## 3.Results and Discussion

- The web application was thoroughly tested across multiple modern web browsers and demonstrated the following outcomes:
  - Responsive Design:** The interface adapts seamlessly across desktops, tablets, and smartphones, ensuring a consistent user experience on all devices.
  - Efficient Product Management:** Sellers can easily upload, update, and manage their home decor listings with real-time updates.
  - Role-Based Functionality:** Admin, seller, and buyer functionalities operate independently and securely, providing personalized experiences for each user type.

- **Reliable Database Operations:** All data transactions, including user registrations, product listings, and orders, are handled smoothly with MySQL ensuring data integrity.
- **Session and Cart Management:** Users can securely log in, manage sessions, and maintain cart contents across browsing sessions.
- **Scalability and Maintainability:** The modular architecture of Angular and the backend design support future expansion and easy maintenance

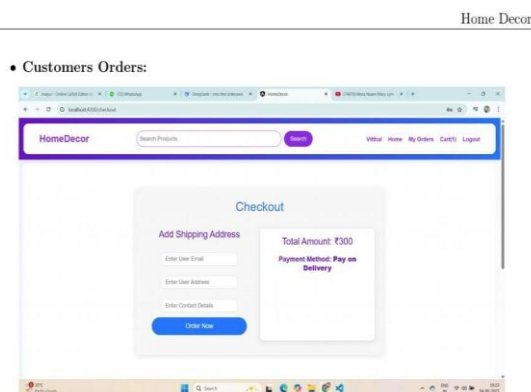


Figure 10: Customers Orders

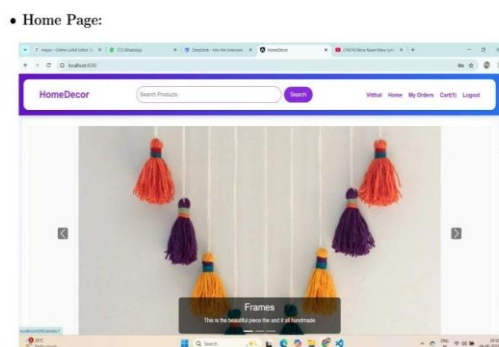


Figure 11: Home Page

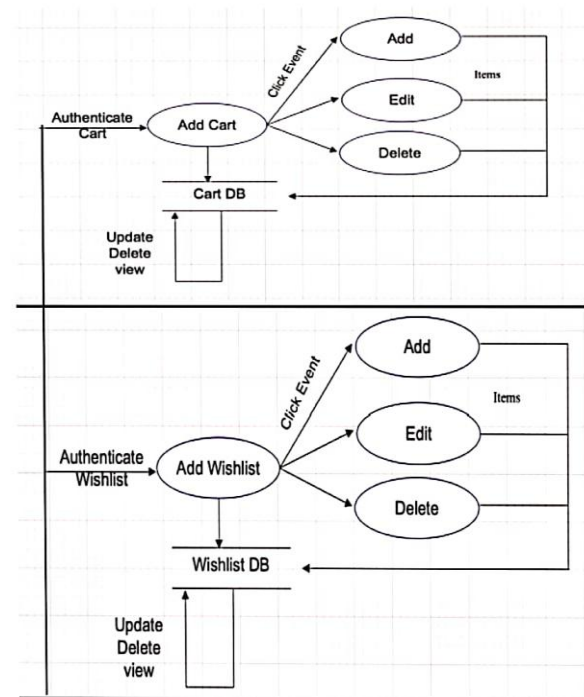


Figure 2: Application flow

Fig -1: System Application Flow

The system architecture of the **Home Decor Web Application** is based on a **modern three-tier architecture**, which ensures separation of concerns, scalability, maintainability, and streamlined development.

At the **presentation layer**, users interact through a responsive front-end built using **Angular**, styled with **HTML, CSS, and Bootstrap**. Angular components handle dynamic content rendering, routing, form validation, and state management, providing a smooth and interactive user experience.

The **application (business logic) layer** is powered by a **RESTful backend API**, typically implemented using technologies like **Node.js, Express.js**, or similar server-side frameworks. This layer handles user requests, processes business logic (e.g., product filtering, order placement, cart operations), and manages authentication and authorization.

At the **data access layer**, the backend interacts with a **relational database** (such as **MySQL or PostgreSQL**) to perform CRUD operations related to products, users, orders, and reviews. The use of **ORM frameworks** like **Sequelize or TypeORM** ensures efficient and secure database interaction. Additionally, the architecture incorporates **role-based access control**, ensuring that admins, customers, and sellers have tailored dashboards and permissions.

Table -1: Customer Orders Page – Home Page

The system's functionality was evaluated through the **User Orders Page**, which displays all product orders placed by a logged-in user. The interface is designed with clarity and responsiveness in mind, showcasing essential details such as **product name, order date, quantity, selected variations (e.g., color or size), and order status**. Built using **Angular components** and **RESTful API integration**, the page efficiently handles dynamic data and maintains optimal performance even when processing multiple records.

## 9 Screen Design

### • Login:

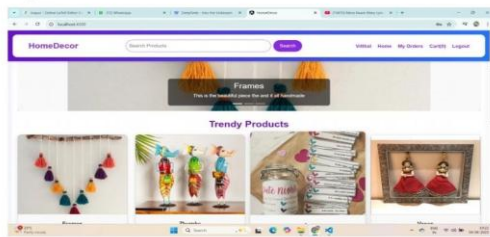


Figure 6: Login

### • Create New User:

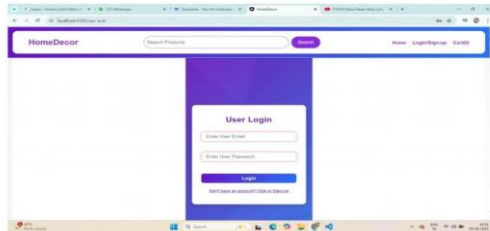


Figure 7: New User

Fig -2: Login And Create new user page

The **Login and Registration modules** are essential components of the Home Decor web application. Built using **Angular's reactive forms**, these modules enable users to securely register and log in. The registration page collects user information such as name, email, mobile number, and password, with real-time validation for improved user experience. After account creation, users can log in and access personalized features like viewing their cart or placing orders. The frontend communicates with the backend REST APIs to securely store and retrieve user credentials and session data.

### • Cart :

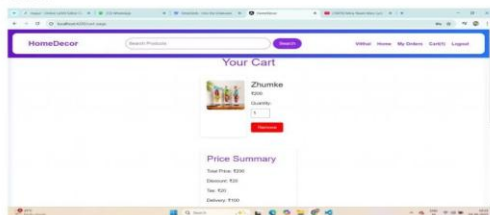


Figure 8: Cart

### • After Ordering :

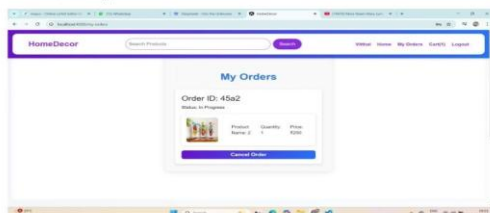


Figure 9: After Ordering

Fig -3: Cart And After Ordering

The **Cart module** plays a crucial role in enhancing the shopping experience by allowing users to add multiple home decor items to their cart before completing a purchase. Users can view product name, quantity, price, and total cost directly from the cart interface. They can also modify or remove items dynamically. The cart functionality is built with Angular and interacts with the backend using **HTTP requests (REST APIs)** to manage **add-to-cart**, **update**, and **delete** operations in real-time, ensuring a smooth and responsive experience.

## 3. CONCLUSIONS

This project demonstrates the practical implementation of a role-based online home decor platform using **Angular** for the frontend and RESTful APIs for backend communication. The system provides a comprehensive solution for managing home decor products, users, sellers, and orders in a secure and scalable environment. With features like real-time product management, dynamic cart functionality, secure login for different user roles (admin, user, seller), and integrated reporting tools, the platform effectively supports both operational efficiency and enhanced user experience.

## ACKNOWLEDGEMENT

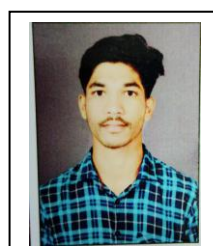
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## BIOGRAPHIES



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