The Rug

1. Introduction

The Rug E-commerce website is a platform designed to facilitate the buying and selling of rugs by connecting end-users with rug providers. The
platform employs the MERN stack (MongoDB, Express.js, React.js, Node.js) and follows the MVC (Model-View-Controller) architecture pattern.

2. Problem Definition

Traditional rug shopping experiences can be cumbersome, with limited access to variety and lack of a centralized marketplace. This website addresses these challenges by creating a digital platform that connects buyers directly with multiple rug providers, streamlining the purchasing process.

3. User Roles

End-User:

- Browse and purchase rugs.
- View **detailed** product information.
- Manage shopping cart.
- Track orders.
- Submit his feedback about the product

Provider:

- Create and manage product listings.
- Update inventory.
- Process orders.
- Manage store profile

Admin:

- Approve provider applications

- Manage all products and orders.

- Monitor user feedback.

- Generate reports.

- Maintain platform integrity.

4. Technology stack

Frontend
1) React.js
This powerful frontend technology powers our e-commerce platform, delivering:
- Faster Development - Reusable components accelerate feature implementation
- Enhanced Performance - Smooth browsing experience for rug shoppers
- Future-Ready - continuous updates
- Mobile Adaptability - Same architecture can power future React Native apps

2) Tailwind CSS
A utility-first CSS framework that enables rapid UI development without leaving your HTML. Unlike traditional CSS frameworks, Tailwind provides low-level utility classes

Backend
3) MongoDB
A NoSQL document database that stores data in flexible, JSON-like documents (BSON format). Designed for scalability and developer agility, it's ideal for handling dynamic product catalogs and user data.

4) Node.js
Node.js serves as the JavaScript runtime environment for our server-side operations, enabling:

- API development with Express.js

- Real-time features (e.g., order notifications) via WebSockets

- Asynchronous I/O operations for high concurrency

- Integration bridge between React frontend and MongoDB

5) Express.js
Express.js serves as Node.js framework, it is a backbone of Node.js handling:

- RESTful API routing

- Middleware pipeline management

- HTTP request/response lifecycle

- Integration with MongoDB via Mongoose

5. Development tools

- GitHub for version control
- Trello for project management
- Figma for UI/UX design

6. MVC Pattern

- Models: Data schemas for users, products, orders and other collections
- Views: React components and pages
- Controllers: CRUD operations

7. Key features

1) Product management

- Product listing and categorization.
- Advanced search and filtering.
- Image gallery.
- Inventory tracking.

2) User management

- User registration and authentication
- Provider application process.
- Profile management.
- Role-based access control.

3) Order management

- Shopping cart functionality.
- Order processing.
- Order tracking.
- Payment integration (Stripe, COD).

4) Admin Dashboard

- Product moderation.
- Provider approval process.
- Order tracking.
- User management.

- Feedback monitoring

8. Security features

- JWT authentication.
- Password encryption.

9. Future enhancements

- Mobile application development

- Integration with additional payment gateways

- Advanced analytics dashboard

- Multi-language support

- Chat support system