Airbnb Clone Application - Project Report

1. Title Page

Project Name: Airbnb Clone Application
Developer: Utkarsh Vijay Renukdas

---

2. Abstract

This project is a web-based application that replicates key functionalities of Airbnb, enabling users to register, log in, and manage listings. The system allows authenticated users to add and manage properties, write reviews, and interact with the platform efficiently. The backend is built with Node.js and Express, while MongoDB serves as the database. User authentication is handled via Passport Local Strategy.

---

3. Introduction

3.1 Purpose

The purpose of this project is to create a **functional clone of Airbnb**, allowing users to browse, add, and manage listings efficiently. The application includes user authentication, property management, and a user-friendly dashboard.

3.2 Technologies Used

- **Frontend:** HTML, CSS, EJS (Embedded JavaScript Templates)
- **Backend:** Node.js, Express.js
- **Database:** MongoDB (Mongoose ORM)
- **Authentication:** Passport.js (Local Strategy)

---

4. System Design

4.1 Architecture Overview

- **Frontend:** HTML, CSS, and EJS templates handle UI rendering.
- **Backend:** Node.js with Express manages API requests and authentication.
- **Database:** MongoDB stores user data, listings, and reviews.

4.2 User Roles

1. **Admin**: Can manage users, listings, and moderate reviews.
2. **User**: Can register, log in, create listings, and add reviews.

---

5. Functionalities

5.1 User Authentication

- User registration & login (handled via Passport.js Local Strategy)
- Secure session-based authentication using Express sessions

5.2 Listing Management

- Users can add, update, and delete property listings
- Listings contain images, descriptions, and pricing

5.3 User Reviews

- Users can leave reviews and ratings for properties
- Reviews are displayed under each listing

5.4 Dashboard

- A personalized dashboard for users to manage their listings and profile
- Admin dashboard for managing users and reports

5.5 Future Booking System

- Users can schedule bookings for properties in advance
- Booking system ensures availability based on selected dates
- Admin can view and manage all bookings

---

6. Implementation Details

6.1 Frontend (HTML, CSS, EJS)

- EJS templates for dynamic content rendering
- CSS for styling and responsiveness

6.2 Backend (Node.js, Express.js)

- RESTful API with Express
- Middleware for authentication and validation

6.3 Database (MongoDB)

- NoSQL database for storing users, listings, and reviews
- Mongoose for schema modeling

6.4 Authentication (Passport.js Local Strategy)

- Session-based authentication

---

7. Challenges Faced & Solutions

7.1 Authentication Issues

Challenge: Managing user authentication securely
Solution: Used Passport.js Local Strategy with session management

7.2 Database Optimization

Challenge: Handling large amounts of data efficiently
Solution: Indexed necessary fields and optimized queries

---

8. Future Enhancements

1. Implement **payment gateway** integration
2. Add **real-time chat** between users
3. Improve UI/UX for better user experience
4. Deploy application to cloud services like AWS or Firebase
5. Enhance **future booking system** with automated reminders and cancellations

---

9. Conclusion

This Airbnb Clone project successfully implements key functionalities of an online rental platform, including user authentication, property management, reviews, and a future booking system. Future enhancements will further refine its usability and scalability.

End of Report