Project Assignment: Bike Zone Web Application

Objective

Create a web application named 'Bike Zone' that allows users to browse, search, and reserve bikes. The application should include functionalities for both customers and admins.

Requirements

User Roles

Customer: Can browse bikes, view bike details, search for bikes, and make reservations.

Admin: Can add, update, and delete bike listings. Can view all reservations.

User Authentication

Implement login and signup functionalities for both customers and admins.

Use JWT tokens for authentication.

Frontend

Initial Page: Welcome the user and provide options to select the user type (customer or admin) before proceeding to login.

Home Page: Display a list of available bikes with basic details (e.g., name, type, price).

Bike Details Page: Display detailed information about a selected bike, including images, specifications, and availability.

Search Functionality: Allow users to search for bikes based on criteria like type, price range, and availability.

Reservation Page: Allow customers to make a reservation for a bike.

Admin Dashboard: Allow admins to manage bike listings and view all reservations.

Backend

API Endpoints:

Authentication endpoints for login and signup.

CRUD operations for bike listings.

Endpoints for handling reservations.

Database Schema:

Users: Stores user information (id, name, email, password, role).

Bikes: Stores bike information (id, name, type, price, availability, specifications, images).

Reservations: Stores reservation information (id, user_id, bike_id, reservation_date, status).

Styling

Use CSS for styling the application.

Ensure a clean, user-friendly interface with a consistent look and feel.

Technical Stack

Frontend: React.js

Backend: Node.js with Express

Database: MongoDB

Authentication: JWT

Features to Implement

Customer Features:

Browse Bikes: View a list of available bikes with basic details.

View Bike Details: Click on a bike to see detailed information.

Search Bikes: Use search functionality to filter bikes.

Make a Reservation: Fill out a form to reserve a bike.

Admin Features:

Manage Bikes: Add, update, and delete bike listings.

View Reservations: See a list of all reservations made by customers.

Steps to Complete

Setup:

Initialize a new React project for the frontend.

Initialize a new Node.js project for the backend.

Set up MongoDB for the database.

Frontend Development:

Create components for the initial page, home page, bike details page, reservation page, and admin dashboard.

Implement routing using React Router.

Implement authentication and protected routes.

Backend Development:

Set up Express server and connect to MongoDB.

Create API endpoints for authentication, bike management, and reservations.

Implement JWT-based authentication middleware.

Database Schema:

Design and create collections for users, bikes, and reservations.

Styling:

Apply CSS to ensure a clean and consistent look across the application.

Testing:

Test all functionalities to ensure they work as expected.

Fix any bugs or issues that arise during testing.

Deliverables

A fully functional web application with both frontend and backend.

Source code hosted on a public GitHub repository.

Detailed README file with instructions on how to set up and run the application.

Screenshots or a video demo of the application in action.