# Car Rental Website Development Plan

## Tech Stack

Frontend:  
- Framework: React   
- Styling: Tailwind CSS for consistent and responsive design.  
- State Management: Redux (React)

Backend:  
- Framework: Node.js with Express.js   
- Database: PostgreSQL  
- Authentication: AWS Cognito  
  
Storage:  
- License Upload: AWS S3  
  
APIs:  
- Custom Booking System: Built using REST APIs to handle:  
 - Car search and filtering.  
 - License upload.  
 - Booking creation with booking number generation.  
  
Payment Integration:  
- Square API: For handling secure payments and deposits.  
  
Hosting and Deployment:  
- Frontend: AWS Amplify  
- Backend: AWS EC2 or DigitalOcean for hosting the Node.js server. Or AWS Lambda  
- Database: Amazon RDS

## Feature Breakdown

Frontend:  
1. Homepage:  
 - Two main options: Kelowna and Vancouver.  
 - Clicking an option redirects to a car inventory page filtered by location.  
  
2. Search and Filtering:  
 - Date range picker (check availability).  
 - Dropdown filters for car type, price range, and other features.  
  
3. Car Listings Page:  
 - Cards for each car: Image, details, price, and a “Book Now” button.  
  
4. Booking Form:  
 - Input fields: Name, email, phone, rental dates.  
 - File upload: License image (stored in S3).  
 - Payment processing through Square.  
 - Display a confirmation with a generated booking number.

## Backend

Admin Panel:  
- Secure login for the owner to:  
 - Add/edit/remove cars.  
 - Block off dates for maintenance or special reservations.  
 - View booking history.  
  
APIs:  
- Search Cars: Accepts filters like location, date range, and car type.  
- Create Booking: Generates a unique booking number and stores data.  
- Upload License: Sends the file to AWS S3 and saves the file path in the database.  
  
Booking Number Generator:  
- Use a combination of timestamp and random alphanumeric strings for uniqueness (e.g., KEL-20231125-XYZ123).

## Database Schema

Tables:  
1. Cars:  
 - id: Primary Key.  
 - make, model, year, features, location, price\_per\_day.  
 - availability: Array of blocked dates.  
  
2. Bookings:  
 - id: Primary Key.  
 - customer\_name, email, phone.  
 - car\_id: Foreign Key referencing Cars.  
 - start\_date, end\_date.  
 - license\_path: Path to the S3 file.  
 - booking\_number.  
  
3. Admin:  
 - id: Primary Key.  
 - username, password\_hash.

## Workflow

User Flow:  
- User selects a location and dates > searches cars > selects a car > fills out the booking form > uploads license > makes payment > gets a confirmation with booking number.  
  
Admin Flow:  
- Admin logs in to view/add/edit cars, block dates, or review bookings, view/add/edit logos.