**# Electric Vehicle Recharge Bunk**

## Project Overview

The Electric Vehicle Recharge Bunk project aims to integrate electric vehicles (EVs) seamlessly into the transportation system by providing a web application to discover and book EV charging slots. This project involves setting up an EV recharge bunk system that includes functionalities for both users and administrators.

## Technologies Used

- HTML

- CSS

- JavaScript

- Firebase (Authentication, Firestore)

- Google Maps API

## Project Structure

```

ev-recharge-bunk/

├── index.html

├── styles.css

├── app.js

├── firebase.json

├── .firebaserc

└── README.md

```

## Features

### User Modules

- \*\*Login\*\*: Users can log in to their account using email and password.

- \*\*Register\*\*: New users can create an account.

- \*\*Search Nearby EV Bunk\*\*: Users can search for nearby EV charging stations.

- \*\*View Bunk Details\*\*: Users can view details of a selected EV bunk.

- \*\*View Slot Vacancy\*\*: Users can view the number of available charging slots at each EV bunk.

### Admin Modules

- \*\*Create EV Bunk Location Details\*\*: Admins can add details of new EV bunks.

- \*\*Manage Bunk Details\*\*: Admins can view, edit, and delete existing EV bunk details.

- \*\*Manage Recharge Slots\*\*: Admins can manage the available slots for charging at each EV bunk.

## Setup and Installation

### Prerequisites

- Node.js and npm installed

- Firebase project setup

### Firebase Setup

1. Go to the [Firebase Console](https://console.firebase.google.com/).

2. Create a new project.

3. Enable Authentication and Firestore in your Firebase project.

4. Get your Firebase configuration object from the project settings.

### Project Setup

1. Clone the repository:

```

git clone https://github.com/yourusername/ev-recharge-bunk.git

cd ev-recharge-bunk

```

2. Create a `firebaseConfig.js` file in the root directory with your Firebase configuration:

```javascript

// firebaseConfig.js

const firebaseConfig = {

apiKey: "YOUR\_FIREBASE\_API\_KEY",

authDomain: "your-project-id.firebaseapp.com",

projectId: "your-project-id",

storageBucket: "your-project-id.appspot.com",

messagingSenderId: "YOUR\_MESSAGING\_SENDER\_ID",

appId: "YOUR\_APP\_ID"

};

export default firebaseConfig;

```

3. Initialize Firebase in `app.js`:

```javascript

import firebaseConfig from './firebaseConfig.js';

// Initialize Firebase

firebase.initializeApp(firebaseConfig);

```

### Running the Application

1. Open `index.html` in your preferred web browser.

## Usage

### Registration

1. Open the application.

2. Fill out the registration form with username, email, and password.

3. Click the "Register" button.

### Login

1. Open the application.

2. Fill out the login form with email and password.

3. Click the "Login" button.

### Adding EV Bunk Locations (Admin)

1. After logging in as an admin, navigate to the "Add EV Bunk" section.

2. Fill out the form with EV bunk details such as name, address, and available slots.

3. Click "Submit" to add the bunk.

### Viewing and Managing EV Bunks

1. Admins can view a list of EV bunks, edit their details, or delete them.

2. Users can view the details of nearby EV bunks and check slot availability.

## Firebase Firestore Structure

- \*\*Users Collection\*\*: Stores user details.

- \*\*EV Bunks Collection\*\*: Stores details of EV bunk locations.

- Document structure:

```json

{

"name": "string",

"address": "string",

"latitude": "number",

"longitude": "number",

"availableSlots": "number"

}

```

## Google Maps Integration

1. Obtain a Google Maps API key from the [Google Cloud Console](https://console.cloud.google.com/).

2. Add the Google Maps API script in `index.html`:

```html

<script src="https://maps.googleapis.com/maps/api/js?key=YOUR\_GOOGLE\_MAPS\_API\_KEY&callback=initMap" async defer></script>

```

3. Initialize the map and display EV bunk locations in `app.js`:

```javascript

let map;

function initMap() {

map = new google.maps.Map(document.getElementById('map'), {

center: { lat: YOUR\_DEFAULT\_LATITUDE, lng: YOUR\_DEFAULT\_LONGITUDE },

zoom: 12

});

// Fetch EV bunk locations from Firestore and add markers to the map

firebase.firestore().collection('ev\_bunks').get().then((querySnapshot) => {

querySnapshot.forEach((doc) => {

const data = doc.data();

const marker = new google.maps.Marker({

position: { lat: data.latitude, lng: data.longitude },

map: map,

title: data.name

});

});

});

}