Thomas Hoerger

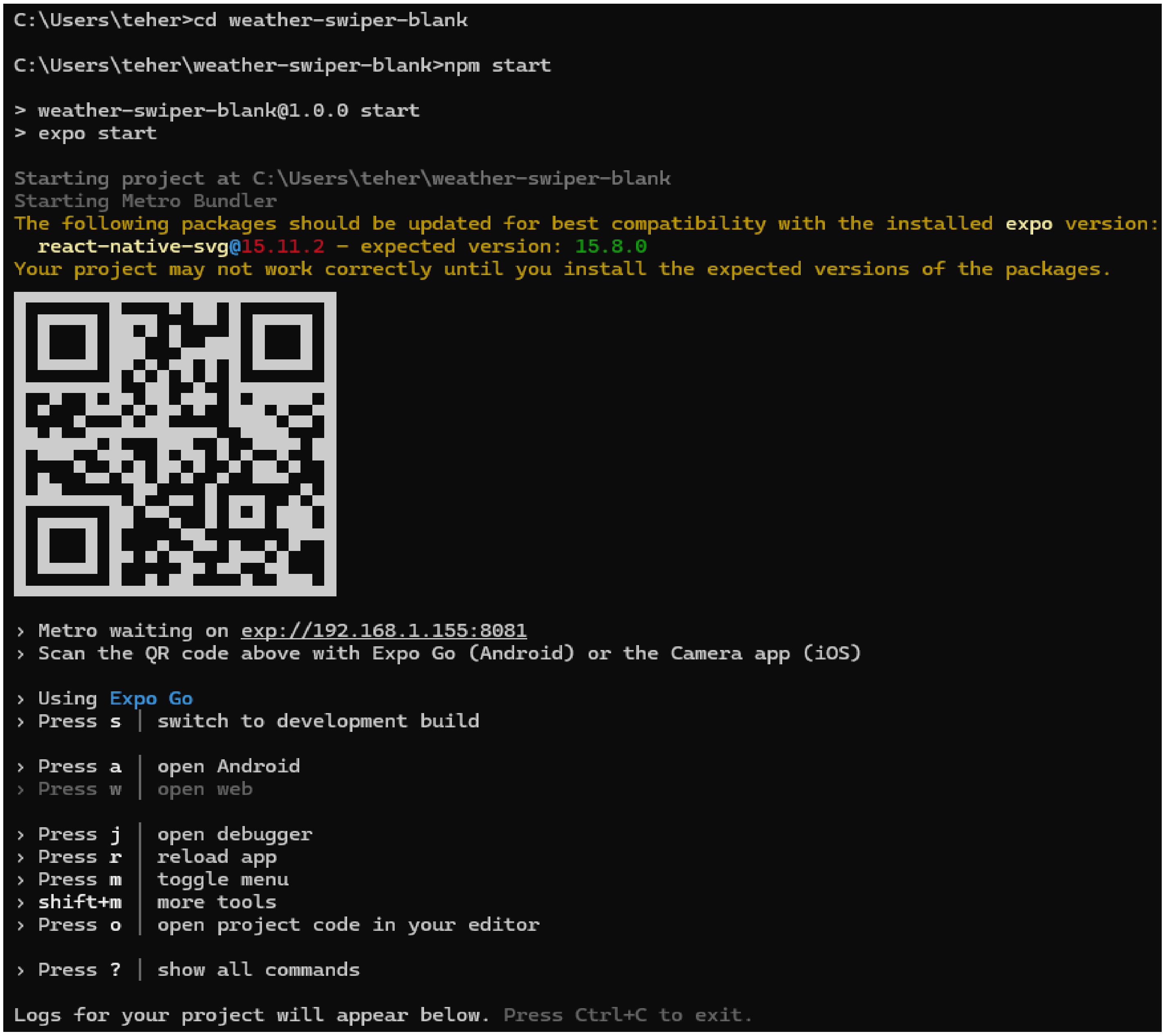
Final Project

4/18/2025

Step-by-Step Implementation

1. VPS Setup and MySQL Database
   - Deployed Ubuntu server on Google Cloud VPS.
   - Installed Apache, PHP, and MySQL.

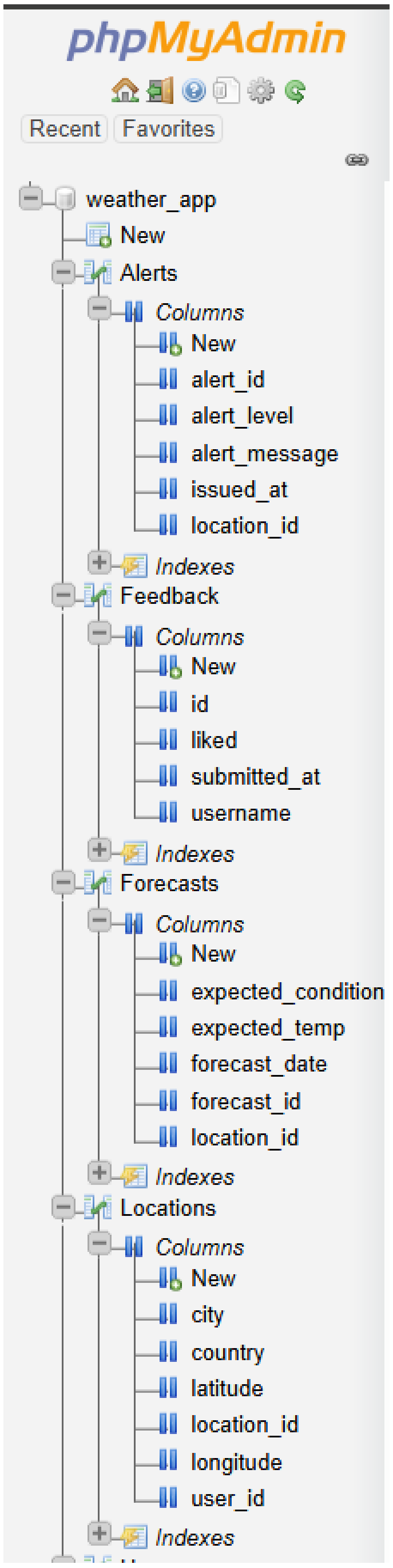
2. Created Expo project with npx create-expo-app weather-swiper-blank after installing it on the local system:



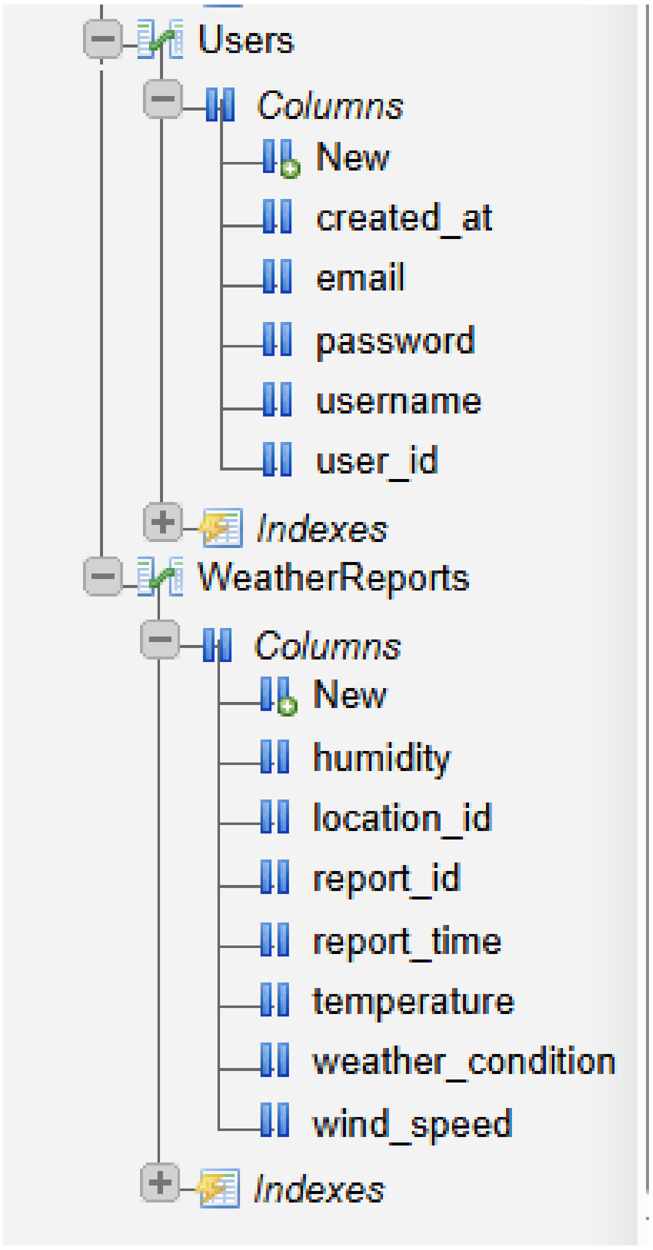
```
C:\Users\teher>cd weather-swiper-blank

C:\Users\teher\weather-swiper-blank>npm start

> weather-swiper-blank@1.0.0 start
> expo start

Starting project at C:\Users\teher\weather-swiper-blank
Starting Metro Bundler
The following packages should be updated for best compatibility with the installed expo version:
  react-native-svg@15.11.2 - expected version: 15.8.0
Your project may not work correctly until you install the expected versions of the packages.
```

```
› Metro waiting on exp://192.168.1.155:8081
› Scan the QR code above with Expo Go (Android) or the Camera app (iOS)

› Using Expo Go
› Press s │ switch to development build

› Press a │ open Android
› Press w │ open web

› Press j │ open debugger
› Press r │ reload app
› Press m │ toggle menu
› shift+m │ more tools
› Press o │ open project code in your editor

› Press ? │ show all commands

Logs for your project will appear below. Press Ctrl+C to exit.
```

3. Created a MySQL database weather_app with 6 tables: Users, Locations, WeatherReports, Forecasts, Alerts, and Feedback.



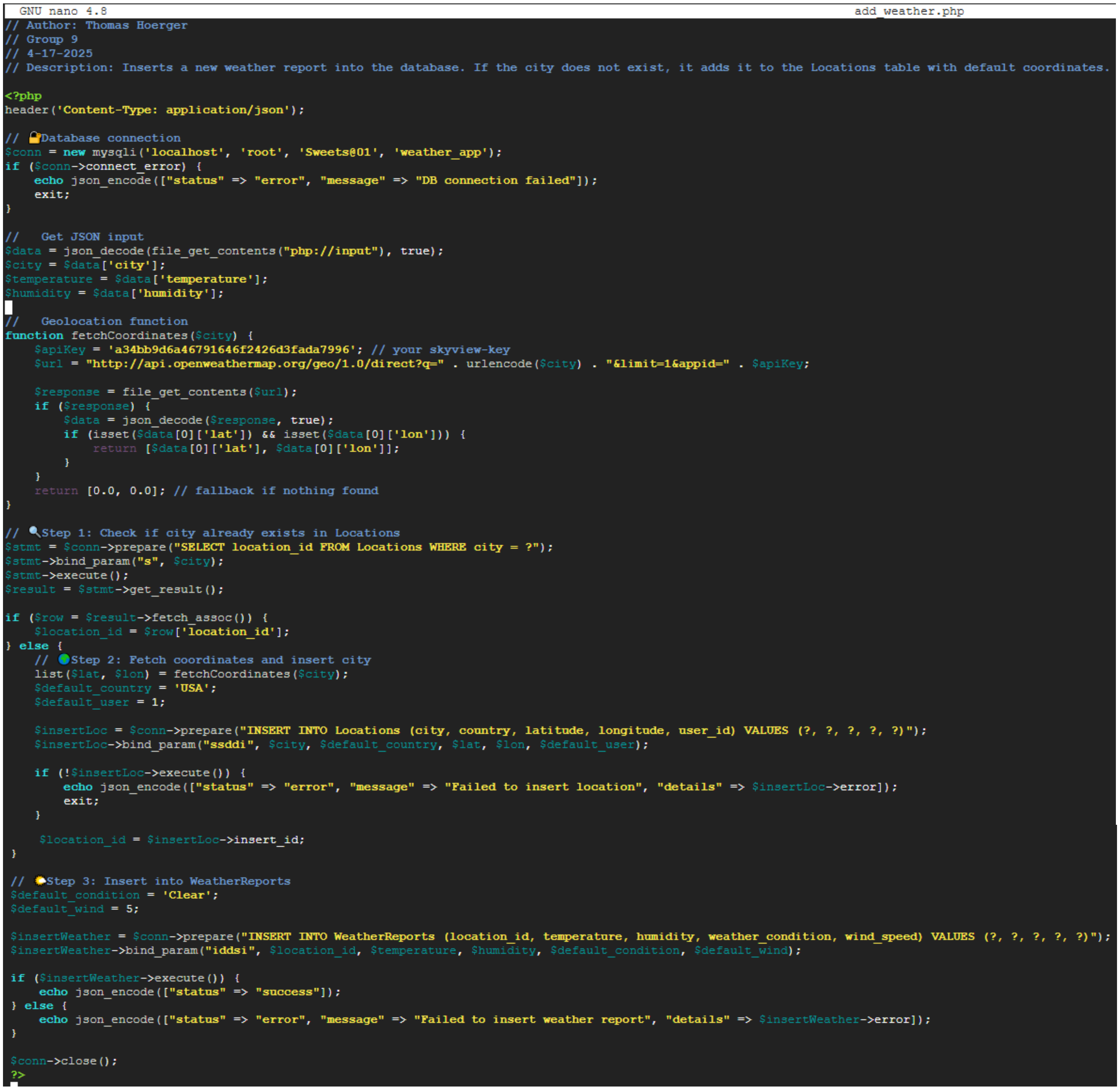
```
weather_app
  New
  Alerts
    Columns
      New
      alert_id
      alert_level
      alert_message
      issued_at
      location_id
    Indexes
  Feedback
    Columns
      New
      id
      liked
      submitted_at
      username
    Indexes
  Forecasts
    Columns
      New
      expected_condition
      expected_temp
      forecast_date
      forecast_id
      location_id
    Indexes
  Locations
    Columns
      New
      city
      country
      latitude
      location_id
      longitude
      user_id
    Indexes
```



```
Users
  Columns
    New
    created_at
    email
    password
    username
    user_id
  Indexes
WeatherReports
  Columns
    New
    humidity
    location_id
    report_id
    report_time
    temperature
    weather_condition
    wind_speed
  Indexes
```

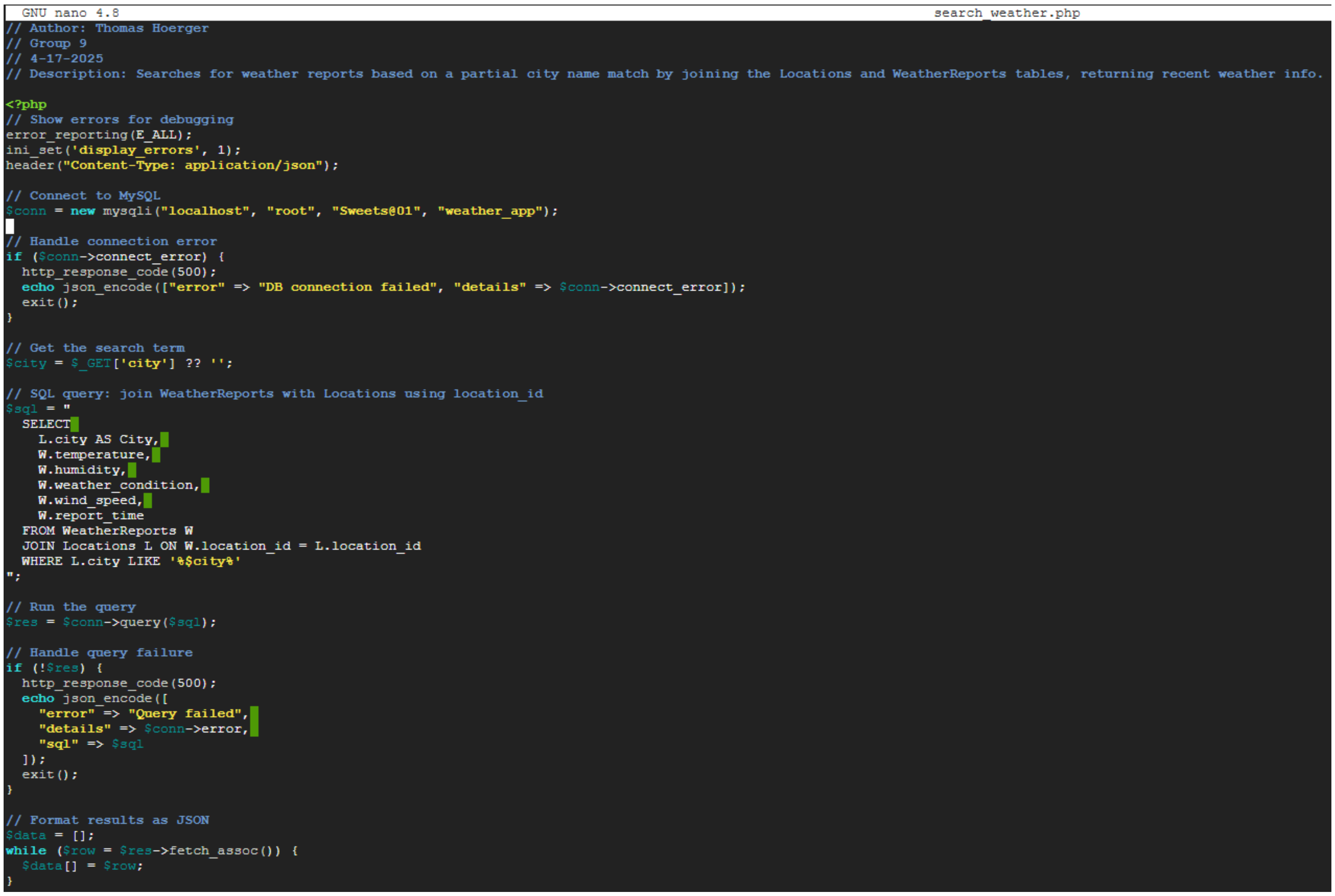
4. Created and enabled remote access to the following PHP scripts on VPS:

add_weather.php: Adds data to the database.



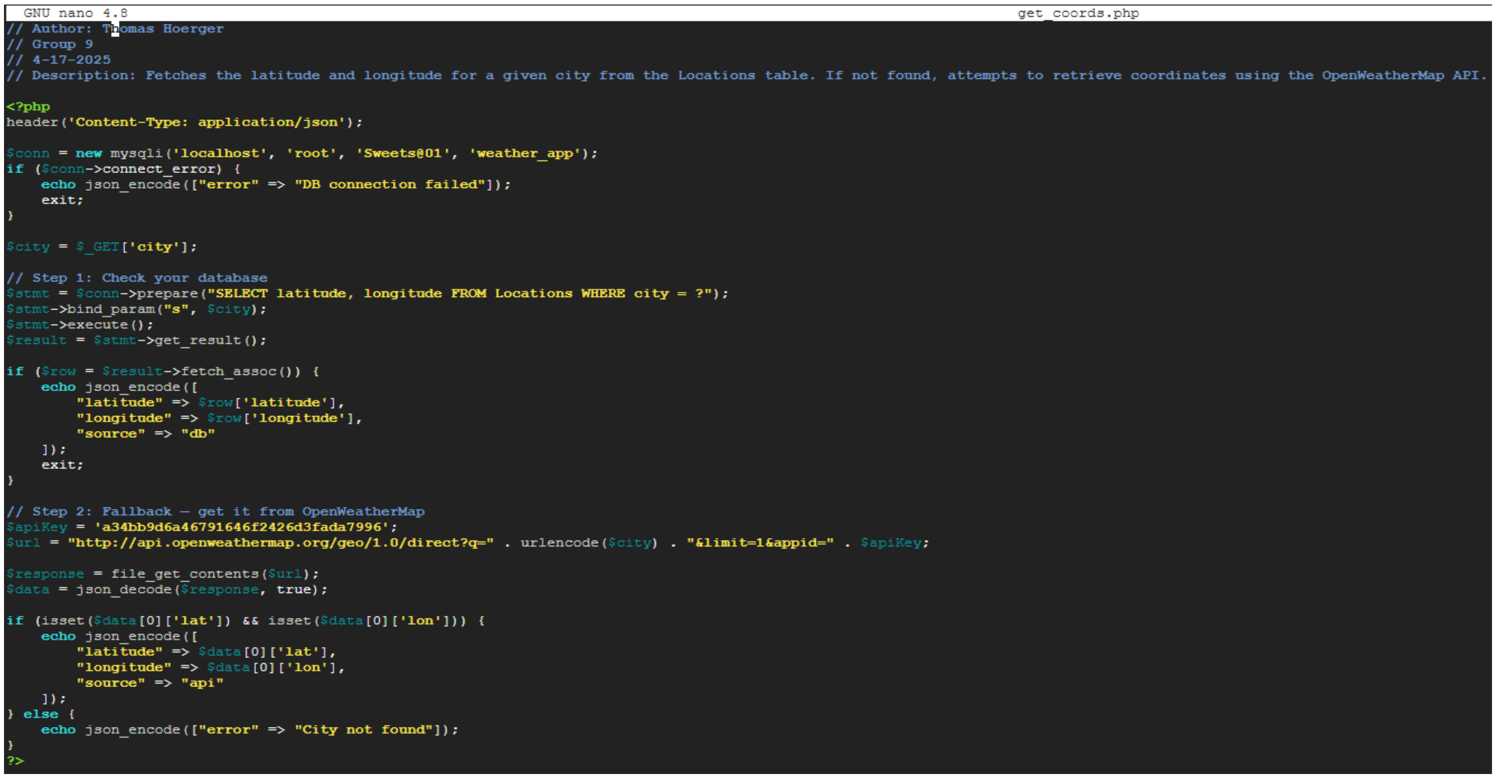
```
GNU nano 4.8                                                                                    add_weather.php
// Author: Thomas Hoerger
// Group 9
// 4-17-2025
// Description: Inserts a new weather report into the database. If the city does not exist, it adds it to the Locations table with default coordinates.

<?php
header('Content-Type: application/json');

// 🔐Database connection
$conn = new mysqli('localhost', 'root', 'Sweets@01', 'weather_app');
if ($conn->connect_error) {
    echo json_encode(["status" => "error", "message" => "DB connection failed"]);
    exit;
}

//   Get JSON input
$data = json_decode(file_get_contents("php://input"), true);
$city = $data['city'];
$temperature = $data['temperature'];
$humidity = $data['humidity'];

//   Geolocation function
function fetchCoordinates($city) {
    $apiKey = 'a34bb9d6a46791646f2426d3fada7996'; // your skyview-key
    $url = "http://api.openweathermap.org/geo/1.0/direct?q=" . urlencode($city) . "&limit=1&appid=" . $apiKey;

    $response = file_get_contents($url);
    if ($response) {
        $data = json_decode($response, true);
        if (isset($data[0]['lat']) && isset($data[0]['lon'])) {
            return [$data[0]['lat'], $data[0]['lon']];
        }
    }
    return [0.0, 0.0]; // fallback if nothing found
}

// 🔍Step 1: Check if city already exists in Locations
$stmt = $conn->prepare("SELECT location_id FROM Locations WHERE city = ?");
$stmt->bind_param("s", $city);
$stmt->execute();
$result = $stmt->get_result();

if ($row = $result->fetch_assoc()) {
    $location_id = $row['location_id'];
} else {
    // 🌍Step 2: Fetch coordinates and insert city
    list($lat, $lon) = fetchCoordinates($city);
    $default_country = 'USA';
    $default_user = 1;

    $insertLoc = $conn->prepare("INSERT INTO Locations (city, country, latitude, longitude, user_id) VALUES (?, ?, ?, ?, ?)");
    $insertLoc->bind_param("ssddi", $city, $default_country, $lat, $lon, $default_user);

    if (!$insertLoc->execute()) {
        echo json_encode(["status" => "error", "message" => "Failed to insert location", "details" => $insertLoc->error]);
        exit;
    }

    $location_id = $insertLoc->insert_id;
}

// ☀Step 3: Insert into WeatherReports
$default_condition = 'Clear';
$default_wind = 5;

$insertWeather = $conn->prepare("INSERT INTO WeatherReports (location_id, temperature, humidity, weather_condition, wind_speed) VALUES (?, ?, ?, ?, ?)");
$insertWeather->bind_param("iddsi", $location_id, $temperature, $humidity, $default_condition, $default_wind);

if ($insertWeather->execute()) {
    echo json_encode(["status" => "success"]);
} else {
    echo json_encode(["status" => "error", "message" => "Failed to insert weather report", "details" => $insertWeather->error]);
}

$conn->close();
?>
```

search_weather.php: Retrieves weather by city.



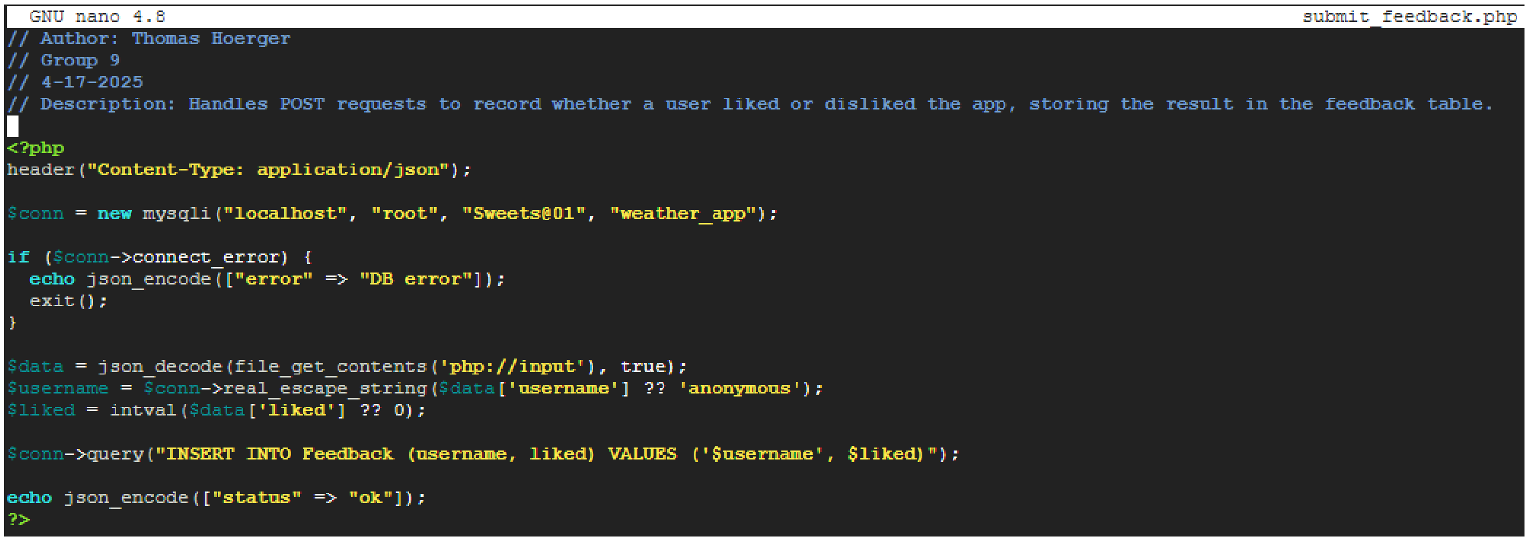
```
  GNU nano 4.8                                                                                    search_weather.php
// Author: Thomas Hoerger
// Group 9
// 4-17-2025
// Description: Searches for weather reports based on a partial city name match by joining the Locations and WeatherReports tables, returning recent weather info.

<?php
// Show errors for debugging
error_reporting(E_ALL);
ini_set('display_errors', 1);
header("Content-Type: application/json");

// Connect to MySQL
$conn = new mysqli("localhost", "root", "Sweets@01", "weather_app");

// Handle connection error
if ($conn->connect_error) {
  http_response_code(500);
  echo json_encode(["error" => "DB connection failed", "details" => $conn->connect_error]);
  exit();
}

// Get the search term
$city = $_GET['city'] ?? '';

// SQL query: join WeatherReports with Locations using location_id
$sql = "
  SELECT
    L.city AS City,
    W.temperature,
    W.humidity,
    W.weather_condition,
    W.wind_speed,
    W.report_time
  FROM WeatherReports W
  JOIN Locations L ON W.location_id = L.location_id
  WHERE L.city LIKE '%$city%'
";

// Run the query
$res = $conn->query($sql);

// Handle query failure
if (!$res) {
  http_response_code(500);
  echo json_encode([
    "error" => "Query failed",
    "details" => $conn->error,
    "sql" => $sql
  ]);
  exit();
}

// Format results as JSON
$data = [];
while ($row = $res->fetch_assoc()) {
  $data[] = $row;
}
```

get_coords.php: Zooms map to city location (with fallback to OpenWeatherMap).



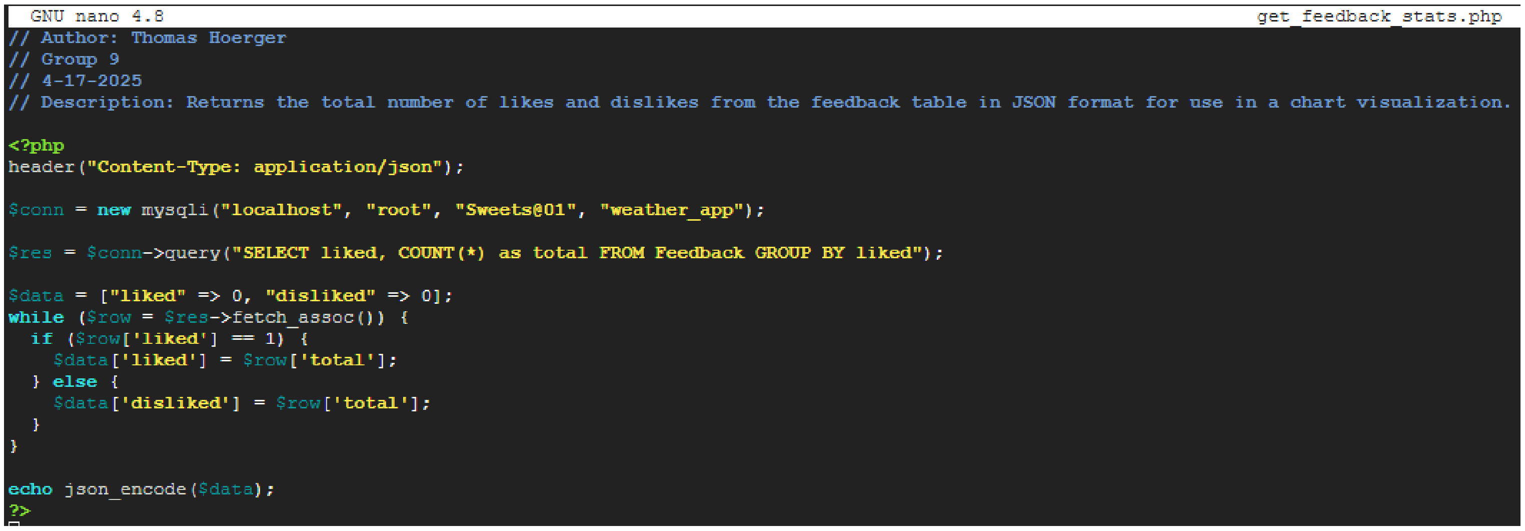
```
  GNU nano 4.8                                                                                    get_coords.php
// Author: Thomas Hoerger
// Group 9
// 4-17-2025
// Description: Fetches the latitude and longitude for a given city from the Locations table. If not found, attempts to retrieve coordinates using the OpenWeatherMap API.

<?php
header('Content-Type: application/json');

$conn = new mysqli('localhost', 'root', 'Sweets@01', 'weather_app');
if ($conn->connect_error) {
    echo json_encode(["error" => "DB connection failed"]);
    exit;
}

$city = $_GET['city'];

// Step 1: Check your database
$stmt = $conn->prepare("SELECT latitude, longitude FROM Locations WHERE city = ?");
$stmt->bind_param("s", $city);
$stmt->execute();
$result = $stmt->get_result();

if ($row = $result->fetch_assoc()) {
    echo json_encode([
        "latitude" => $row['latitude'],
        "longitude" => $row['longitude'],
        "source" => "db"
    ]);
    exit;
}

// Step 2: Fallback — get it from OpenWeatherMap
$apiKey = 'a34bb9d6a46791646f2426d3fada7996';
$url = "http://api.openweathermap.org/geo/1.0/direct?q=" . urlencode($city) . "&limit=1&appid=" . $apiKey;

$response = file_get_contents($url);
$data = json_decode($response, true);

if (isset($data[0]['lat']) && isset($data[0]['lon'])) {
    echo json_encode([
        "latitude" => $data[0]['lat'],
        "longitude" => $data[0]['lon'],
        "source" => "api"
    ]);
} else {
    echo json_encode(["error" => "City not found"]);
}
?>
```

submit_feedback.php: Stores like/dislike values.

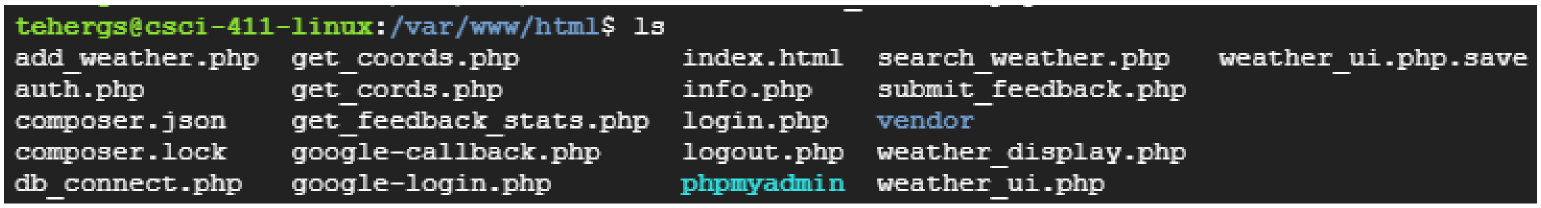


```
  GNU nano 4.8                                                                                   submit_feedback.php
// Author: Thomas Hoerger
// Group 9
// 4-17-2025
// Description: Handles POST requests to record whether a user liked or disliked the app, storing the result in the feedback table.

<?php
header("Content-Type: application/json");

$conn = new mysqli("localhost", "root", "Sweets@01", "weather_app");

if ($conn->connect_error) {
  echo json_encode(["error" => "DB error"]);
  exit();
}

$data = json_decode(file_get_contents('php://input'), true);
$username = $conn->real_escape_string($data['username'] ?? 'anonymous');
$liked = intval($data['liked'] ?? 0);

$conn->query("INSERT INTO Feedback (username, liked) VALUES ('$username', $liked)");

echo json_encode(["status" => "ok"]);
?>
```

get_feedback_stats.php: Returns feedback data.



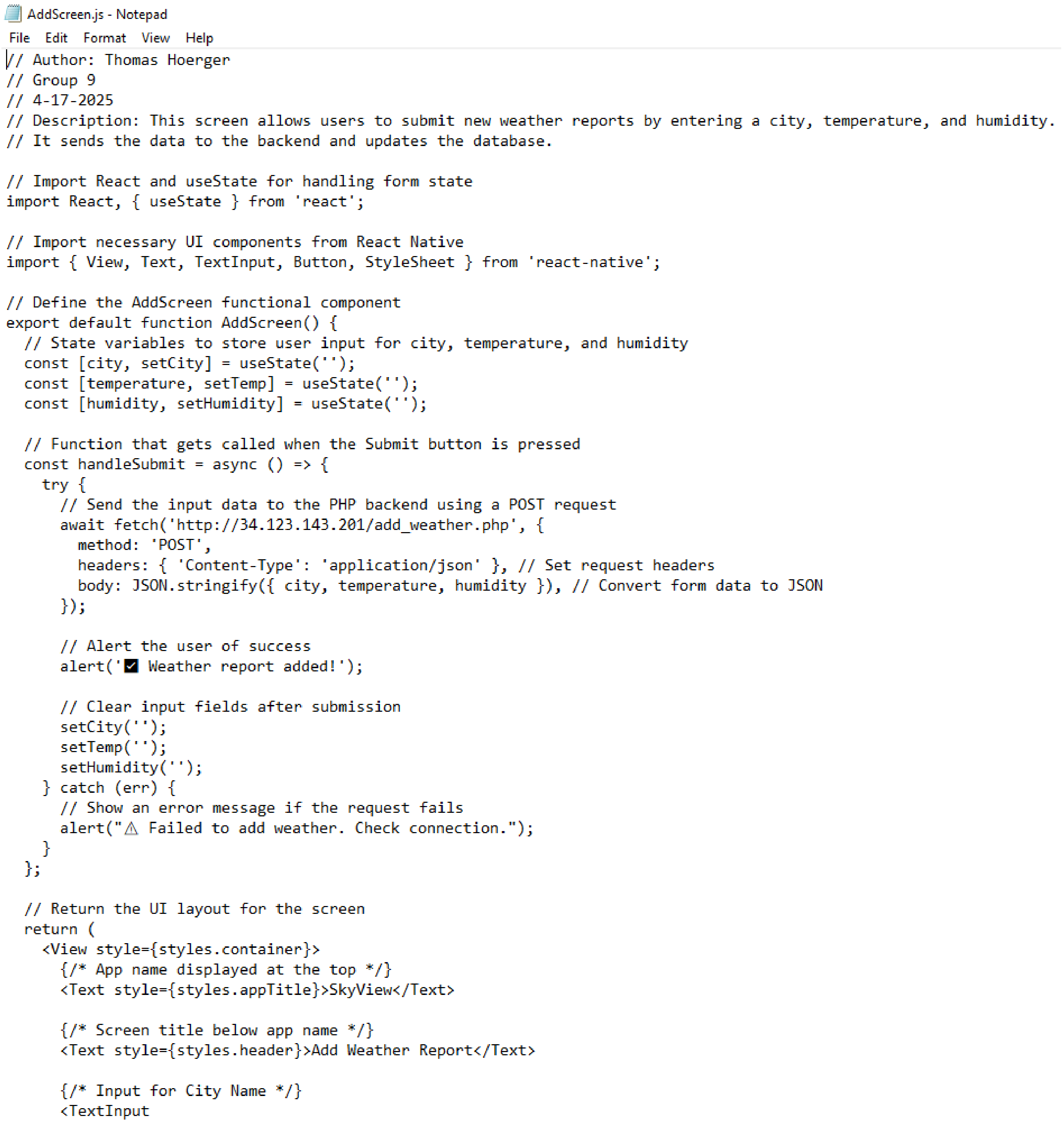
```
  GNU nano 4.8                                                                                get_feedback_stats.php
// Author: Thomas Hoerger
// Group 9
// 4-17-2025
// Description: Returns the total number of likes and dislikes from the feedback table in JSON format for use in a chart visualization.

<?php
header("Content-Type: application/json");

$conn = new mysqli("localhost", "root", "Sweets@01", "weather_app");

$res = $conn->query("SELECT liked, COUNT(*) as total FROM Feedback GROUP BY liked");

$data = ["liked" => 0, "disliked" => 0];
while ($row = $res->fetch_assoc()) {
  if ($row['liked'] == 1) {
    $data['liked'] = $row['total'];
  } else {
    $data['disliked'] = $row['total'];
  }
}

echo json_encode($data);
?>
```



```
tehergs@csci-411-linux:/var/www/html$ ls
add_weather.php  get_coords.php          index.html   search_weather.php   weather_ui.php.save
auth.php         get_cords.php           info.php     submit_feedback.php
composer.json    get_feedback_stats.php  login.php    vendor
composer.lock    google-callback.php     logout.php   weather_display.php
db_connect.php   google-login.php        phpmyadmin   weather_ui.php
```

5. Implemented 5 screens in the Expo project on my local machine using JavaScript:

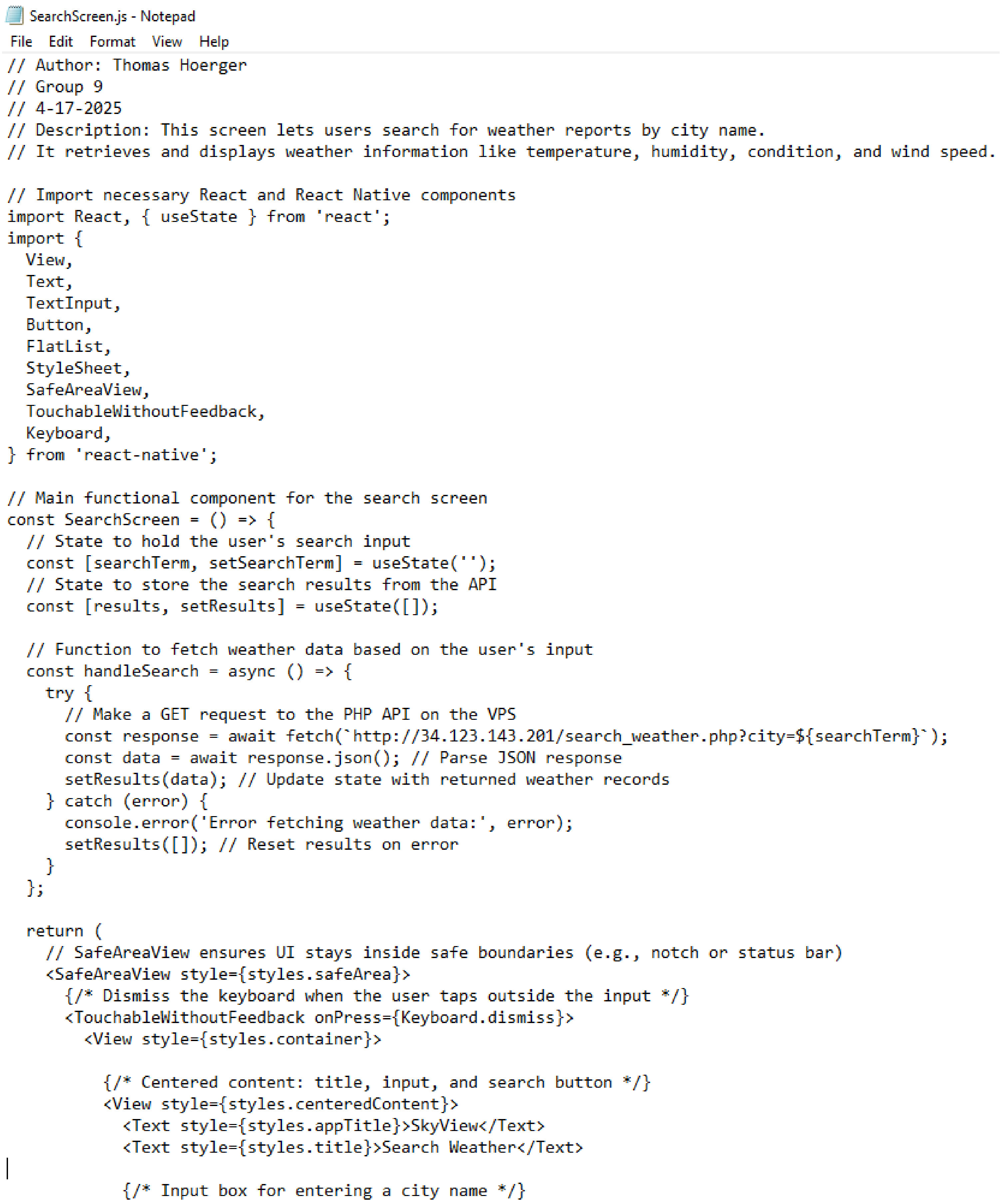
AddScreen.js: Form to submit weather.



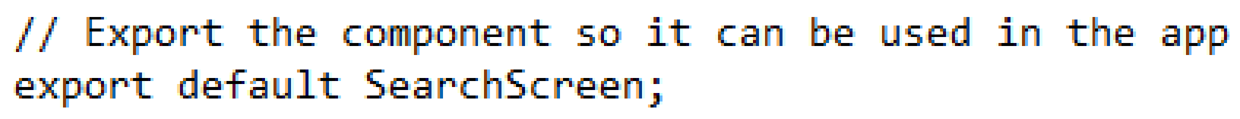
```
// Author: Thomas Hoerger
// Group 9
// 4-17-2025
// Description: This screen allows users to submit new weather reports by entering a city, temperature, and humidity.
// It sends the data to the backend and updates the database.

// Import React and useState for handling form state
import React, { useState } from 'react';

// Import necessary UI components from React Native
import { View, Text, TextInput, Button, StyleSheet } from 'react-native';

// Define the AddScreen functional component
export default function AddScreen() {
  // State variables to store user input for city, temperature, and humidity
  const [city, setCity] = useState('');
  const [temperature, setTemp] = useState('');
  const [humidity, setHumidity] = useState('');

  // Function that gets called when the Submit button is pressed
  const handleSubmit = async () => {
    try {
      // Send the input data to the PHP backend using a POST request
      await fetch('http://34.123.143.201/add_weather.php', {
        method: 'POST',
        headers: { 'Content-Type': 'application/json' }, // Set request headers
        body: JSON.stringify({ city, temperature, humidity }), // Convert form data to JSON
      });

      // Alert the user of success
      alert('✅ Weather report added!');

      // Clear input fields after submission
      setCity('');
      setTemp('');
      setHumidity('');
    } catch (err) {
      // Show an error message if the request fails
      alert("⚠ Failed to add weather. Check connection.");
    }
  };

  // Return the UI layout for the screen
  return (
    <View style={styles.container}>
      {/* App name displayed at the top */}
      <Text style={styles.appTitle}>SkyView</Text>

      {/* Screen title below app name */}
      <Text style={styles.header}>Add Weather Report</Text>

      {/* Input for City Name */}
      <TextInput
```

```
          placeholder="City"
          value={city}
          onChangeText={setCity}
          style={styles.input}
        />

        {/* Input for Temperature */}
        <TextInput
          placeholder="Temperature (°F)"
          value={temperature}
          onChangeText={setTemp}
          keyboardType="numeric" // Brings up numeric keypad
          style={styles.input}
        />

        {/* Input for Humidity */}
        <TextInput
          placeholder="Humidity (%)"
          value={humidity}
          onChangeText={setHumidity}
          keyboardType="numeric"
          style={styles.input}
        />

        {/* Submit button that triggers handleSubmit */}
        <Button title="Submit" onPress={handleSubmit} />
      </View>
    );
}

// Styles for layout and UI design
const styles = StyleSheet.create({
  container: {
    flex: 1,                    // Fills the screen vertically
    width: '100%',              // Full width
    alignItems: 'center',       // Center horizontally
    justifyContent: 'center',   // Center vertically
    padding: 16,                // Add padding around the form
  },

  // Style for the app title (SkyView)
  appTitle: {
    fontSize: 28,
    fontWeight: 'bold',
    color: '#007AFF',           // Blue color for branding
    textAlign: 'center',
    marginBottom: 10,
  },

  // Style for the form section title
  header: {
    fontSize: 22,
    fontWeight: 'bold',
    marginBottom: 20,
    textAlign: 'center',
  },

  // Style for each input field
  input: {
    borderWidth: 1,
    borderColor: '#ccc',
    marginBottom: 12,
    padding: 10,
    borderRadius: 5,
    width: '100%',
    maxWidth: 400, // Keeps form a nice width on wider screens
  },
});
```

SearchScreen.js: Uses FlatList to show search results.

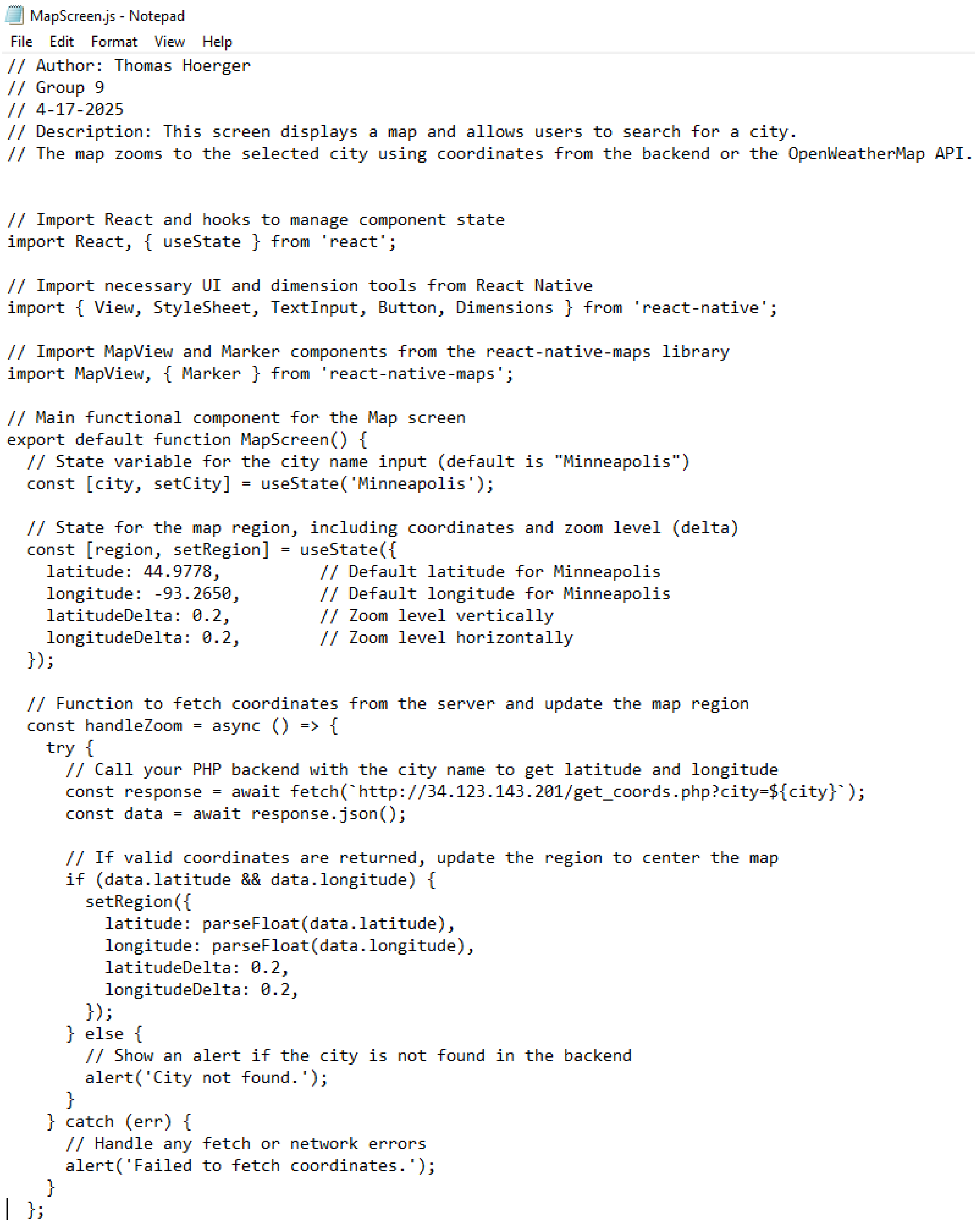


```
// Author: Thomas Hoerger
// Group 9
// 4-17-2025
// Description: This screen lets users search for weather reports by city name.
// It retrieves and displays weather information like temperature, humidity, condition, and wind speed.

// Import necessary React and React Native components
import React, { useState } from 'react';
import {
  View,
  Text,
  TextInput,
  Button,
  FlatList,
  StyleSheet,
  SafeAreaView,
  TouchableWithoutFeedback,
  Keyboard,
} from 'react-native';

// Main functional component for the search screen
const SearchScreen = () => {
  // State to hold the user's search input
  const [searchTerm, setSearchTerm] = useState('');
  // State to store the search results from the API
  const [results, setResults] = useState([]);

  // Function to fetch weather data based on the user's input
  const handleSearch = async () => {
    try {
      // Make a GET request to the PHP API on the VPS
      const response = await fetch(`http://34.123.143.201/search_weather.php?city=${searchTerm}`);
      const data = await response.json(); // Parse JSON response
      setResults(data); // Update state with returned weather records
    } catch (error) {
      console.error('Error fetching weather data:', error);
      setResults([]); // Reset results on error
    }
  };

  return (
    // SafeAreaView ensures UI stays inside safe boundaries (e.g., notch or status bar)
    <SafeAreaView style={styles.safeArea}>
      {/* Dismiss the keyboard when the user taps outside the input */}
      <TouchableWithoutFeedback onPress={Keyboard.dismiss}>
        <View style={styles.container}>

          {/* Centered content: title, input, and search button */}
          <View style={styles.centeredContent}>
            <Text style={styles.appTitle}>SkyView</Text>
            <Text style={styles.title}>Search Weather</Text>

            {/* Input box for entering a city name */}
            <TextInput
              style={styles.input}
              placeholder="Enter city name"
              value={searchTerm}
              onChangeText={setSearchTerm}
            />

            {/* Button to trigger the search */}
            <Button title="Search" onPress={handleSearch} />
          </View>

          {/* Section to display search results below the input */}
          <View style={styles.resultsSection}>
            {results.length > 0 ? (
              // If results are returned, show them using a FlatList
              <FlatList
                data={results}
                keyExtractor={(item, index) => index.toString()}
                renderItem={({ item }) => (
                  <View style={styles.resultBox}>
                    <Text style={styles.city}>{item.City}</Text>
                    <Text>{item.temperature}°F | {item.humidity}% Humidity</Text>
                    <Text>{item.weather_condition} | Wind: {item.wind_speed} mph</Text>
                    <Text>{item.report_time}</Text>
                  </View>
                )}
              />
            ) : (
              // If no results and a search term exists, show a message
              searchTerm !== '' && (
                <Text style={styles.noMatch}>No match found for “{searchTerm}”</Text>
              )
            )}
          </View>
        </View>
      </TouchableWithoutFeedback>
    </SafeAreaView>
  );
};

// StyleSheet for the layout and visual styling
const styles = StyleSheet.create({
  safeArea: {
    flex: 1,
    backgroundColor: '#fff', // white background
  },
  container: {
    flex: 1,
    padding: 16,
    justifyContent: 'center', // centers vertically
    alignItems: 'center',     // centers horizontally
  centeredContent: {
    alignItems: 'center',
    justifyContent: 'center',
    marginBottom: 20,
    width: '100%',
    maxWidth: 400, // prevent stretching too far on large screens
  },
  appTitle: {
    fontSize: 28,
    fontWeight: 'bold',
    color: '#007AFF',
    marginBottom: 10,
    textAlign: 'center',
  },
  title: {
    fontSize: 22,
    fontWeight: 'bold',
    marginBottom: 12,
    textAlign: 'center',
  },
  input: {
    borderWidth: 1,
    borderColor: '#aaa',
    padding: 10,
    marginBottom: 10,
    borderRadius: 6,
    width: '100%',
  },
  resultsSection: {
    width: '100%',
    maxWidth: 400,
    flexShrink: 1, // allows shrinking if there's not enough space
  },
  resultBox: {
    backgroundColor: '#f0f0f0',
    padding: 10,
    borderRadius: 6,
    marginBottom: 12,
  },
  city: {
    fontSize: 18,
    fontWeight: 'bold',
  },
  noMatch: {
    marginTop: 20,
    fontStyle: 'italic',
    color: 'gray',
    textAlign: 'center',
  },
});
```

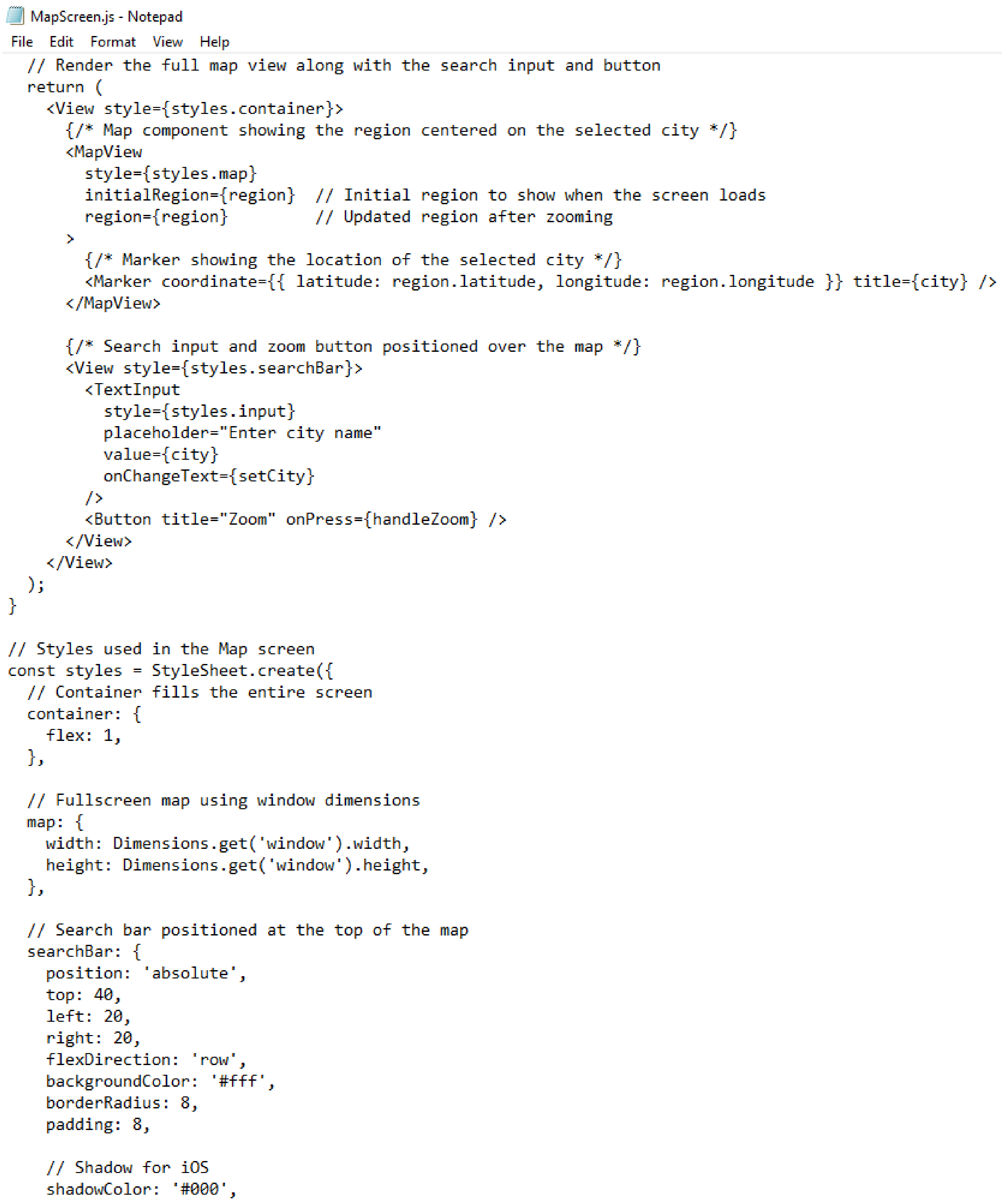


```
// Export the component so it can be used in the app
export default SearchScreen;
```

MapScreen.js: Zoom to coordinates using react-native-maps.

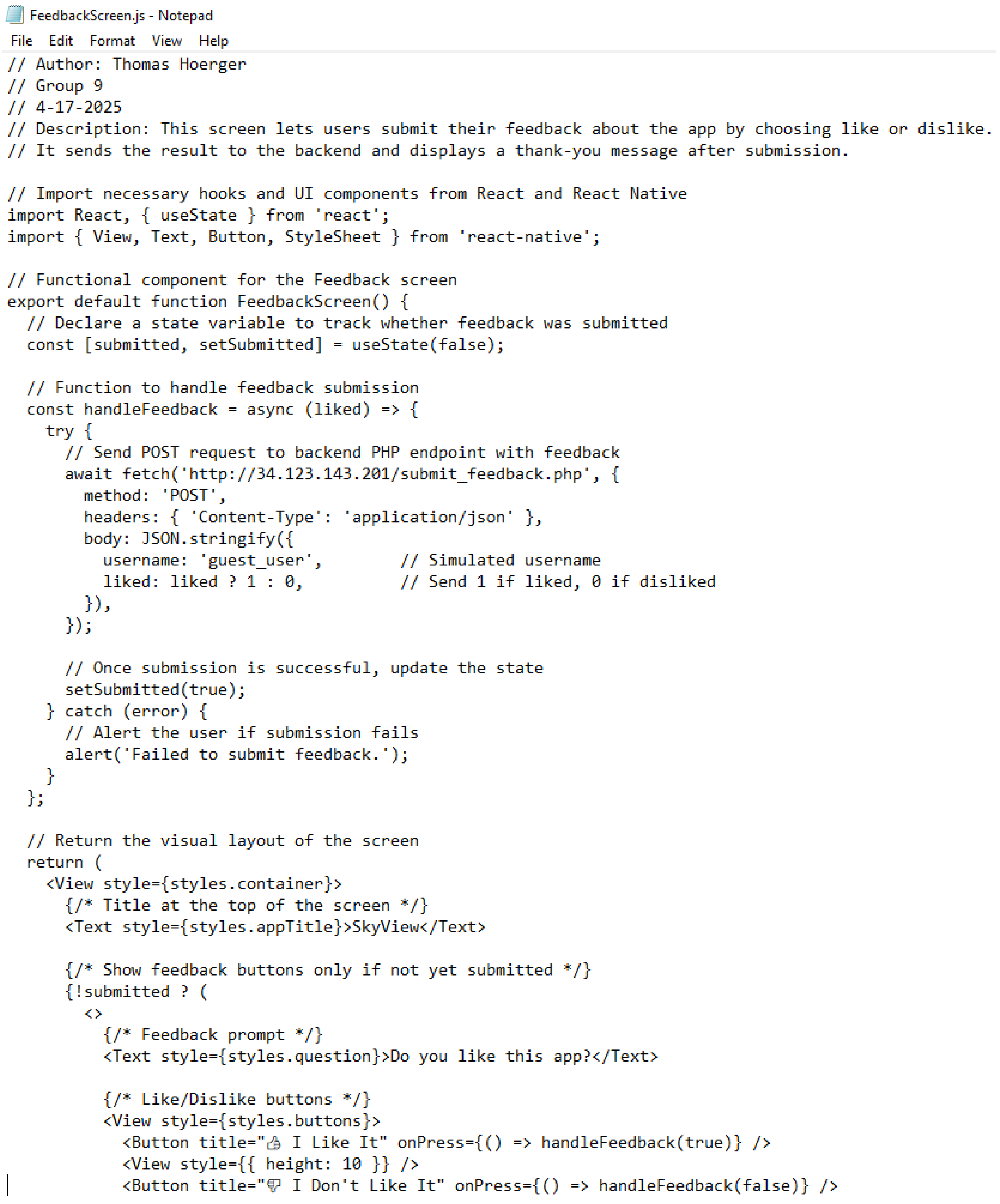


```
// Author: Thomas Hoerger
// Group 9
// 4-17-2025
// Description: This screen displays a map and allows users to search for a city.
// The map zooms to the selected city using coordinates from the backend or the OpenWeatherMap API.


// Import React and hooks to manage component state
import React, { useState } from 'react';

// Import necessary UI and dimension tools from React Native
import { View, StyleSheet, TextInput, Button, Dimensions } from 'react-native';

// Import MapView and Marker components from the react-native-maps library
import MapView, { Marker } from 'react-native-maps';

// Main functional component for the Map screen
export default function MapScreen() {
  // State variable for the city name input (default is "Minneapolis")
  const [city, setCity] = useState('Minneapolis');

  // State for the map region, including coordinates and zoom level (delta)
  const [region, setRegion] = useState({
    latitude: 44.9778,          // Default latitude for Minneapolis
    longitude: -93.2650,        // Default longitude for Minneapolis
    latitudeDelta: 0.2,         // Zoom level vertically
    longitudeDelta: 0.2,        // Zoom level horizontally
  });

  // Function to fetch coordinates from the server and update the map region
  const handleZoom = async () => {
    try {
      // Call your PHP backend with the city name to get latitude and longitude
      const response = await fetch(`http://34.123.143.201/get_coords.php?city=${city}`);
      const data = await response.json();

      // If valid coordinates are returned, update the region to center the map
      if (data.latitude && data.longitude) {
        setRegion({
          latitude: parseFloat(data.latitude),
          longitude: parseFloat(data.longitude),
          latitudeDelta: 0.2,
          longitudeDelta: 0.2,
        });
      } else {
        // Show an alert if the city is not found in the backend
        alert('City not found.');
      }
    } catch (err) {
      // Handle any fetch or network errors
      alert('Failed to fetch coordinates.');
    }
  };
```



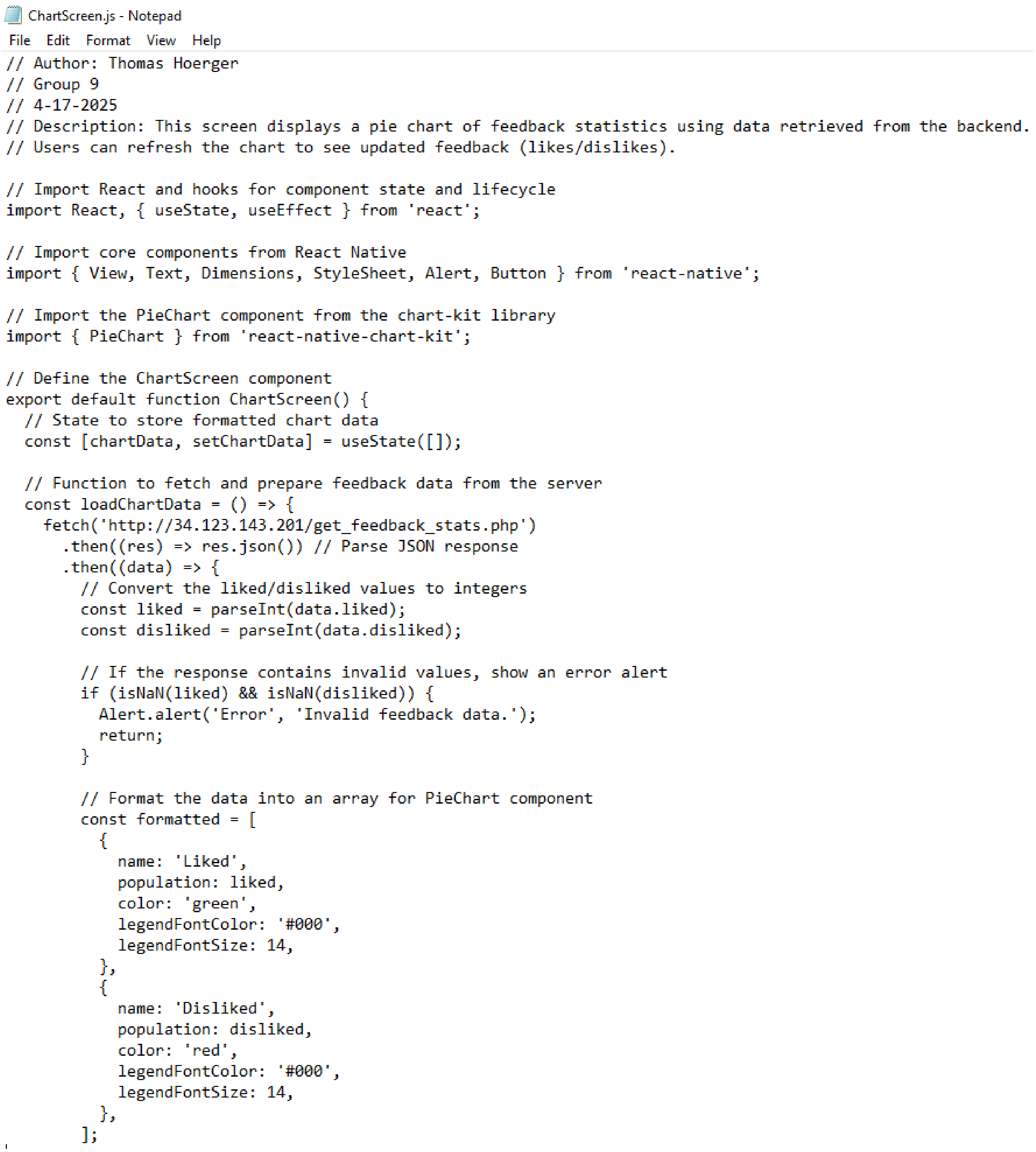
```
  // Render the full map view along with the search input and button
  return (
    <View style={styles.container}>
      {/* Map component showing the region centered on the selected city */}
      <MapView
        style={styles.map}
        initialRegion={region}  // Initial region to show when the screen loads
        region={region}         // Updated region after zooming
      >
        {/* Marker showing the location of the selected city */}
        <Marker coordinate={{ latitude: region.latitude, longitude: region.longitude }} title={city} />
      </MapView>

      {/* Search input and zoom button positioned over the map */}
      <View style={styles.searchBar}>
        <TextInput
          style={styles.input}
          placeholder="Enter city name"
          value={city}
          onChangeText={setCity}
        />
        <Button title="Zoom" onPress={handleZoom} />
      </View>
    </View>
  );
}

// Styles used in the Map screen
const styles = StyleSheet.create({
  // Container fills the entire screen
  container: {
    flex: 1,
  },

  // Fullscreen map using window dimensions
  map: {
    width: Dimensions.get('window').width,
    height: Dimensions.get('window').height,
  },

  // Search bar positioned at the top of the map
  searchBar: {
    position: 'absolute',
    top: 40,
    left: 20,
    right: 20,
    flexDirection: 'row',
    backgroundColor: '#fff',
    borderRadius: 8,
    padding: 8,

    // Shadow for iOS
    shadowColor: '#000',
    shadowOffset: { width: 0, height: 2 },
    shadowOpacity: 0.3,
    shadowRadius: 3,

    // Elevation for Android
    elevation: 4,
  },

  // Style for the text input field
  input: {
    flex: 1,                    // Take up available space
    paddingHorizontal: 10,      // Horizontal padding inside the input
  },
});
```

FeedbackScreen.js: Like/dislike UI and submits.



```
// Author: Thomas Hoerger
// Group 9
// 4-17-2025
// Description: This screen lets users submit their feedback about the app by choosing like or dislike.
// It sends the result to the backend and displays a thank-you message after submission.

// Import necessary hooks and UI components from React and React Native
import React, { useState } from 'react';
import { View, Text, Button, StyleSheet } from 'react-native';

// Functional component for the Feedback screen
export default function FeedbackScreen() {
  // Declare a state variable to track whether feedback was submitted
  const [submitted, setSubmitted] = useState(false);

  // Function to handle feedback submission
  const handleFeedback = async (liked) => {
    try {
      // Send POST request to backend PHP endpoint with feedback
      await fetch('http://34.123.143.201/submit_feedback.php', {
        method: 'POST',
        headers: { 'Content-Type': 'application/json' },
        body: JSON.stringify({
          username: 'guest_user',        // Simulated username
          liked: liked ? 1 : 0,          // Send 1 if liked, 0 if disliked
        }),
      });

      // Once submission is successful, update the state
      setSubmitted(true);
    } catch (error) {
      // Alert the user if submission fails
      alert('Failed to submit feedback.');
    }
  };

  // Return the visual layout of the screen
  return (
    <View style={styles.container}>
      {/* Title at the top of the screen */}
      <Text style={styles.appTitle}>SkyView</Text>

      {/* Show feedback buttons only if not yet submitted */}
      {!submitted ? (
        <>
          {/* Feedback prompt */}
          <Text style={styles.question}>Do you like this app?</Text>

          {/* Like/Dislike buttons */}
          <View style={styles.buttons}>
            <Button title="👍 I Like It" onPress={() => handleFeedback(true)} />
            <View style={{ height: 10 }} />
            <Button title="👎 I Don't Like It" onPress={() => handleFeedback(false)} />
          </View>
        </>
      ) : (
        // After feedback is submitted, show thank you message
        <Text style={styles.thanks}>Thanks for your feedback! ✅</Text>
      )}
    </View>
  );
}

// Styles for the Feedback screen
const styles = StyleSheet.create({
  // Overall container for layout
  container: {
    flex: 1,                          // Fill entire screen
    paddingTop: 40,                   // Top padding for spacing
    alignItems: 'center',             // Center all items horizontally
    justifyContent: 'center',         // Center items vertically
    paddingHorizontal: 16,            // Add side padding
  },

  // SkyView app title style
  appTitle: {
    fontSize: 28,                     // Large title text
    fontWeight: 'bold',              // Bold font
    color: '#007AFF',                // iOS blue color
    marginBottom: 20,
    textAlign: 'center',
  },

  // "Do you like this app?" question style
  question: {
    fontSize: 22,
    fontWeight: 'bold',
    marginBottom: 20,
    textAlign: 'center',
  },

  // Container for feedback buttons
  buttons: {
    width: '80%',                     // Constrain button width
  },

  // Style for the thank you message
  thanks: {
    fontSize: 18,
    color: 'green',
    textAlign: 'center',
  },
});
```

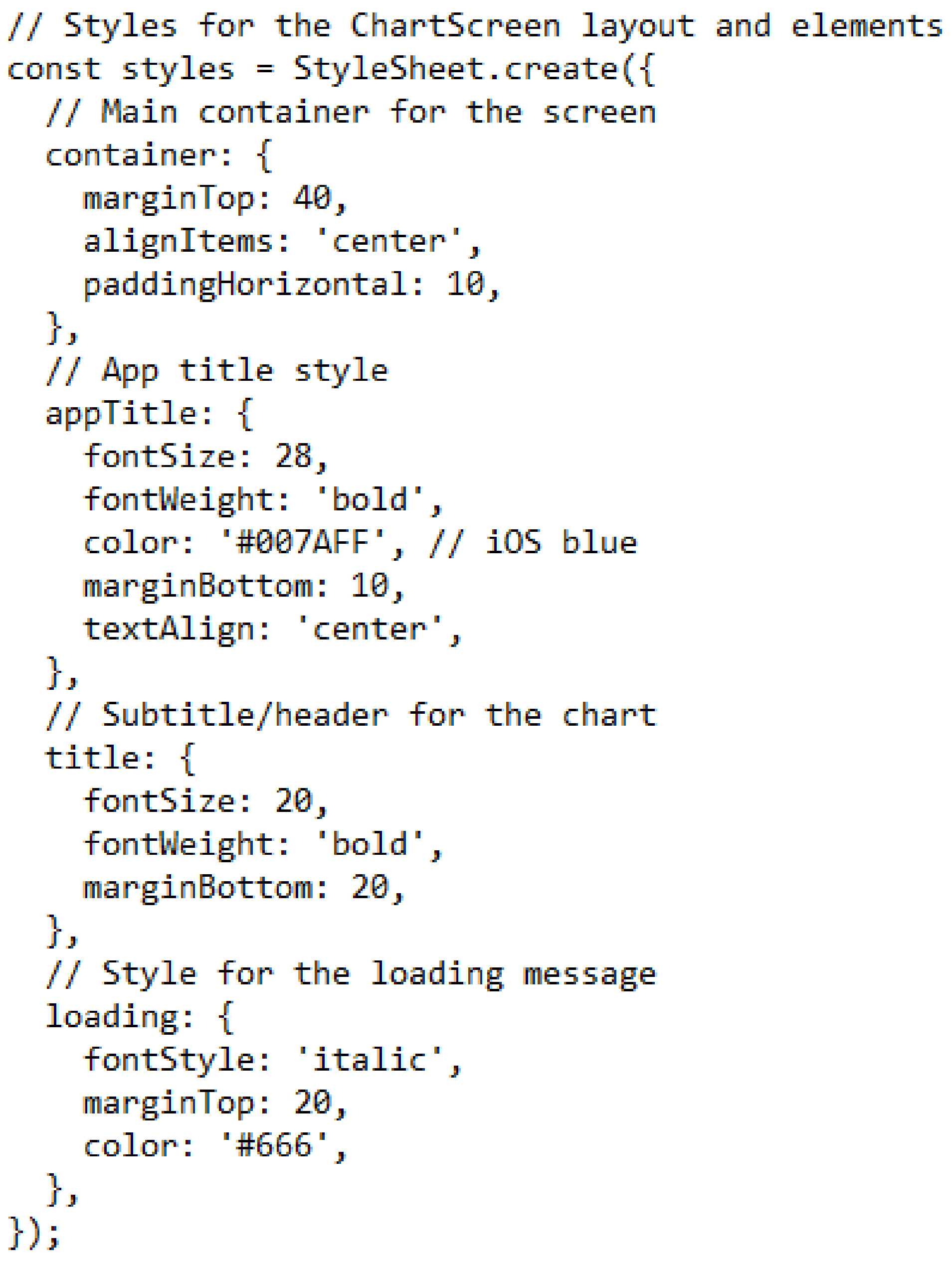
ChartScreen.js: Pie chart using react-native-chart-kit.



ChartScreen.js - Notepad

File Edit Format View Help

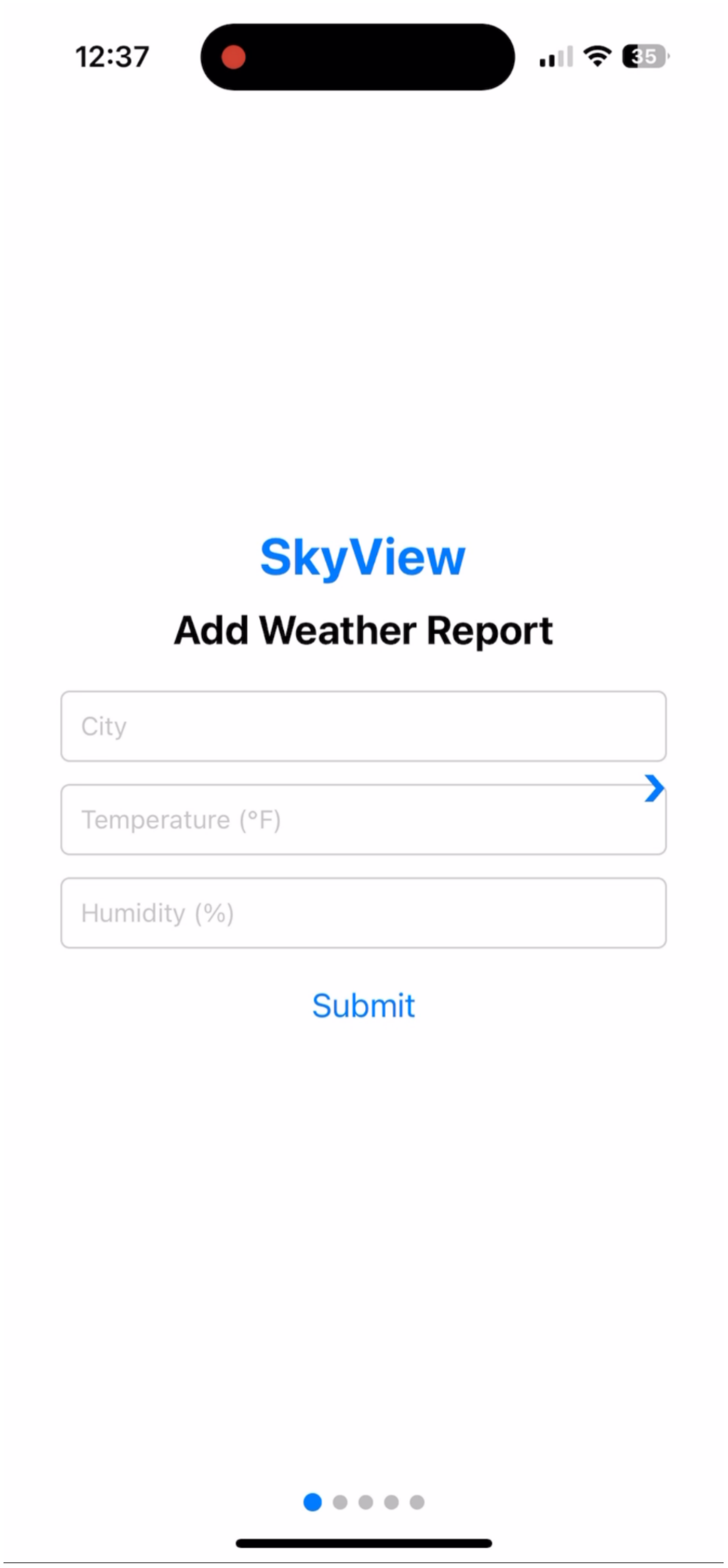
```
// Author: Thomas Hoerger
// Group 9
// 4-17-2025
// Description: This screen displays a pie chart of feedback statistics using data retrieved from the backend.
// Users can refresh the chart to see updated feedback (likes/dislikes).

// Import React and hooks for component state and lifecycle
import React, { useState, useEffect } from 'react';

// Import core components from React Native
import { View, Text, Dimensions, StyleSheet, Alert, Button } from 'react-native';

// Import the PieChart component from the chart-kit library
import { PieChart } from 'react-native-chart-kit';

// Define the ChartScreen component
export default function ChartScreen() {
  // State to store formatted chart data
  const [chartData, setChartData] = useState([]);

  // Function to fetch and prepare feedback data from the server
  const loadChartData = () => {
    fetch('http://34.123.143.201/get_feedback_stats.php')
      .then((res) => res.json()) // Parse JSON response
      .then((data) => {
        // Convert the liked/disliked values to integers
        const liked = parseInt(data.liked);
        const disliked = parseInt(data.disliked);

        // If the response contains invalid values, show an error alert
        if (isNaN(liked) && isNaN(disliked)) {
          Alert.alert('Error', 'Invalid feedback data.');
          return;
        }

        // Format the data into an array for PieChart component
        const formatted = [
          {
            name: 'Liked',
            population: liked,
            color: 'green',
            legendFontColor: '#000',
            legendFontSize: 14,
          },
          {
            name: 'Disliked',
            population: disliked,
            color: 'red',
            legendFontColor: '#000',
            legendFontSize: 14,
          },
        ];
        // Update the state with the formatted chart data
        setChartData(formatted);
      })
      .catch((err) => {
        // Handle any network or parsing errors
        console.error('Chart fetch error:', err);
        Alert.alert('Error', 'Could not load chart data.');
      });
  };

  // useEffect runs once on mount to fetch the initial chart data
  useEffect(() => {
    loadChartData();
  }, []);

  // Render the layout
  return (
    <View style={styles.container}>
      {/* App title displayed at the top */}
      <Text style={styles.appTitle}>SkyView</Text>

      {/* Subtitle for the chart section */}
      <Text style={styles.title}>User Feedback</Text>

      {/* Button to manually refresh the chart */}
      <Button title="Refresh Chart" onPress={loadChartData} />

      {/* If chartData is available, show the PieChart. Otherwise, show loading message. */}
      {chartData.length > 0 ? (
        <PieChart
          data={chartData} // Data to display in the chart
          width={Dimensions.get('window').width - 20} // Chart width based on screen size
          height={220} // Chart height
          chartConfig={{
            backgroundColor: '#fff',
            backgroundGradientFrom: '#fff',
            backgroundGradientTo: '#fff',
            color: (opacity = 1) => `rgba(0, 0, 0, ${opacity})`, // Chart segment color
            labelColor: () => '#000', // Label color
          }}
          accessor="population" // Tells PieChart which key holds the numeric values
          backgroundColor="transparent"
          paddingLeft="15"
          absolute // Shows numeric values inside the chart
        />
      ) : (
        <Text style={styles.loading}>Loading chart data...</Text>
      )}
    </View>
  );
}
```



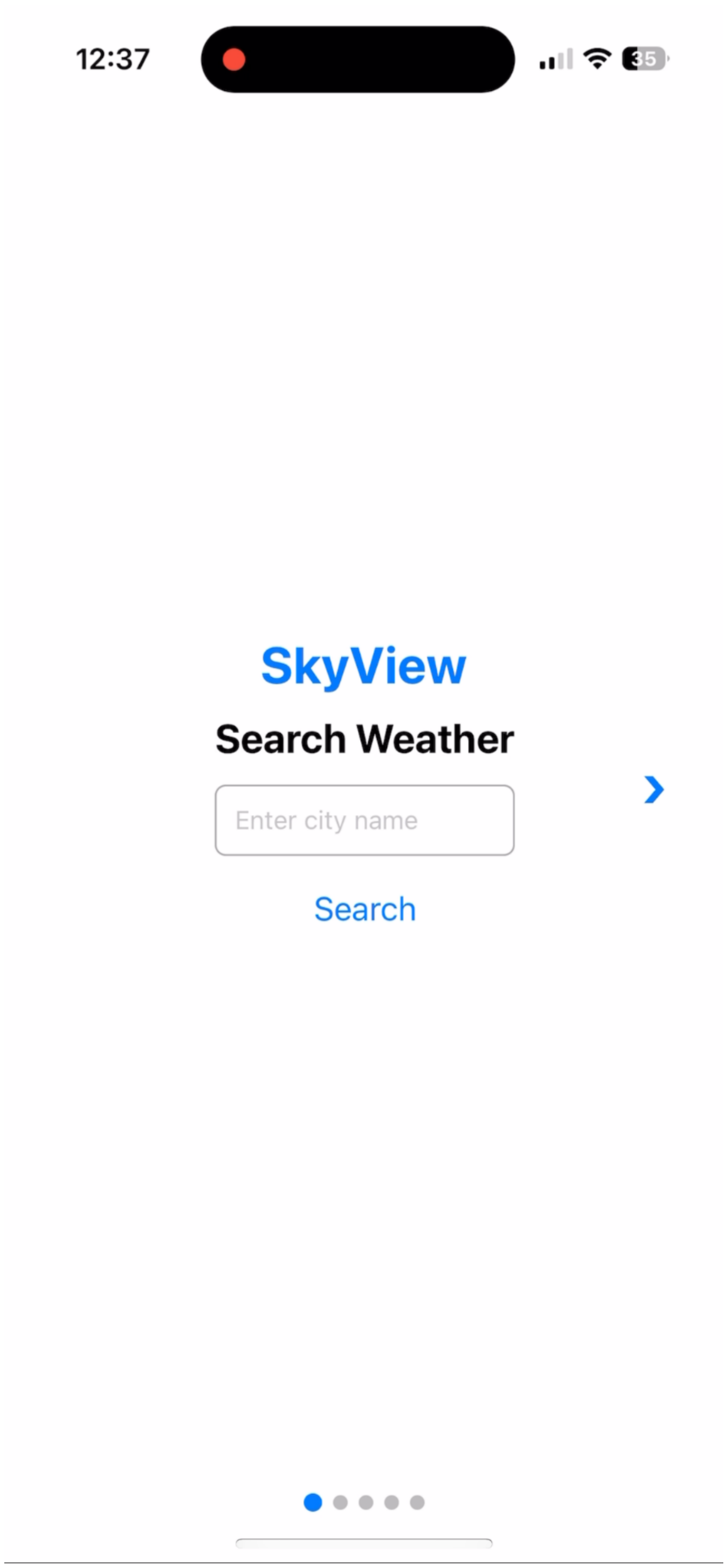
```
// Styles for the ChartScreen layout and elements
const styles = StyleSheet.create({
  // Main container for the screen
  container: {
    marginTop: 40,
    alignItems: 'center',
    paddingHorizontal: 10,
  },
  // App title style
  appTitle: {
    fontSize: 28,
    fontWeight: 'bold',
    color: '#007AFF', // iOS blue
    marginBottom: 10,
    textAlign: 'center',
  },
  // Subtitle/header for the chart
  title: {
    fontSize: 20,
    fontWeight: 'bold',
    marginBottom: 20,
  },
  // Style for the loading message
  loading: {
    fontStyle: 'italic',
    marginTop: 20,
    color: '#666',
  },
});
```

6. Included Features:
   - Installed react-native-swiper for navigation.
   - Added custom dot and arrow indicators.

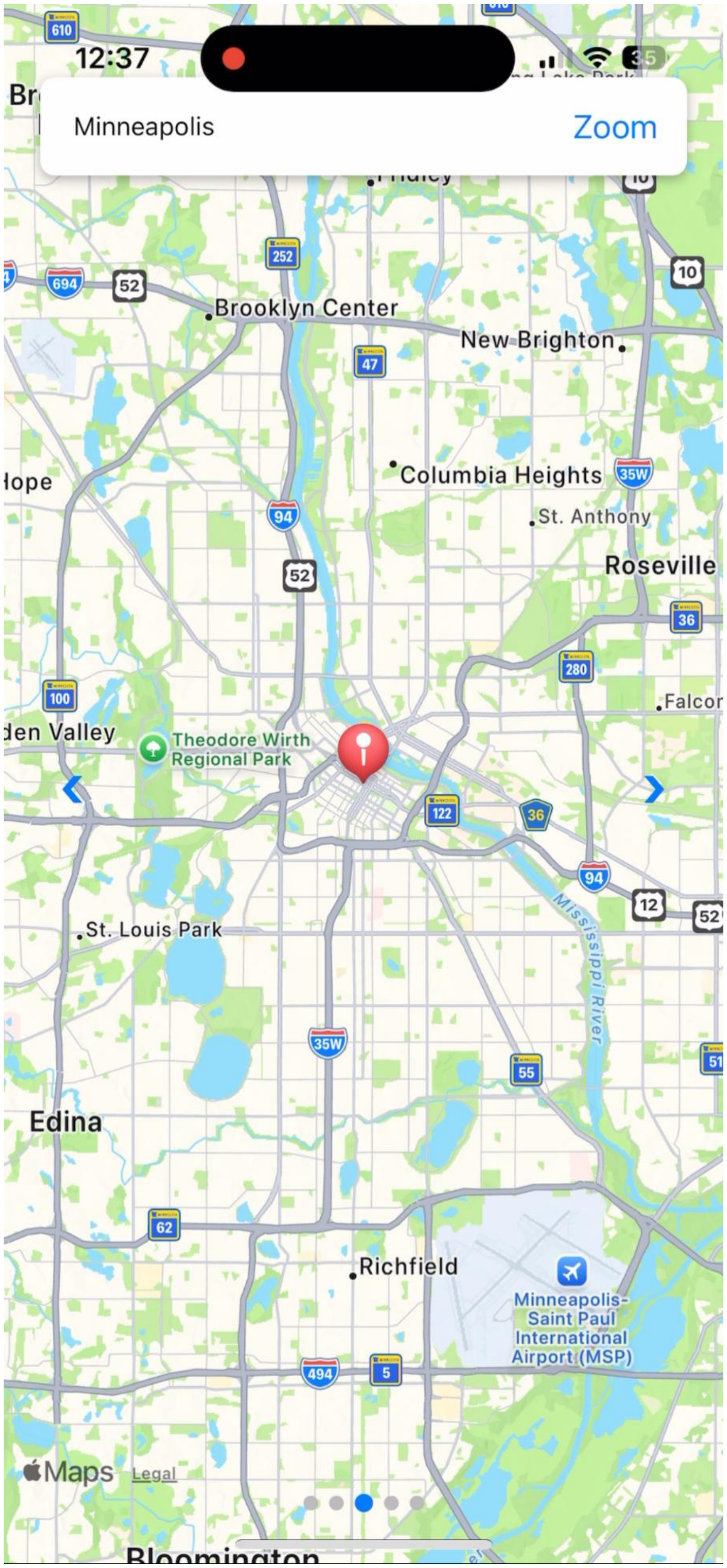
- Implemented add feature so that the user can add to the database via the app.



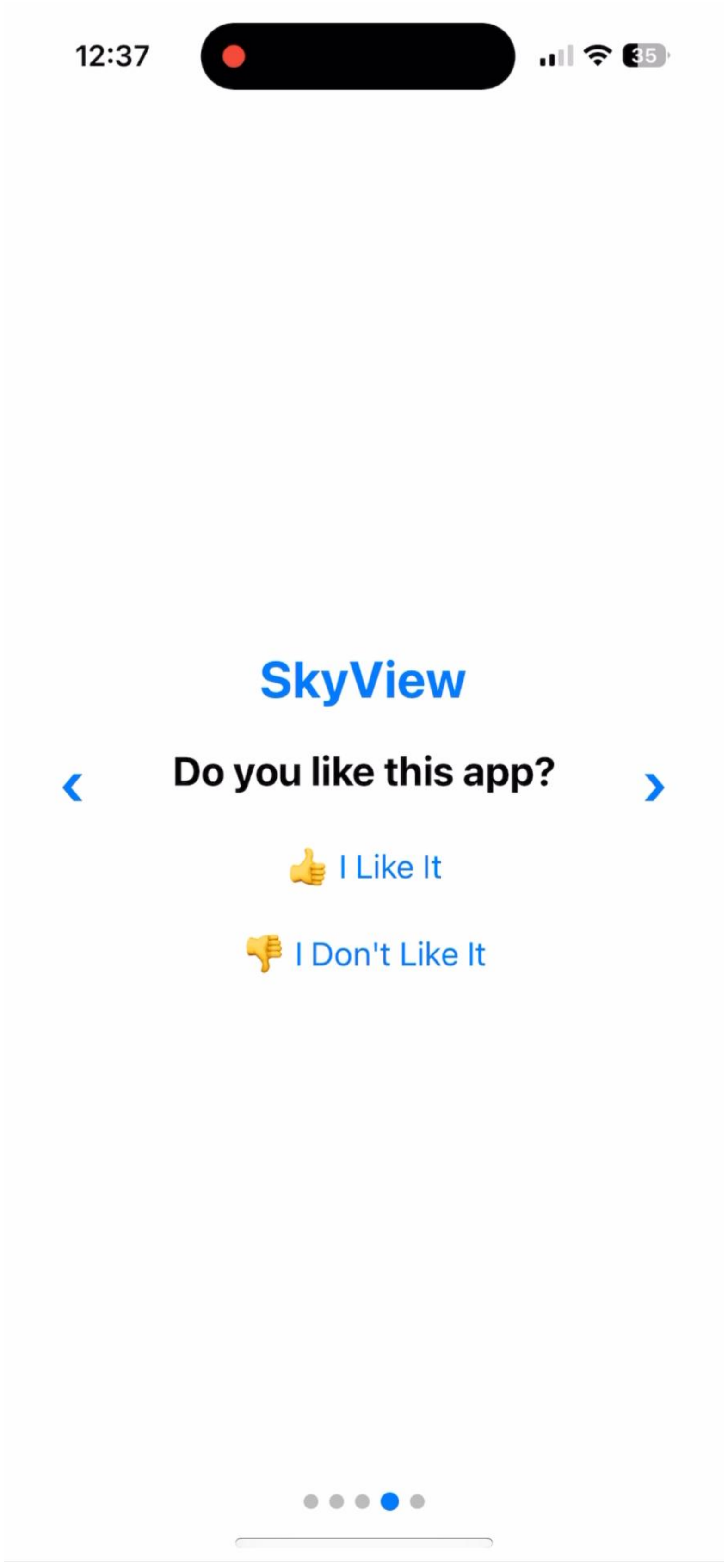
- Added search so that the user can display weather reports from the searched city.

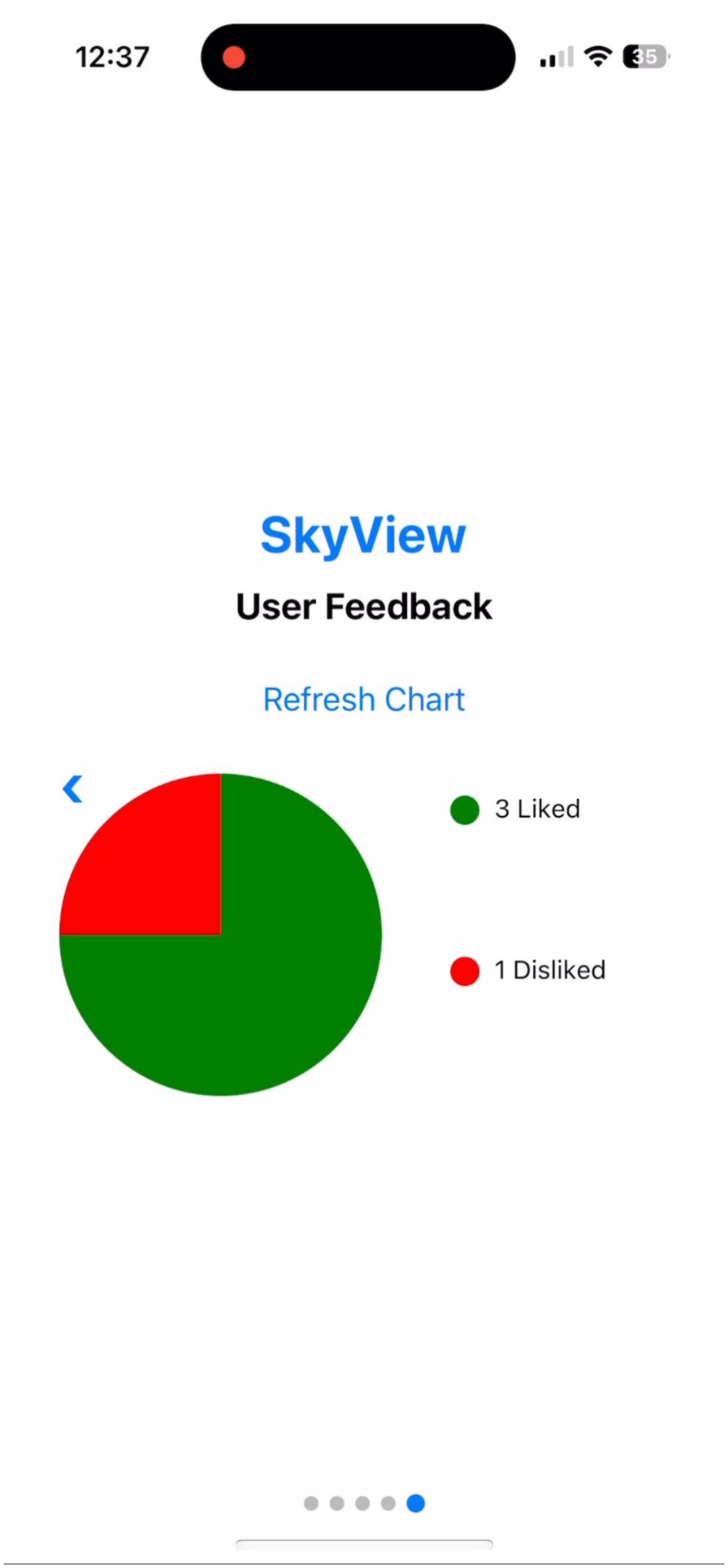


- Added map feature so that the user can search a city and display it on a map.
    - Integrated OpenWeatherMap API (Geo API) into get_coords.php. So if the city isn't in the database, script fetches coordinates live from API



- Feedback + Chart System
    - Users select like/dislike and submit.
    - Chart displays live data from database using a refresh button.





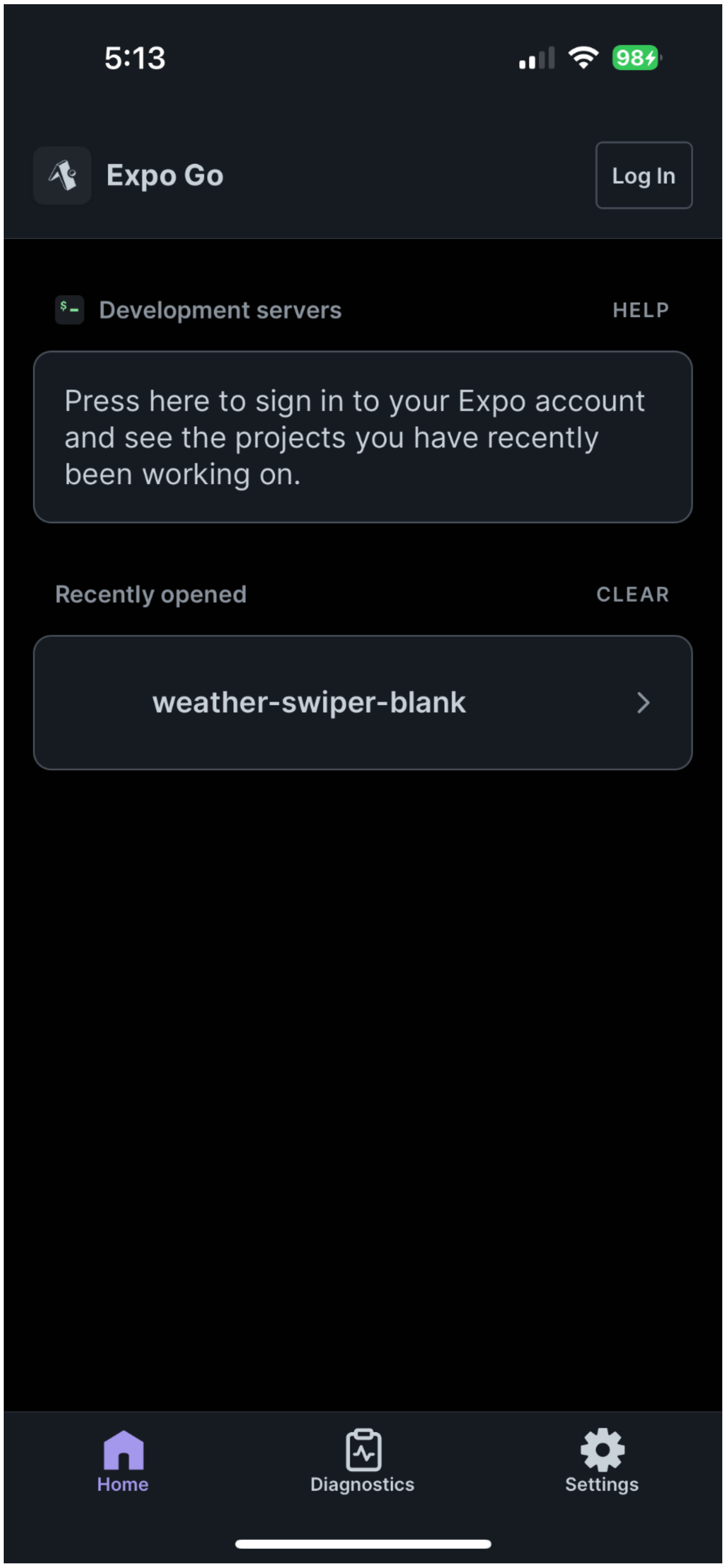
SkyView

User Feedback

Refresh Chart

- Ensure Mobile Responsiveness:
    - Used responsive styles to support both mobile and laptop views.
    - Components such as maps, charts, and form fields scale based on screen size.

7. Install Expo Go app and scan QR code to use app.



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Summary:

The SkyView swiper app project successfully integrates a full-stack weather reporting system with modern mobile app development. Users can add and search for city-specific weather reports, view dynamic map locations, and submit real-time feedback. The system is hosted on a cloud-based VPS using Apache, PHP, and MySQL, and interacts with a React Native frontend built using Expo.

Key features include adding/searching the database, dynamic geolocation using OpenWeatherMap, map zoom functionality, and a feedback chart using real-time database stats. The application supports full mobile and desktop responsiveness, ensuring a good experience across platforms.

Overall, this project demonstrates that I can design and deploy a complete, data-driven application that bridges backend, frontend, APIs, and live hosting infrastructure.