**7. Program**

**Firebase Real Time Database**

**1.Aim:**

The aim of this code is to create a web page that allows users to write text messages to a Firebase Realtime Database and read messages from that database.

**2.Problem Description:**

The provided HTML and JavaScript code set up a basic web application that interacts with a Firebase Realtime Database. It allows users to input messages and store them in the database using the "Write" button. The "Read" button retrieves and displays these messages in JSON format. However, the code has issues such as an incomplete Immediately Invoked Function Expression, variable name mismatches, and missing error handling. Furthermore, it exposes sensitive Firebase configuration details in the client-side code. In a production scenario, it's crucial to address these issues for security, reliability, and maintainability.

**3.Necessary File codes :**

**Index.js**

<!DOCTYPE html>

<html>

<head>

    <!-- Include Firebase App and Database libraries -->

    <script src="https://www.gstatic.com/firebasejs/7.24.0/firebase-app.js"></script>

    <script src="https://www.gstatic.com/firebasejs/7.24.0/firebase-database.js"></script>

</head>

<body>

    <!-- Input field for text -->

    <input id="message" type="text" placeholder="text to write to DB"><br>

    <!-- Buttons for writing and reading data -->

    <button id="write">Write</button>

    <button id="read">Read</button>

    <!-- Display status or messages here -->

    <div id="status"></div>

    <!-- Include JavaScript code from 'database.js' -->

    <script src="database.js"></script>

</body>

</html>

**Database.js**

(function () {

  // Firebase configuration

const firebaseConfig = {

  apiKey: "AIzaSyDf9wdD3WuUeyNrrzmhJ0izjqU9jf79\_lE",

  authDomain: "courso-78c60.firebaseapp.com",

  databaseURL: "https://courso-78c60-default-rtdb.firebaseio.com",

  projectId: "courso-78c60",

  storageBucket: "courso-78c60.appspot.com",

  messagingSenderId: "8689552942",

  appId: "1:8689552942:web:af68791f3a92c6ab3cd9bf",

  measurementId: "G-0SXHVMRQSB"

};

  // Initialize Firebase with the provided configuration

    firebase.initializeApp(firebaseConfig);

    // Reference to the Firebase database

    const db = firebase.database();

    // DOM elements

    const message = document.getElementById('message');

    const write = document.getElementById('write');

    const read = document.getElementById('read');

    const status = document.getElementById('status');

  // Event listener for the "Write" button

  write.addEventListener('click', (e) => {

    // Reference to the 'messages' in the database

    const messages = db.ref('messages');

    // Generate a unique ID based on the current timestamp

    const id = new Date().getTime();

    // Set the message with the unique ID as the key

    messages.child(id).set({ message: message.value }).then(function () {

      status.innerHTML = "Wrote to DB!";

    });

  });

  // Event listener for the "Read" button

  read.addEventListener('click', (e) => {

    status.innerHTML = '';

    // Reference to the 'messages' in the database

    const messages = db.ref('messages');

    // Read data from the database

    messages.once('value').then(function (dataSnapshot) {

      var data = dataSnapshot.val();

      if (data) {

        var keys = Object.keys(data);

        // Loop through the keys and display the data

        keys.forEach(function (key) {

          console.log(data[key]);

          status.innerHTML += JSON.stringify(data[key]) + '<br>';

        });

      } else {

        status.innerHTML = 'No data found';

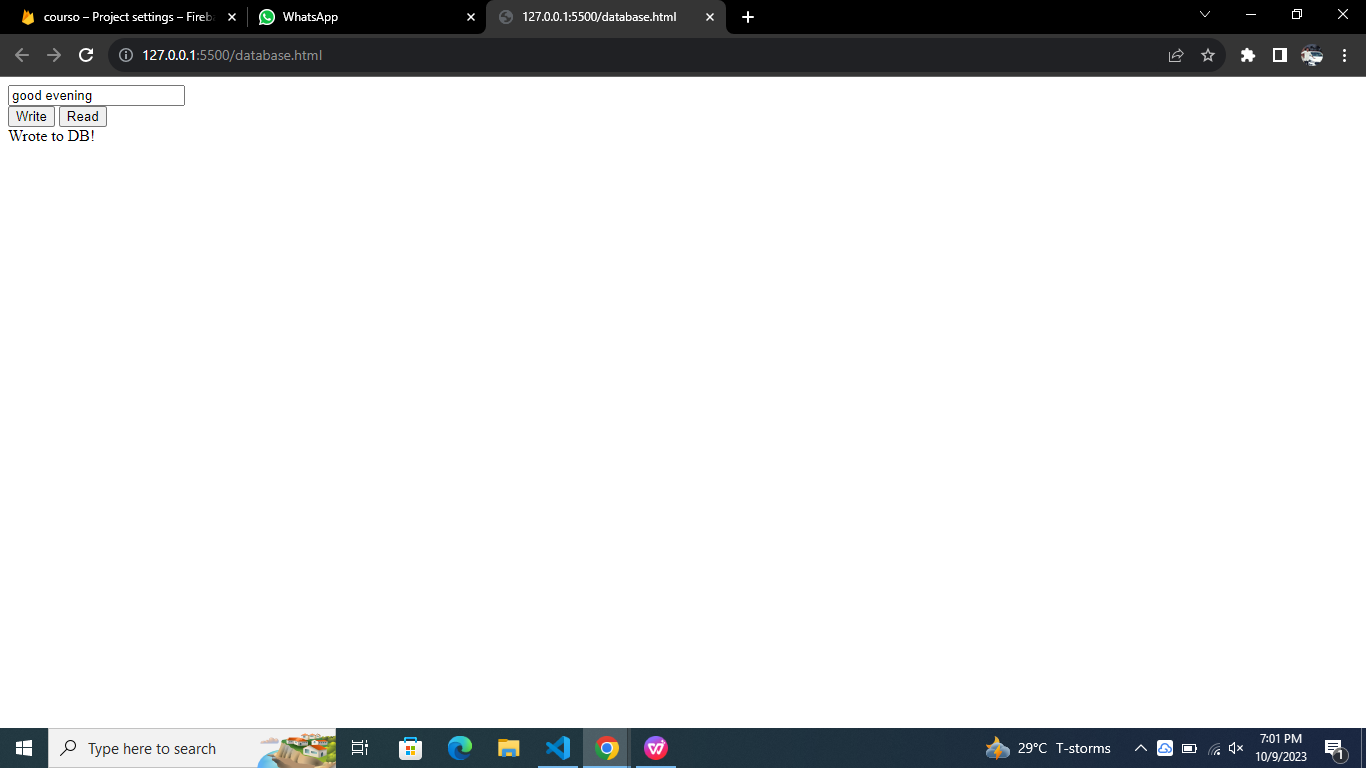
      }

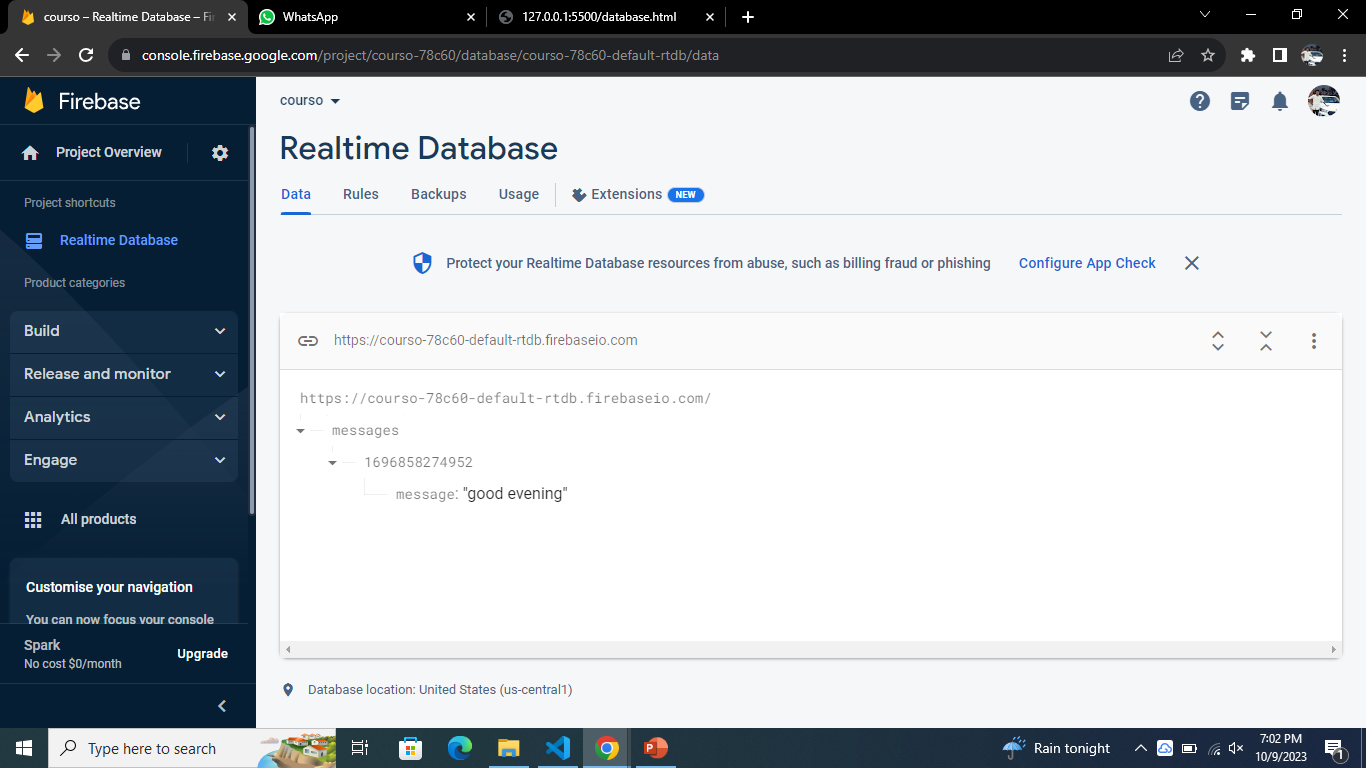
    });

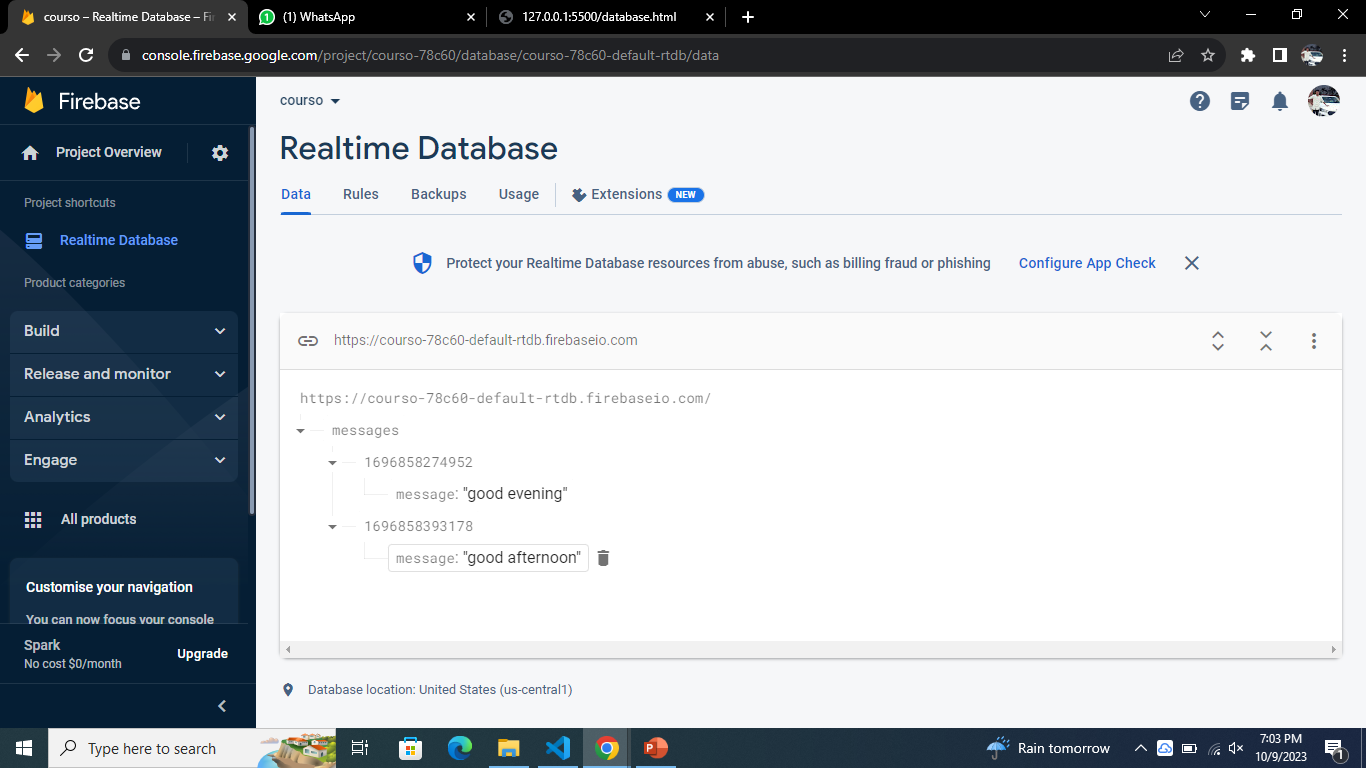
  });

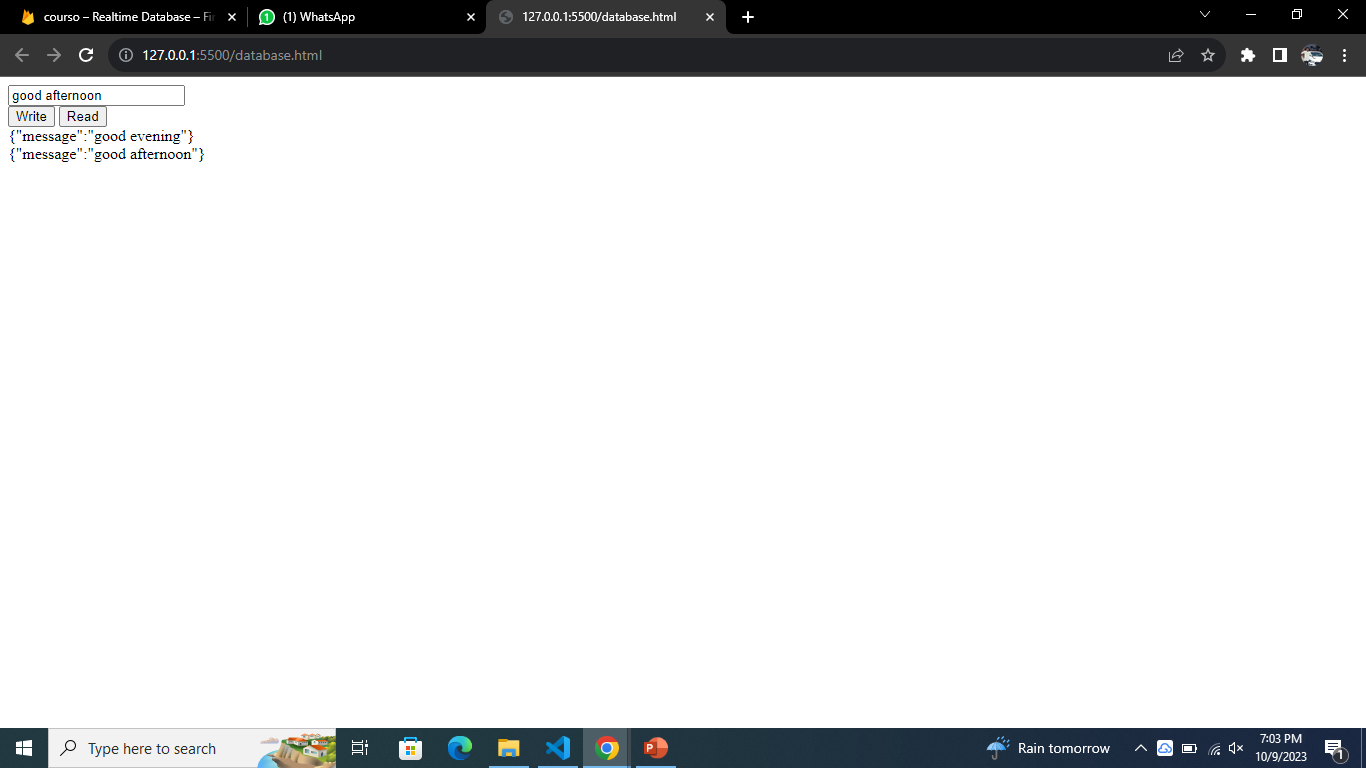
})();

**4.Outputs:**

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**5.Conclusion:**

The code initializes Firebase, connects to a Firebase Realtime Database, and provides functionality to write and read messages. However, the code should be updated with your Firebase configuration (API Key, Auth Domain, etc.), and some minor issues in the JavaScript code have been highlighted in the comments. Once these changes are made, the web page should function as intended, allowing users to write and read messages to/from the Firebase Realtime Database.