LAB ASSIGNMENT

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T1. Develop a currency converter application that allows users to input an amount in one currency and convert it to another. For the sake of this challenge, you can use a hard-coded exchange rate. Take advantage of React state and event handlers to manage the input and conversion calculations.

.js

```
import React, { useState } from 'react';
import './App.css'; // Import a separate CSS file for styling (create this file in the same
directory as your component)

const CurrencyConverter = () => {
  const [amount, setAmount] = useState('');
  const [convertedAmount, setConvertedAmount] = useState('');
  const exchangeRate = 0.85; // 1 USD = 0.85 EUR (Replace with actual exchange rate)

  const handleAmountChange = (event) => {
    setAmount(event.target.value);
  };

  const convertCurrency = () => {
    const result = parseFloat(amount) * exchangeRate;
    setConvertedAmount(result.toFixed(2));
  };

  return (
    <div className="currency-converter-container">
      <h1 className="converter-title">Currency Converter</h1>
      <div className="input-container">
        <label htmlFor="amount" className="label-text">
          Enter Amount in USD:
        </label>
        <input
```

```
          type="number"
          id="amount"
          value={amount}
          onChange={handleAmountChange}
          className="input-field"
        />
      </div>
      <div className="button-container">
        <button onClick={convertCurrency} className="convert-button">
          Convert
        </button>
      </div>
      {convertedAmount && (
        <div className="result-container">
          <p className="result-text">Converted Amount: {convertedAmount} EUR</p>
        </div>
      )}
    </div>
  );
};

function App() {
  return (
    <div className="app-container">
      <CurrencyConverter />
    </div>
  );
}

export default App;
```

.css

```
.currency-converter-container {
    max-width: 400px;
    margin: auto;
    padding: 20px;
    border: 1px solid #ccc;
    border-radius: 5px;
    box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
  }

  .converter-title {
    text-align: center;
    color: #333;
  }

  .input-container {
    margin-bottom: 15px;
```

```
}

.label-text {
  display: block;
  margin-bottom: 5px;
  color: #555;
}

.input-field {
  width: 100%;
  padding: 8px;
  border: 1px solid #ccc;
  border-radius: 4px;
}

.button-container {
  text-align: center;
}

.convert-button {
  padding: 10px;
  background-color: #4caf50;
  color: #fff;
  border: none;
  border-radius: 4px;
  cursor: pointer;
}

.result-container {
  margin-top: 20px;
}

.result-text {
  color: #333;
}
```

Output:

T2. Create a stopwatch application through which users can start, pause and reset the timer. Use React state, event handlers and the setTimeout or setInterval functions to manage the timer's state and actions.

.js

```
import React, { useState, useRef } from 'react';
import './App.css';

function App() {
  const [time, setTime] = useState(0);
  const [isRunning, setIsRunning] = useState(false);
  const timerRef = useRef();

  const startTimer = () => {
    if (!isRunning) {
      timerRef.current = setInterval(() => {
        setTime((prevTime) => prevTime + 1);
      }, 1000);
      setIsRunning(true);
    }
  };

  const pauseTimer = () => {
    clearInterval(timerRef.current);
    setIsRunning(false);
  };

  const resetTimer = () => {
    clearInterval(timerRef.current);
    setTime(0);
    setIsRunning(false);
  };

  return (
    <div className="stopwatch-container">
      <h1>Stopwatch</h1>
      <div className="timer">{formatTime(time)}</div>
      <div className="controls">
        <button onClick={startTimer} disabled={isRunning}>
          Start
        </button>
        <button onClick={pauseTimer} disabled={!isRunning}>
          Pause
        </button>
        <button onClick={resetTimer}>Reset</button>
      </div>
    </div>
  );
```

```
}

function formatTime(seconds) {
  const minutes = Math.floor(seconds / 60);
  const remainingSeconds = seconds % 60;
  return ${String(minutes).padStart(2, '0')}:${String(remainingSeconds).padStart(2, '0')};
}

export default App;
```

.css

```
.stopwatch-container {
    max-width: 300px;
    margin: auto;
    text-align: center;
  }

  .timer {
    font-size: 2em;
    margin: 10px 0;
  }

  .controls button {
    font-size: 1em;
    margin: 5px;
    padding: 10px;
    cursor: pointer;
  }

  .controls button:disabled {
    cursor: not-allowed;
  }
```

Output:

T3. Develop a messaging application that allows users to send and receive messages in real time. The application should display a list of conversations and allow the user to select a specific conversation to view its messages. The messages should be displayed in a chat interface with the most recent message at the top. Users should be able to send new messages and receive push notifications.

```
// src/App.js
import React, { useState, useEffect } from 'react';
import { auth, firestore } from './firebase';
import Conversations from './components/Conversations';
import Chat from './components/Chat';
import { useCollectionData } from 'react-firebase-hooks/firestore';

const App = () => {
  const [user, setUser] = useState(null);
  const [selectedConversation, setSelectedConversation] = useState(null);

  useEffect(() => {
    const unsubscribe = auth.onAuthStateChanged((user) => {
      setUser(user);
    });

    return () => unsubscribe();
  }, []);

  const conversationsRef = firestore.collection('conversations');
  const [conversations] = useCollectionData(conversationsRef, { idField: 'id' });

  const messagesRef = selectedConversation
    ? conversationsRef.doc(selectedConversation.id).collection('messages')
    : null;
  const [messages] = useCollectionData(messagesRef, { idField: 'id' });

  const sendMessage = () => {
    // Implement message sending logic
  };

  return (
    <div>
      {user ? (
        <>
          <button onClick={() => auth.signOut()}>Sign Out</button>
          <Conversations conversations={conversations}
onSelectConversation={setSelectedConversation} />
          {selectedConversation && <Chat messages={messages} sendMessage={sendMessage} />}
        </>
      ) : (
        <button onClick={() => auth.signInAnonymously()}>Sign In Anonymously</button>
      )}
```

```
    </div>
  );
};

export default App;
```

```
[5:46 PM, 3/5/2024] Raksha(raksha Cse ): // src/firebase.js
import firebase from 'firebase/app';
import 'firebase/auth';
import 'firebase/firestore';

const firebaseConfig = {
  // Your Firebase Config Object
};

firebase.initializeApp(firebaseConfig);

export const auth = firebase.auth();
export const firestore = firebase.firestore();
[5:46 PM, 3/5/2024] raksha(raksha Cse ):
// src/components/Chat.js


import React from 'react';

const Chat = ({ messages, sendMessage }) => {
  return (
    <div>
      <h2>Chat</h2>
      <div>
        {messages.map((message) => (
          <div key={message.id}>
            <strong>{message.sender}:</strong> {message.text}
          </div>
        ))}
      </div>
      <div>
        <input type="text" placeholder="Type your message" />
        <button onClick={sendMessage}>Send</button>
      </div>
    </div>
  );
};

export default Chat;
```

```
// src/components/Conversations.js
import React from 'react';

const Conversations = ({ conversations, onSelectConversation }) => {
  return (
    <div>
      <h2>Conversations</h2>
      <ul>
        {conversations.map((conversation) => (
          <li key={conversation.id} onClick={() => onSelectConversation(conversation)}>
            {conversation.name}
          </li>
        ))}
      </ul>
    </div>
  );
};

export default Conversations;
```

Output: