**Data Flow Diagram (DFD) for Login Form App**

**Login Form App** allows users to input their email and password, validates credentials, and either logs them in or shows an error message. Below is the **DFD representation**:

**Level 0 (Context Diagram)**

At the highest level, the system consists of:

1. **External Entity: User** → Inputs email and password.
2. **Process: Login System** → Validates credentials and determines login success or failure.
3. **Data Store: React State (useState Hook)** → Stores user input and error messages.

+--------------------+

| External Entity: |

| User |

+--------------------+

|

v

+--------------------+

| Login System | (Process 1.0)

+--------------------+

|

v

+--------------------+

| useState Hook | (Stores email, password, error message)

+--------------------+

**Level 1 DFD (Decomposed Processes)**

Breaking down **Process 1.0 (Login System)** into detailed steps:

+--------------------+ +------------------------+

| External Entity: | | Process 1.1 - Input |

| User | -----> | (Enter Email & Pass) |

+--------------------+ +------------------------+

| |

v v

+--------------------+ +------------------------+

| Process 1.2 - | | Process 1.3 - Validate|

| Validate Email | <-----> | (Check Credentials) |

+--------------------+ +------------------------+

| |

v v

+--------------------+ +------------------------+

| Process 1.4 - | | Process 1.5 - Login |

| Error Handling | -----> | (Show Success/Error) |

+--------------------+ +------------------------+

|

v

+--------------------+

| useState Hook | (Stores User Data & Errors)

+--------------------+

**Explanation of Level 1 DFD Processes**

1. **Process 1.1 - Input Handling**
   * The user enters an email and password.
2. **Process 1.2 - Email Validation**
   * The system ensures the email follows the correct format (user@example.com).
3. **Process 1.3 - Credential Validation**
   * Checks if email and password match predefined credentials.
4. **Process 1.4 - Error Handling**
   * If fields are empty or credentials are incorrect, an error message is stored and displayed.
5. **Process 1.5 - Login Success/Error Handling**
   * If credentials are correct, a success message (Login Successful!) is displayed.
   * If incorrect, an error message (Invalid Credentials) appears.

**Data Flow Summary**

✔ **User enters credentials → System validates input → Updates login state → Displays result**  
✔ Uses **React state (useState Hook)** for real-time data updates.  
✔ **No backend authentication**—only front-end validation.