**Level 0 (Context Diagram)**

At the highest level, the system consists of a single process that represents the **E-Commerce App**.

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| External Entity |

| (User) |

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

|

v

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

| E-Commerce App |

| (Process: 1.0) |

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|

v

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| Data Store: Users |

| Data Store: Cart |

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**Explanation:**

* **External Entity (User):** The user interacts with the **E-Commerce App** by signing up, logging in, browsing products, and adding items to the cart.
* **Process (E-Commerce App):** The system allows users to authenticate, view products, and manage their cart.
* **Data Stores:**
  + **Users Database:** Stores registered user data.
  + **Cart Database:** Stores products added by the user.

**Level 1 DFD (Decomposition of Process 1.0 - E-Commerce App)**

Now, let’s break down the **E-Commerce App** process into more detailed steps.

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| External Entity |

| (User) |

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v

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| Process: 1.1 - Sign Up |

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v

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| Data Store: Users |

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

| Process: 1.2 - Login |

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v

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| Decision: Credentials Valid? |

| (Yes) | (No) |

|-------------|---------------|

| Redirect to | Show Error |

| Products | Message |

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| Process: 1.3 - View Products |

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| Process: 1.4 - Add to Cart |

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| Data Store: Cart |

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| Process: 1.5 - View Cart |

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| Process: 1.6 - Checkout |

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**Explanation:**

1. **Process 1.1 (Sign Up):**
   * The user registers by entering their details.
   * The system stores user data in the **Users Database**.
2. **Process 1.2 (Login):**
   * The user enters credentials to access the app.
   * The system verifies credentials by checking stored data.
   * **If valid**, the user is redirected to the **Products Page**.
   * **If invalid**, an error message is displayed.
3. **Process 1.3 (View Products):**
   * The user browses a list of available products.
4. **Process 1.4 (Add to Cart):**
   * The user selects a product and adds it to their **Cart**.
   * The **Cart Database** updates with the selected product.
5. **Process 1.5 (View Cart):**
   * The user reviews items in their cart before checkout.
6. **Process 1.6 (Checkout - Future Enhancement):**
   * The user proceeds to purchase the selected products.

**Data Flow**

* The **User** navigates through **SignUp, Login, Products, and Cart**.
* The **SignUp Form** collects user data and stores it in the **Users Database**.
* The **Login System** verifies credentials before granting access.
* The **Products Page** displays available products.
* The **Cart System** manages added products.
* The system updates data in the **Users and Cart Databases**.

**Additional Notes:**

* **React Router** is used for navigation.
* The app defaults to the **Products page (/products)**.
* Future enhancements could include:
  + **Checkout and Payment processing**
  + **User authentication with JWT**
  + **Persistent cart using local storage or a database**