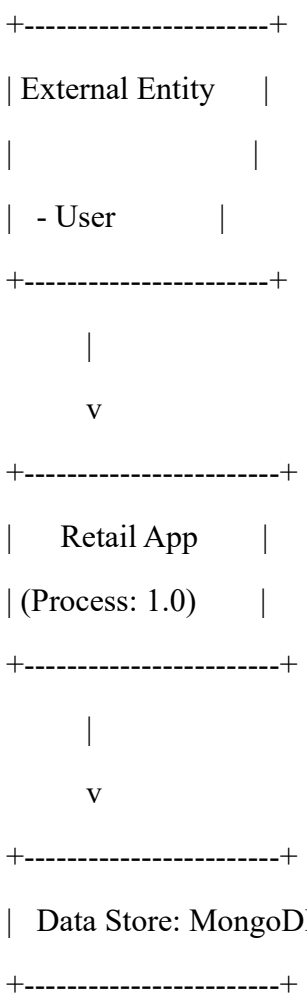
DFD for RETAIL - APPLICATION

A Data Flow Diagram (DFD) for a developer typically represents the flow of data within a system, illustrating how data moves between different processes, data stores, and external entities. Below is a simple example of a DFD for a basic application, such as a user login system.

Level 0: Context Diagram

- **Users** interact with the **Retail App**.
- The **Retail App** communicates with **MongoDB** to store and retrieve user details and product information.



Explanation:

- **External Entity (User):** The User interacts with the Retail App.
- **Process (Retail App):** The system processes authentication, product browsing, cart management, and checkout.
- **Data Store (MongoDB):** The database stores user credentials, product details, cart items, and transaction history.

Level 1 DFD (High-Level DFD)

- Breaking down the **Retail App** process into more detailed steps.

1. **User Authentication**

    1. User clicks **Sign Up** or **Login**.
    2. If the user exists in **MongoDB**, they are logged in.
    3. If not, they sign up, and details are stored in **MongoDB**.
    4. After successful authentication, the **Product Catalogue Page** opens.

2. **Product Catalogue**

    5. Displays product details fetched from **MongoDB**.
    6. User can click **"Add to Cart"** to add products to the cart.

3. **Cart Management**

    7. User can view the cart by clicking **"View Cart"**.
    8. Products added to the cart are stored in **MongoDB**.

4. **Payment**

    9. User can proceed to payment from the **Cart Page**.
    10. Payment details are stored and processed.

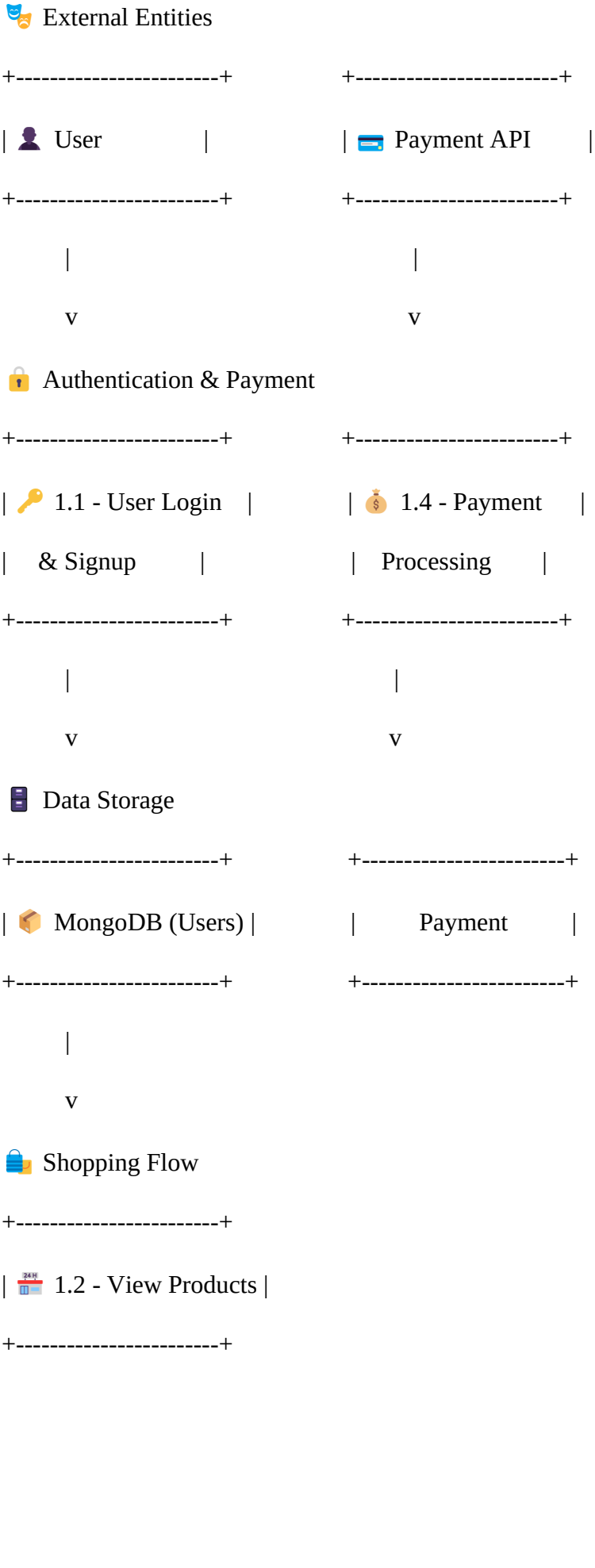
5. **Logout**

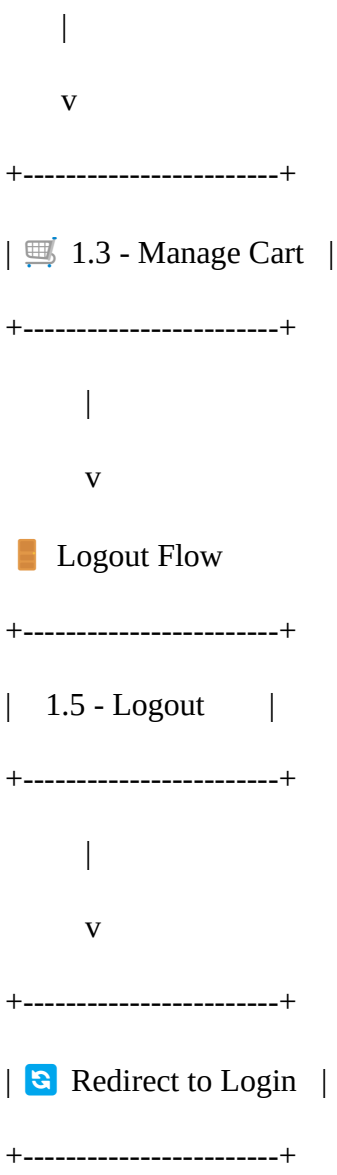
    11. Clicking **Logout** redirects the user to the **Login/Sign Up Page**.

Decomposition of Process - Retail App:

In Level 1 of the Data Flow Diagram (DFD), we break down the Retail App process into multiple sub-processes that handle user authentication, product catalogue management, cart operations, payment processing, and logout functionality. Each process in the **Retail App DFD** represents a critical function, ensuring smooth e-commerce operations while maintaining **data integrity** and **efficient system interactions** with MongoDB and external services.

Breaking down the **Retail App** process into more detailed steps.





Explanation:

1. **Process 1.1 (User Authentication):** The user logs in or signs up. If credentials exist in **MongoDB**, they log in; otherwise, new user details are stored.
2. **Process 1.2 (View Products):** The user browses available products.
3. **Process 1.3 (Manage Cart):** The user adds/removes products from the cart, updating **Cart DB**.
4. **Process 1.4 (Payment Processing):** When proceeding to checkout, payment details are sent to an external **Payment API**.
5. **Process 1.5 (Logout):** The user logs out, and the system redirects them to the login page.