**Data Flow & System Behavior**

**1. Data Flow Diagram (DFD)**

* **Context-Level DFD:** Shows the interaction between the system and external entities (users, APIs).
* **Detailed-Level DFD:** Represents how data moves between components within the system, such as movie search, filtering, and recommendations.

**2. Sequence Diagrams**

* Illustrate step-by-step interactions between users and system components.
* Show the sequence of API calls for fetching and displaying movie recommendations.

**3. Activity Diagram**

* Visual representation of user workflows, such as searching for a movie, applying filters, and viewing details.
* Covers decision points like handling API errors or no search results.

**4. State Diagram**

* Depicts various states of the system objects (e.g., movie selection, filter applied, recommendation generated).
* Shows transitions between states, like moving from the search state to the result display state.

**5. Class Diagram**

* Defines key system entities such as Movie, User, Filter, and Recommendation.
* Illustrates relationships and attributes of these classes.

These diagrams ensure a structured and clear understanding of system processes and behaviors, helping in effective development and implementation.