Assignment 4

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Subject: Software Analysis and Design
Topic: *To prepare detailed Activity diagram with notational compliance to UML 2.0 indicating clear use of pins, fork-join, synchronization, datastores*

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1. Problem Statement

Design an **Activity Diagram** for the Fitness Tracker System that captures the workflow of a user performing key activities like logging in, using fitness services, tracking progress, and receiving notifications. The diagram should strictly follow UML 2.0 notation with:

- **Pins** for input/output data

- **Fork/Join** for parallel processing

- **Synchronization** for combining concurrent flows

- **Datastore** for saving and retrieving persistent data

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2. Activity Diagram Description

Flow of Activities:

1. **Start** → User logs into the system.

2. **Decision:** Login successful or failed.

    o   If failed → Retry login or exit.

    o   If successful → Proceed.

3. **Fork:** System allows parallel activities:

    o   **Track Fitness Activities** (steps, workouts, sleep)

    o   **Track Nutrition** (food logging, water intake)

4. Both flows **synchronize** after completion.

5. Data from both flows stored into **Datastore (User Progress DB)**.

6. System generates reports & reminders.

7. **End State** → User gets summary & notifications.

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3. UML 2.0 Activity Diagram Elements Used

- **Start Node (●)**

- **Activities/Actions** (rounded rectangles with input/output pins)

- **Decision/Merge** (diamond)

- **Fork/Join** (thick horizontal bars)

- **Datastore** (cylinder symbol)

- **End Node** (⬤)