**Personal Health Record and Wellness Tracker:**

**Problem Description**

Managing and tracking personal health and wellness data is currently inefficient and scattered. Individuals often struggle to consolidate their health records, wellness activities, and goals in one secure, accessible location. This fragmentation can lead to poor health management and oversight, hindering individuals from making informed decisions about their health and wellness routines.

**Objective**

The project aims to create a unified platform that allows individuals to securely manage their personal health records, track wellness activities, set, and monitor health-related goals. This platform will serve as a central hub for personal health management, streamlining the process of tracking and analyzing health and wellness data.

**Relational Schema**

1. **User**
   * user\_id: Primary Key
   * username
   * password
   * email
   * date\_of\_birth
   * gender
2. **Health\_Record**
   * record\_id: Primary Key
   * user\_id: Foreign Key referencing User
   * date
   * height
   * weight
   * blood\_pressure
   * notes
3. **Activity**
   * activity\_id: Primary Key
   * user\_id: Foreign Key referencing User
   * activity\_type
   * duration
   * intensity
   * calories\_burned
   * date
4. **Goal**
   * goal\_id: Primary Key
   * user\_id: Foreign Key referencing User
   * goal\_type
   * target\_value
   * start\_date
   * end\_date
   * progress
5. **Diet**

* **diet\_id**: Primary Key
* **user\_id**: Foreign Key referencing User
* **date**
* **meal\_type** (e.g., Breakfast, Lunch, Dinner, Snack)
* **food\_item**
* **calories**

1. **Medication Reminder**

* reminder\_id: Primary Key
* user\_id: Foreign Key referencing User
* medication\_name : Text
* frequency : int
* notes

**Key Nouns and Verbs**

**Nouns**

* User, Health Record, Activity, Goal

**Verbs**

* Manage, Track, Set, Monitor

**Potential Challenges**

* Workflow Integration: Develop a workflow that integrates additional health metrics or wellness activities seamlessly into the platform.
* External Services: Identify potential external data sources or services that could enhance the platform's functionality, such as integration with fitness trackers or health apps.
* Performance Evaluation Metrics: Establish metrics to evaluate user engagement, data accuracy, and overall effectiveness of the platform.
* Predictive Analysis: Consider integrating machine learning algorithms for predictive health analysis, offering users insights into potential health trends based on their data.

**Relationships:**

* Each **User** can have multiple **Health\_Record** entries, **Activity** logs, **Goals**, **Diet** records, and **Medication Reminders**.
* All classes except **User** contain a foreign key referencing **user\_id**, indicating a many-to-one relationship with the **User** class.

**Functionalities for In-Memory Key-Value Storage:**

* **Current Logged-in Users**: Store session tokens or user IDs of currently active users for quick access and session management.
* **Active Goals**: Maintain a cache of users' active goals for real-time progress updates and alerts.
* **Recent Activities**: Hold the most recently logged activities for quick retrieval and dashboard display.
* **Dietary Intakes**: Cache recent meals and caloric intake for faster access and dietary analysis.
* **Medication Schedules**: Keep an in-memory schedule of upcoming medication reminders for timely alerts.