DATA STORAGE SYSTEM UML CLASS DIAGRAM

This UML class diagram illustrates the architecture of the data layer system designed to manage and retrieve patient data securely. It's structured around six main components: data retrieval, data storage, data representation, metrics, user management, and user permissions.

Data Retrieval and Storage

The "DataRetriever" acts as the central component for data operations, such as adding, updating, deleting, and retrieving patient data. It holds a reference to an authenticated user to ensure secure access to data. For validating and managing data operations securely, "DataRetriever" uses "User" and "UserPermission" classes. Moreover, the "DataStorage" class is responsible for the actual storage and retrieval of data from a database, by interacting with "PatientData". It provides methods to add, update, delete, and get patient data, utilizing a database collection.

Data Representation

The "PatientData" class represents patient-specific data, including a list of metrics and a timestamp. It includes methods to retrieve patient ID, metrics, and timestamp, by accessing the "Metric" list that carries metric objects.

Metrics

The "Metric" class represents individual health metrics of a patient with a name and value. It provides methods to get the name and value of the metric.

User Management

The "user" class represents the users of the system with attributes such as user ID, username, password, and activity status. This ensures that only active users can interact with data.

User Permissions

The "UserPermission" class manages the permissions associated with each user, including patient ID, read-only status, and validity dates. This ensures data access adheres to the specified permissions.

Conclusion

The UML Class Diagram for the data storage system highlights a solid and secure architecture for managing patient data. By emphasizing modularity and secure access control, this design ensures maintainability, scalability, and flexibility. The system effectively supports secure data retrieval and storage while managing user permissions, making it a reliable solution for handling sensitive patient information.