**HealthMate AI - Factory Method Design Pattern**

**Overview**

The Factory Method Design Pattern in HealthMate AI is a pivotal architectural choice that strategically manages communication channels within the healthcare application. This pattern promotes modularity, extensibility, and user experience customization.

**Elements**

**1. Communication Interface**

* **Definition:**
  + Blueprint defining the structure for communication objects.
  + Common method **sendMessage(message: string)** ensures consistency.

**2. Communication Channel Factory**

* **Role:**
  + Abstract class responsible for creating diverse communication channels.
  + Key Method: **createCommunication()** acts as the factory method.

**3. AI Communication Channel**

* **Purpose:**
  + Concrete class implementing the **Communication** interface.
  + Specialized for interactions with AI systems.

**4. Hospital Staff Communication Channel**

* **Objective:**
  + Another concrete class implementing the **Communication** interface.
  + Tailored for seamless interactions with hospital staff.

**5. AI Communication Class**

* **Functionality:**
  + Specific implementation of AI communication.
  + Executes logic for sending messages to AI based on user inputs.

**6. Hospital Staff Communication Class**

* **Functionality:**
  + Specific implementation for hospital staff communication.
  + Handles messages to hospital staff based on user inputs.

**7. Client Class**

* **Role:**
  + Represents end-users interacting with HealthMate AI.
  + Utilizes **CommunicationChannelFactory** for channel creation.
  + Manages communication channel use through dedicated methods.

**Relationships**

* **Communication Interface:** Core blueprint for all communication objects.
* **Communication Channel Factory:** Abstract class orchestrating the creation of channels.
* **Concrete Communication Classes:** Implement the interface and provide specialized functionality.
* **Client:** Leverages the factory to create and manage communication channels.