E-Data-Privacy: Data Privacy Considerations and Implementation

**Overview of Data Handling**

The French Learning Chatbot is designed with user privacy in mind. All interactions between the user and the chatbot are handled in-memory using Flask sessions, ensuring that no data is stored permanently. This means that once the session ends, all conversation history is automatically cleared.

**Session-Based Data Storage**

The chatbot uses Flask’s session management to maintain the conversation history temporarily. This allows the chatbot to reference previous user inputs and generate contextually accurate responses. The conversation history is stored as a list of messages, which is reset when the session ends or when the user explicitly clears it.

*if 'conversation\_history' not in session:*

*session['conversation\_history'] = [{"role": "system", "content": "You are a helpful French learning assistant."}]*

**Data Clearing Mechanism**

The chatbot includes a Clear Chat button on the frontend, allowing users to manually clear their session history. When this button is clicked, a POST request is sent to the /clear endpoint, which removes the conversation\_history from the session:

*@app.route('/clear', methods=['POST'])*

*def clear\_history():*

*session.pop('conversation\_history', None)*

*return jsonify({"status": "Conversation history cleared."}), 200*

This ensures that users have full control over their data during the session.

**No Persistent Data Storage**

The chatbot does not use any databases or file systems to store user data. All interactions are stored temporarily in memory and are cleared either when the user ends the session or uses the Clear Chat feature. This design choice ensures complete data privacy and minimizes the risk of data leaks.

**Future Data Privacy Enhancements**

Future iterations of the chatbot could include additional privacy features:

* **User Authentication**: Implementing user authentication would allow the chatbot to remember a user’s progress without storing sensitive data.
* **Data Encryption**: Encrypting session data could add an extra layer of security for sensitive interactions.