

# Developer Summary — Updated SQL Patch-ChatBot

## 1. Users & Authentication

- Table: **users**
- Purpose: Stores user accounts with secure password hashes (**password**), roles, and status.
- Features:
  - **role** column allows role-based access (Admin/User).
  - **status** indicates active/inactive users.
  - **deleted\_at** supports soft delete for GDPR compliance.
  - **created\_at** and **updated\_at** track record creation and modification.
  - Unique constraint on **email** ensures no duplicate accounts.
- Seed Data: Includes Admin, normal user, and demo user accounts.

## 2. Password Reset Management

- Table: **password\_resets**
- Purpose: Handles password reset requests securely.
- Features:
  - **token** stores unique reset token.
  - **expires\_at** defines validity of reset token.
  - Foreign key links email to **users** table for integrity.
  - Indexes on **email**, **token**, and **expires\_at** optimize search.

## 3. Remember Me / Persistent Login

- Table: **remember\_tokens**
- Purpose: Implements "remember me" functionality for persistent sessions.
- Features:
  - **token** and **expires\_at** track session persistence.
  - Soft delete via **deleted\_at**.
  - Indexed by **user\_id** and **expires\_at** for fast validation.
  - Foreign key ensures token belongs to a valid user.

## 4. Chat Sessions

- Table: **chat\_sessions**
- Purpose: Tracks chat sessions per user or anonymous visitor.
- Features:
  - **session\_uid** ensures unique session identification.
  - **status** indicates active/completed sessions.
  - Tracks start/end timestamps.
  - Foreign key links sessions to registered users (**user\_id**).
  - Indexed for fast session lookups by **user\_id** and **status**.

## 5. Chat Messages

- Table: **chat\_messages**
- Purpose: Stores individual messages for each session.
- Features:
  - **sender** indicates user vs bot messages.
  - Soft delete via **deleted\_at** and Full-text search on **message** supports content-based queries.
  - Indexed by **session\_id** and **timestamp** for chronological retrieval.
  - Foreign key ensures message belongs to a valid session.

## 6. Chat History

- Table: `chat_history`
- Purpose: Aggregates chat data with user, IP, location, and agent info.
- Features:
  - `user_message` & `bot_response` capture conversation.
  - Supports geo-tracking (`latitude`, `longitude`, `location`) for analytics.
  - Soft delete via `deleted_at`.
  - Foreign key links to `users` table.
  - Indexed for quick retrieval by `created_at`, `user_id`, and `ip_address`.

## 7. Chatbot Suggestions

- Table: `chatbot_suggestion_logs`
- Purpose: Logs suggested bot responses and user selection.
- Features:
  - `selected` indicates if suggestion was accepted.
  - `deleted_at` supports soft delete.
  - Foreign keys link suggestions to `chat_messages` and `users`.
  - Indexed for analytics and A/B testing via `created_at`, `user_id`, `message_id`.

## 8. Visitor Tracking

- Table: `chatbot_visitors`
  - Purpose: Tracks site visitors including anonymous users.
  - Features:
    - Stores IP, hashed IP, user agent, and geo-location (`city`, `region`, `country`, `latitude`, `longitude`).
- Soft delete via `deleted_at`.
- Indexed by IP, timestamp, and geo coordinates for analytics and geo-mapping.

## 9. FAQ / Knowledge Base

- Table: `faq`
- Purpose: Stores bot knowledge base with hierarchical structure.
- Features:
    - `parent_id` allows nested FAQ relationships.
    - `is_suggestion` identifies suggested answers.
    - `is_welcome` flags welcome messages.
    - Soft delete via `deleted_at`.
    - Full-text search on `user_question` supports quick matching.
    - Foreign key ensures hierarchical integrity (`parent_id`).

## 10. User Activity Logging

- Table: `user_activity_log`
- Purpose: Tracks actions performed by users for auditing and security.
- Features:
  - `action` codes represent specific activities.
  - Logs IP and user agent for traceability.
  - Soft delete via `deleted_at`.
  - Indexed by `user_id` for fast queries.
  - Foreign key ensures activities are linked to valid users.

## 11. Site Settings

- Table: `site_settings`
  - Purpose: Stores key-value configuration for the system.
  - Features:
    - `name` is primary key ensuring uniqueness.
- Allows dynamic configuration of system behavior.

## 12. Data Integrity & Referential Constraints

- Foreign keys enforce relationships:
  - Messages → Sessions
  - Suggestions → Messages & Users
  - History → Users
  - Sessions → Users
  - FAQ → Parent FAQ
  - Password resets → Users
  - Remember tokens → Users
  - User activity → Users
- Cascading updates/deletes ensure consistent data.

## 13. Indexing & Performance

- Proper indexes added for:
  - Fast search (`FULLTEXT` on messages and FAQs)
  - Quick retrieval by timestamps, `user_id`, IP, `session_id`, geo coordinates
- Supports analytics, A/B testing, and real-time queries efficiently.

## 14. Soft Delete Support

- All main tables (`users`, `chat_messages`, `chat_sessions`, `chat_history`, `faq`, `chatbot_suggestion_logs`, `remember_tokens`, `user_activity_log`) include `deleted_at` for compliance and reversible deletions.

## 15. Seed Data

- Preloaded Admin, User, and Demo accounts for quick setup.
- Admin user assigned role `2` and active status.

## Summary of Key Developer Capabilities Provided

- Full-featured chat system with sessions, messages, and conversation history.
- Suggestion logs, visitor tracking, and FAQ hierarchy for analytics & AI response optimization.
- Secure authentication, password reset, and persistent login support.
- Soft deletes and auditing for compliance and tracking.
- Indexed and optimized for high performance with `FULLTEXT` search and geo queries.
- Referential integrity ensures data consistency across all relationships.

ER diagram and relationships,

