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## DSA.ai Chatbot Documentation

Welcome to DSA.ai, your assistant for Data Structures and Algorithms (DSA) practice and problem-solving. This chatbot is designed to help you with both solving DSA questions and generating practice problems to enhance your skills. The chatbot leverages Codellama:7b, Ollama, and Streamlit UI to provide a seamless experience.

### Features Overview

#### 1. Solve Section

In the Solve section, you can paste your DSA questions to receive detailed, summarized solutions. This feature is ideal for students and professionals who need help understanding specific problems or algorithms.

##### How to Use:

1. **Paste Your Question:** Input your DSA question into the provided text area.
2. **Submit:** Press 'ctrl + enter' to send your question to the chatbot.
3. **Receive Solution:** The chatbot will generate a detailed and summarized solution to your question, explaining the approach and providing key insights.

##### Example Use Case:

- **User Input:** "How do I solve the problem of finding the shortest path in a graph using Dijkstra's algorithm?"
- **Chatbot Response:** The chatbot will provide a detailed explanation of Dijkstra's algorithm, including its steps, time complexity, and a summary of how it can be applied to the problem.

#### 2. Practice Section

In the Practice section, you can generate new DSA questions to test your skills. This feature is useful for self-assessment and improving problem-solving abilities.

##### How to Use:

1. **Generate Questions:** It will automatically load a DSA question
2. **Answer Questions:** Work on the questions and use the Solve section to get solutions if needed.

##### Example Use Case:

- **Generated Questions:**
  1. "Implement a function to check if a binary tree is balanced."
  2. "Given a binary search tree, write a function to find the kth smallest element."

## Technical Details

### Backend

- **Codellama:7b:** Provides natural language processing and problem-solving capabilities for understanding and generating solutions to DSA questions.
- **Ollama:** Enhances the chatbot's conversational abilities and ensures accurate and relevant responses.
- **Streamlit UI:** Powers the user interface, offering an intuitive and interactive experience for pasting questions and generating practice problems.

### Frontend

- **Input Areas:** For pasting questions and selecting practice parameters.
- **Buttons:** For displaying solutions in practice Section
- **Response Display:** For showing detailed solutions and practice questions.