DATA INTERACTION APPLICATION

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1. INTRODUCTION

The Data Interaction Application is an innovative solution that facilitates querying of SQLite databases using natural language questions. Powered by Google's Generative AI, this application converts user queries into SQL commands, enabling seamless data retrieval and manipulation. This document serves as a comprehensive guide for installation, usage, and understanding of the application.

2. INSTALLATION

2.1. Prerequisites

Before installing the Data Interaction Application, ensure the following prerequisites are met:

- Python 3 is installed on your system.
- Access to a SQLite database.
- A valid Google API key for utilizing Google's Generative AI service.

2.2.Setup Instructions

To set up the application, follow these steps:

1. Clone the repository to your local machine:

git clone <repository_url>

2. Navigate to the project directory:

cd <project_directory>

3. Install the required dependencies listed in the requirements.txt file:

pip install -r requirements.txt

4. Create a.env file in the project directory and provide your Google API key:

GOOGLE_API_KEY = "your_api_key"

3. USAGE GUIDE

3.1. Input Instructions

Using the Data Interaction Application is straightforward:

1. Launch the application by executing the app.py file:

    streamlit run app.py

2. Input your question in the designated text input field.

3. Click the "Ask the question" button to submit your query.

3.2. Interpretation of Responses

Upon submitting your query, the application performs the following actions:

- Utilizes Google's Generative AI to interpret the question and generate a corresponding SQL command.
- Executes the SQL command on the SQLite database.
- Presents the retrieved data within the application interface.

4. IMPLEMENTATION DETAILS

4.1. Application Components

The Data Interaction Application comprises the following components:

- app.py: Contains the Streamlit application code responsible for user interaction, integration with Google Generative AI, and database queries.
- SQLite.py: Initializes the SQLite database, creates a table (STUDENT_INFO), inserts sample records, and demonstrates fundamental database operations.

4.2 Database Schema Overview

The SQLite database utilized by the application adheres to the following schema:

CREATE TABLE STUDENT_INFO (

NAME VARCHAR(25),

CLASS VARCHAR(25),

SECTION VARCHAR(25),

MARKS INT

);

5. HOW IT WORKS

The Data Interaction Application works by:

1. Utilizing Google's Generative AI technology to interpret user queries expressed in natural language.
2. Generating SQL commands based on the interpreted queries.
3. Executing the SQL commands on the SQLite database.
4. Displaying the retrieved data in the application interface.

6. ADDITIONAL INFORMATION

6.1. Dependencies

The Data Interaction Application relies on the following dependencies:

- **Streamlit:** A framework for developing interactive web applications.
- **google-generativeai:** Google's Generative AI library for natural language processing.
- **python-dotenv:** A library for managing environment variables from a.env file.