AI SQL Query Builder

An **AI SQL Query Builder** is a tool designed to assist users, particularly those without extensive SQL expertise, in converting human language requirements into SQL queries. This innovative solution leverages natural language processing (NLP) and artificial intelligence (AI) algorithms to interpret user input, understand the underlying data structure, and generate SQL queries accordingly.

For this, you must host LLM Locally.

Sample Example of Data Definition Language (DDL) Script:

```
Unset

CREATE TABLE Employees (
 EmployeeID INT PRIMARY KEY,
 FirstName VARCHAR(50),
 LastName VARCHAR(50),
 DepartmentID INT,
 Salary DECIMAL(10,2)
);

CREATE TABLE Departments (
 DepartmentID INT PRIMARY KEY,
 DepartmentName VARCHAR(50)
);
```

Human Interaction Scenario:

User Input:

- User: "I need a list of all employees and their departments."

AI SQL Query Builder Interaction:

- AI: "Sure! Based on your requirement, I'll generate the SQL query for you."
- AI: "SELECT Employees.FirstName, Employees.LastName, Departments.DepartmentName FROM Employees INNER JOIN Departments ON Employees.DepartmentID = Departments.DepartmentID;"

User Input:

- User: "What about employees earning more than $50000?"

AI SQL Query Builder Interaction:

- AI: "Alright! Here's the updated query."
- AI: "SELECT Employees.FirstName, Employees.LastName, Departments.DepartmentName FROM Employees INNER JOIN Departments ON Employees.DepartmentID = Departments.DepartmentID WHERE Employees.Salary > 50000;"

Bonus Task: Execute with Database and Generate Result, Showcase in Website

For this bonus task, participants can integrate the AI SQL Query Builder with a database management system (DBMS) such as MySQL, PostgreSQL, or SQLite. Upon receiving the SQL query from the AI, the system can execute it against the database, retrieve the results, and showcase them in a web interface.

Execution Steps:

Receive the SQL query generated by the AI SQL Query Builder.
Connect to the configured database using the appropriate credentials.
Execute the SQL query against the database.
Retrieve the query results.
Display the results dynamically on a website interface.

Benefits:

- Users can instantly visualize the outcome of their queries.
- Enhances user experience by providing a seamless interaction between AI, database, and web interface.
- Facilitates rapid prototyping and development of database-driven applications.

Note: Ensure proper security measures are implemented to prevent SQL injection attacks and unauthorized access to the database.