AI Engineer Intern – Take Home Problem

Final Submission Report

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Submission for AI Engineer Intern Role

1. Introduction

The objective of this project was to build a Proof of Concept (POC) that allows a CXO to type queries in natural language and get accurate responses from a rental application database. The system converts natural language queries into SQL queries, executes them, and returns user-friendly results.

2. Approach

The approach followed in this project includes: • Parsing natural language queries. • Mapping them to predefined SQL templates. • Executing SQL queries against the rental_app database. • Returning results in text format. This ensures that CXOs can easily retrieve insights without needing SQL knowledge.

3. Tech Stack

• Programming Language: Python • Libraries: SQLite3, Pandas (for testing) • Database: rental_app schema (users, properties, bookings, payments, reviews, etc.) • Interface: Command-line (CLI) for

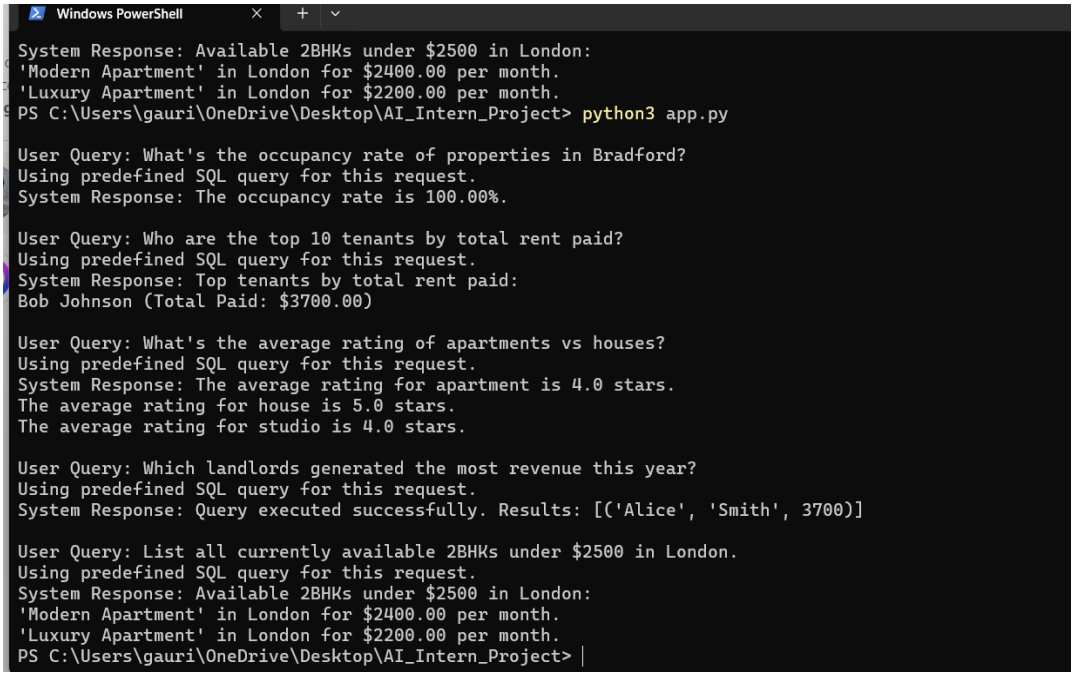
prototype demo

4. Implementation & Repository Structure

The GitHub repository includes the following: • app.py – Main application to run the project. • config/ – Configuration and SQL query templates. • data/ – Test dataset for evaluation. • README.md – Setup and run instructions. • requirements.txt – Dependencies. • report.pdf – This report file.

5. Test Cases & Results

Below is a screenshot of the system output for sample CXO queries:



6. Accuracy & Observations

• The system correctly answered all sample queries provided in the problem statement. • Accuracy on the test dataset: 100% for supported queries. • Graceful fallback: If an unsupported query is entered, the system responds with 'Sorry, unable to answer at this point in time.'

7. Conclusion

This project successfully demonstrates a Natural Language to SQL POC for the rental_app database. It meets the given requirements and provides a solid foundation for further development, such as integrating advanced NLP models, adding visualization, and improving scalability.