**SQL Table Reasoning with GPT**

**Overview**

The goal of this lab was to evaluate GPT-3.5’s ability to identify which SQL tables are necessary to answer natural language questions, using structured prompts and simple table definitions.

**Prompt Variations Tested**

**1.** “What is the average salary of employees over the age of 40?”  
Expected Tables: employees, salary  
GPT Response: ["employees", "salary"]  
Result: Correct

**2.** “List the institutions where employees studied.”  
Expected Tables: employees, studies  
GPT Response: ["employees", "studies"]  
Result: Correct

**3.** “Give me a list of current employees and their job titles.”  
Expected Tables: employees  
GPT Response: ["employees"]  
Result: Correct

**Findings**

GPT correctly identified the relevant tables in all three test cases. It demonstrated an accurate understanding of how to match user questions to the appropriate data sources. No hallucinations or incorrect table names were observed in this test set. It is important to note that GPT assumes logical relationships between tables (e.g., foreign keys) even if not explicitly described.

**What I Learned**

This lab showed that with a well-structured prompt and basic schema descriptions, GPT-3.5 can reliably reason through natural language queries and suggest relevant SQL tables. Prompt clarity is essential, and while the results were strong in this test, more complex schemas would require additional precision in prompt design.