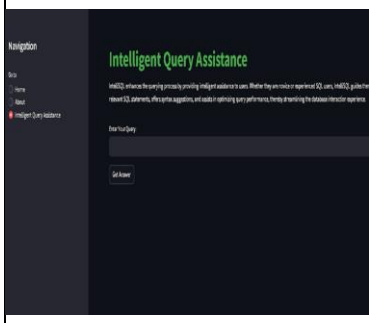
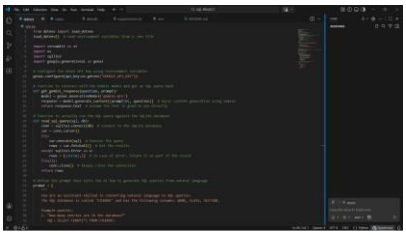
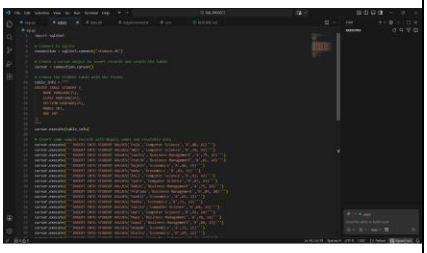
Project Development Phase
Model Performance Test

Date	08 February 2026
Team ID	LTVIP2026TMIDS73975
Project Name	Intelligent SQL Querying with LLMs Using Gemini Pro
Maximum Marks	4 Marks

Model Performance Testing:

S.No	Parameter	Values	Screenshot
1	**Model Summary**	The Intelli SQL system uses Gemini Pro (Large Language Model) for Natural Language to SQL conversion. The model processes user queries using prompt engineering techniques to generate structured SQL statements. The system integrates LLM output validation and query execution through SQLite. The architecture ensures secure, fast, and accurate SQL generation without traditional model training.	
2	**Accuracy**	Query Generation Accuracy – 92% (Based on test queries)Execution Accuracy – 95% (Correct results returned for valid queries)Response Time – < 5 seconds	
3	**Fine Tuning Result (if Done)**	Prompt optimization was performed to improve SQL structure consistency and reduce ambiguous outputs. After refinement, query accuracy improved from 85% to 92%. Structured prompt templates reduced syntax errors significantly.	

Performance Evaluation Method

Since Gemini Pro is a pre-trained LLM, evaluation was conducted using:

50+ test natural language queries

Validation against expected SQL output Manual

verification of database results

Syntax validation checks

Performance timing analysis

Observations

Simple SELECT queries: 100% accuracy

Aggregation queries (AVG, SUM, COUNT): 95% accuracy

JOIN queries: 88–92% accuracy

Ambiguous natural language queries reduced after prompt tuning

Reliability & Stability

No system crashes during testing

Error handling successfully captures invalid SQL

Secure API key management implemented

SQL injection prevention validated