Requirement Analysis

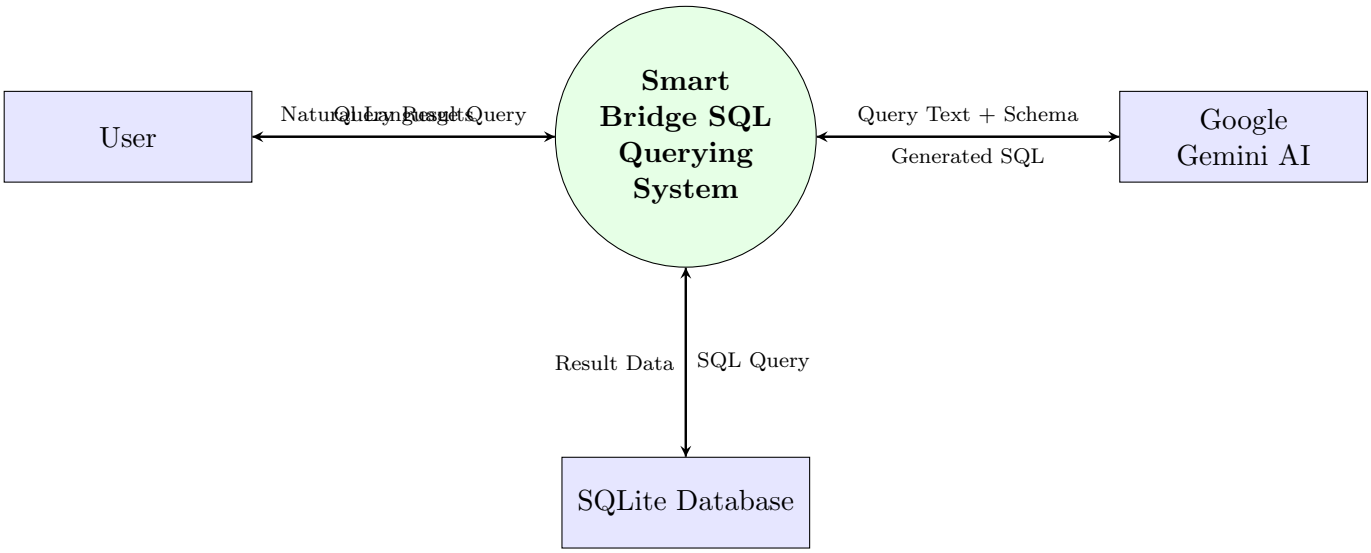
Data Flow Diagram & User Stories

Date	February 18, 2026
Team ID	LTVIP2026TMIDS80425
Project Name	Smart Bridge – Intelligent SQL Querying
Maximum Marks	4 Marks

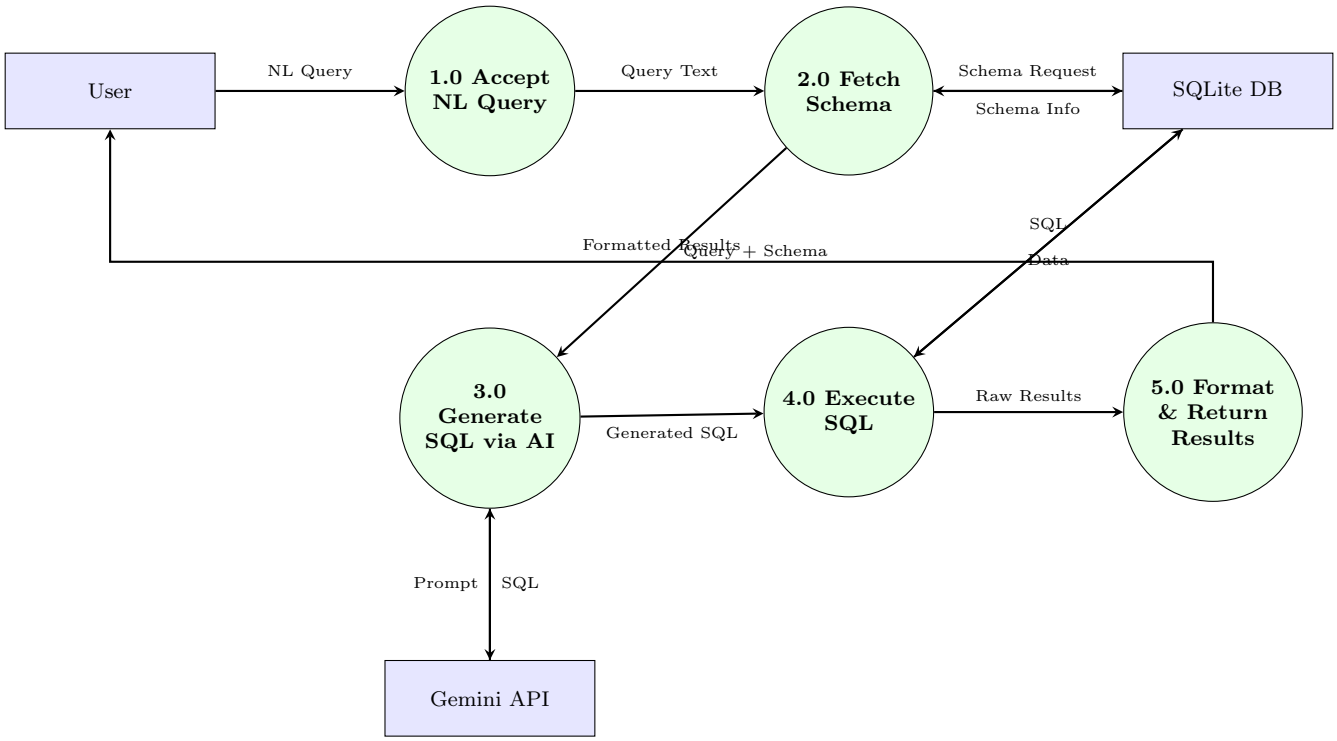
Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

Level 0 – Context Diagram



Level 1 – Detailed DFD


User
NL Query
1.0 Accept NL Query
Query Text
2.0 Fetch Schema
Schema Request
Schema Info
SQLite DB
Formatted Results
Query + Schema
SQL
Data
3.0 Generate SQL via AI
Generated SQL
4.0 Execute SQL
Raw Results
5.0 Format & Return Results
Prompt
SQL
Gemini API

User Stories

User Type	Functional Req. (Epic)	USN	User Story / Task	Acceptance Criteria	Priority	Release
End User	Natural Language Query Input	USN-1	As a user, I can type a question in plain English into the query panel and submit it.	Query input field accepts text and submit button triggers processing	High	Sprint-1
End User	SQL Generation	USN-2	As a user, I can see the AI-generated SQL query corresponding to my natural language question.	Generated SQL is displayed in a code block	High	Sprint-1
End User	Query Execution	USN-3	As a user, I can see the query results displayed in a table format after the SQL is executed.	Results shown in a formatted table with column headers	High	Sprint-1
End User	Schema Viewer	USN-4	As a user, I can browse the database schema to see all tables and their columns.	Schema sidebar shows tables with expandable column details	High	Sprint-1
End User	Error Handling	USN-5	As a user, I get meaningful error messages when my query cannot be processed.	Clear error messages displayed for invalid queries or API failures	High	Sprint-1
End User	Query History	USN-6	As a user, I can view my previous queries and their results.	History panel shows past queries with timestamps	Medium	Sprint-2
End User	Theme Toggle	USN-7	As a user, I can switch between dark and light themes.	Theme toggle button switches UI theme	Medium	Sprint-2
Admin	Database Seeding	USN-8	As an admin, I can seed the database with sample data for testing.	Seed script populates sample e-commerce data	High	Sprint-1

User Type	**Functional Req.**	**USN**	**User Story / Task**	**Acceptance Criteria**	**Priority**	**Release**
Developer	API Endpoints	USN-9	As a developer, I can access RESTful API endpoints for query processing and schema retrieval.	API docs available, endpoints return proper JSON responses	High	Sprint-1
End User	Sample Queries	USN-10	As a user, I can click on suggested sample queries to quickly test the system.	Clickable sample query buttons populate the query input	Medium	Sprint-2