

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

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| Date | 08 February 2026 |
| Team ID | LTVIP2026TMIDS81581 |
| Project Name | Intelligent SQL Querying with LLMs Using Gemini Pro |
| Maximum Marks | 4 Marks |

Functional Requirements:

Following are the functional requirements of the proposed solution.

| FR No. | Functional Requirement (Epic) | Sub Requirement (Story / Sub-Task) |
|--------|------------------------------------|--|
| FR-1 | User Registration & Authentication | Registration through form, Gmail login, LinkedIn login |
| FR-2 | User Confirmation | Email verification, OTP confirmation |
| FR-3 | Natural Language Query Input | User enters natural language question to generate SQL |
| FR-4 | LLM-based SQL Generation | Gemini Pro converts natural language into schema-aware SQL query |
| FR-5 | Query Validation & Security | SQL syntax validation, |
| FR-6 | Query Execution | Execute generated SQL query on connected database |
| FR-7 | Result Display & Explanation | Display query results and provide simple explanation |
| FR-8 | Query History Management | Store and retrieve previously executed queries |

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

| FR No. | Non-Functional Requirement | Description |
|--------|----------------------------|--|
| NFR-1 | Usability | User-friendly interface enabling non-technical users to interact easily. |
| NFR-2 | Security | Secure authentication, encrypted communication, SQL injection prevention. |
| NFR-3 | Reliability | Accurate SQL generation with minimal failure rate. |
| NFR-4 | Performance | Fast response time for query generation and execution. |
| NFR-5 | Availability | System accessible 24/7 with minimal downtime. |
| NFR-6 | Scalability | System capable of handling increasing number of users and large databases. |