**Project Design Phase**

**Solution Architecture**

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| Date | 27 June 2025 |
| Team ID | LTVIP2025TMID59561 |
| Project Name | HealthAI: Intelligent Healthcare Assistant Using IBM Granite |
| Maximum Marks | 4 Marks |

**Solution Architecture:**

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| **Component** | **Technology** | **Purpose** |
| **Frontend UI** | **Streamlit** | **Provides user interface for chat, predictions, treatment plans, and analytics** |
| **AI Integration** | **IBM Watson Granite 13B, Google Gemini** | **Enables natural language understanding, condition prediction, and treatment generation** |
| **Data Visualization** | **Plotly, Altair, Matplotlib** | **Renders heart rate, blood pressure, glucose trends, and symptom distribution** |
| **Backend** | **Python** | **Processes user inputs, communicates with AI, and serves predictions** |
| **Database** | **SQLite / PostgreSQL** | **Stores user inputs, predictions, and historical data** |
| **Authentication** | **Firebase Auth** | **Secures access and supports user sessions (if needed)** |
| **Environment Config** | **.env via dotenv** | **Manages API credentials securely** |
| **Logging & Monitoring** | **Streamlit logs** | **Tracks usage and debug information for performance tracking** |
| **Deployment Options** | **Streamlit Cloud** | **For public hosting or scalable cloud deployment** |

**Architecture Diagram:**

