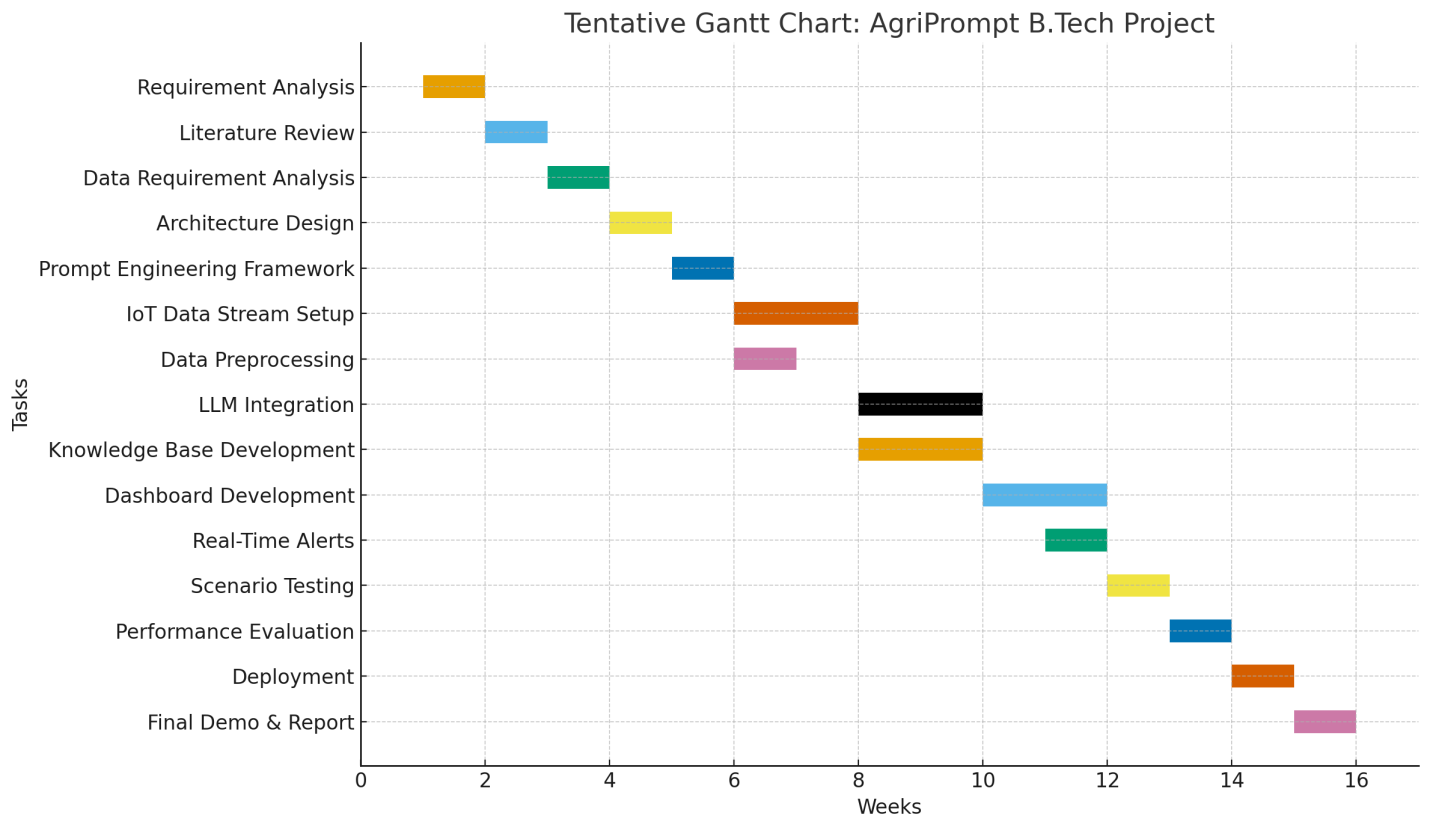
**AgriPrompt: Smart Farm Management Using Prompt-Engineered LLMs and IoT Data Streams\***

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| **Phase** | **Task** | **Description** | **Expected Output/Deliverable** |
| **1. Requirement Analysis** | Problem Understanding | Study farm management challenges (crop health, irrigation, pest control, yield prediction). | Problem definition document |
| Literature Review | Review LLM applications, IoT in agriculture, and prompt-engineering strategies. | Literature survey report |
| Data Requirement Analysis | Identify IoT sensor data needed (soil moisture, temperature, humidity, pest detection, etc.). | Data requirement specification |
| **2. System Design** | Architecture Design | Design system architecture integrating IoT data streams with LLM-based prompt engine. | Architecture diagram |
| Prompt Engineering Framework | Define structured prompts for farm advisory (irrigation alerts, fertilizer suggestions, disease detection). | Prompt templates |
| **3. Data Collection & Preprocessing** | IoT Data Stream Setup | Collect real-time farm sensor data (from APIs/simulated devices). | Data stream setup |
| Data Preprocessing | Clean, normalize, and structure IoT data for input into LLM. | Preprocessed dataset |
| **4. Model Development** | LLM Integration | Connect IoT data streams with LLM using APIs or fine-tuning. | Working prototype of prompt-driven LLM |
| Knowledge Base Development | Create domain knowledge base (crop cycles, fertilizer use, weather conditions). | Knowledge repository |
| **5. Implementation** | Dashboard Development | Build a user interface to display insights, alerts, and recommendations. | Web/Mobile dashboard |
| Real-Time Alerts | Implement real-time notifications for farmers (via WhatsApp/SMS/app). | Alert system |
| **6. Testing & Validation** | Scenario Testing | Test system on different farm scenarios (drought, pest attack, overwatering). | Test cases & results |
| Performance Evaluation | Evaluate accuracy of recommendations, response time, and IoT-LLM integration efficiency. | Evaluation metrics |
| **7. Deployment & Demonstration** | Deployment | Deploy solution on a local server/cloud with simulated IoT data. | Deployed prototype |
| Final Demo & Report | Demonstrate system functionality and prepare final documentation. | Final report & demo presentation |

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