**Project Design Phase-II**

**Technology Stack (Architecture & Stack)**

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| --- | --- |
| Date | 19 June 2025 |
| Team ID | LTVIP2025TMID31490 |
| Project Name | Health AI: Intelligent Health care Assistant Using IBM Granite |
| Maximum Marks |  |

**Table-1 : Components & Technologies:**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Component** | **Description** | **Technology** |
|  | User Interface | Users interact via web and mobile app | HTML, CSS, JavaScript / Angular Js / React Js etc. |
|  | Application Logic-1 | Handles request and integrates IBM Granite model | Python (transformers, torch) |
|  | Application Logic-2 | Converts speech input to text | IBM Watson Speech to Text |
|  | Application Logic-3 | AI assistant for health conversations | IBM Watson Assistant |
|  | Database | User records, symptoms history | IBM Watson Assistant |
|  | Cloud Database | Medical knowledge & assistant logs | IBM Cloudant |
|  | File Storage | User records, symptoms history | IBM Cloud Object Storage |
|  | External API-1 | Health alerts based on weather | IBM Weather API |
|  | External API-2 | Identity verification | Aadhar UIDAI API |
|  | Machine Learning Model | Generates answers to medical questions | IBM Granite 3.3-2B Instruct (via Hugging Face) |
|  | Infrastructure (Server / Cloud) | Local + Cloud deployment using containers | Docker, IBM Cloud Foundry, Kubernetes |

**Table-2: Application Characteristics:**

| **S.No** | **Characteristics** | **Description** | **Technology** |
| --- | --- | --- | --- |
|  | Open-Source Frameworks | Frontend and backend app dev | React.js, Flask |
|  | Security Implementations | Data encryption, IAM, token access | SHA-256, OAuth 2.0, IBM IAM |
|  | Scalable Architecture | Modular microservice-based LLM pipeline | Docker, Kubernetes |
|  | Availability | Auto-failover & multi-region cloud setup | IBM Load Balancer, Multi-Zone Clusters |
|  | Performance | Fast response from LLM + caching + API gateway | Redis, IBM API Gateway, Cloudflare CDN |