**Project Design Phase-II**

**Technology Stack (Architecture & Stack)**

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| --- | --- |
| Date | 15 October 2022 |
| Team ID | PNT2022TMID15129 |
| Project Name | SmartFarmer – IoT Enabled Smart Farming Application |
| Maximum Marks | 4 Marks |

**Technical Architecture:**

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table2

USER

LOGIN

APPLICATION

IOT DEVICES

IBM CLOUD

NODE RED

Enter Credentials

For Login, firebase is used

WIDGETS

It used to display

sensors data and

control other process

WEB UI

It used to store data

which is collected

from IoT devices

It consists of

various

sensors such as DHT11

sensor, soil moisture

It provides dashboard

to see

the devices performance,

data, requests etc

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

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Component** | **Description** | **Technology** |
| 1. | User Interface | Mobile app. In our application, were data are displayed using widgets like structure. Users interacts with widgets to additional info | MIT App Inventor |
| 2. | Application Logic-1 | Logic for a process in the application | Python |
| 3. | Application Logic-2 | Logic for a process in the application | IBM Watson STT service |
| 4. | Application Logic-3 | Logic for a process in the application | IBM Watson Assistant |
| 5. | Database | Data base type | Firebase is Nosql database |
| 6. | Cloud Database | Database Service on Cloud | Firebase, IBM Watson IoT Cloud Platform |
| 7. | File Storage | File storage requirements | IBM Block Storage or Other Storage Service or Local Filesystem |
| 8. | External API-1 | Purpose of the API is get to weather information | Open Weather API |
| 9. | External API-2 | Purpose of the API is to connect with firebase for login purpose | Firebase API |
| 10. | Infrastructure (Server / Cloud) | Application Deployment on Local System / Cloud Local Server Configuration:  Cloud Server Configuration : | Local, IBM Cloud, Firebase |
| 11. | DHT11 sensor, Soil Moisture sensor | It used to monitor the soil, temperature, humidity. |  |

**Table-2: Application Characteristics:**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Characteristics** | **Description** | **Technology** |
| 1. | Open-Source Frameworks | Node Red, MIT App Inventor, Arduino IDE  Node Red for connecting with application, MIT App Inventor for building app, Arduino is open source electronics platform to build hardware and software. | It is a software, which helps in connecting and building application. Node Red, MIT App Inventor, Arduino IDE. |
| 2. | Security Implementations | HTTPS Connections, X-Force Red IoT Testing | Encryptions, Secured Connection |
| 3. | Scalable Architecture | Architecture is scalable from 10 devices to 300 devices easily and account is also scalable upto thousand connections. For very high scalability we need to upgrade our cloud plan. | Firebase, IBM Cloud |
| 4. | Availability | Availability of our application is 24/7 because which use a cloud technology. Firebase will use commercially reasonable efforts to make Firebase available with a Monthly Uptime Percentage of at least 99.95% and distributed servers. | Firebase, IBM Cloud |
| 5. | Performance | No of requests is 2 requests per 20 seconds or 4 requests per 30 second and sometimes user request will be added with respective to the requests | MIT App Inventor, Node Red, Cloud |