**PROJECT DESIGN PHASE-II**
**Technology Stack (Architecture & Stack)**

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|---|---|
| Date | 15 October 2022 |
| Team ID | PNT2022TMID44288 |
| Project Name | Exploratory Analysis of Rainfall Data in India for Agriculture |
| Maximum Marks | 4 Marks |

## Components & Technologies:

| S.No | Component | Description | Technology |
|---|---|---|---|
| 1. | Web Application | Open application, logs into it | HTML, CSS, Flask, python |
| 2. | Registration | Enters the phone number and gets an OTP message to login | Python, Flask |
| 3. | Rainfall Prediction | Enters the month and year | Python, Flask |
| 4. | Database | Rainfall data set downloaded from the web | MySQL. |
| 5. | Cloud Database | Database Service on Cloud | IBM DB2, IBM Cloudant etc. |
| 6. | Data Pre-processing | Data is processed and missing values are omitted, so the data can be used to training the model | Pandas, NumPy, Matplotlib modules of python |
| 7. | Machine Learning Model | Random forest algorithm is used with decision trees to improve the accuracy of prediction | Sklearn, Seaborn |
| 8. | Result | This application shows the predicted rainfall data with the crop's suggestions | Python, Flask |
| 9. | Crops | This shows the list of crops and its details about it | HTML, CSS, Flask |

**Application Characteristics:**

| S. No | Characteristics | Description | Technology |
|-------|-----------------|-------------|------------|
| 1. | Open-Source Frameworks | Python, Flask | Python |
| 2. | Security Implementations | The personal details of the farmer are secured and protected | Encryption methods |
| 3. | Scalable Architecture | It can grow and adapt with ease. It is designed for scalability and flexibility that offers help to farmers | Python, Flask |
| 4. | Availability | The infrastructure of the system provides recoverability and protection from system failure | Flask |
| 5. | Performance | The application is developed in such a way to predict rainfall for multi user at a same time | Flask, Python |

# Technical Architecture: