PROJECT DESIGN PHASE-II

Technology Stack (Architecture & Stack)

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| Date | 17 October 2022 |
| TeamId | PNT2022TMID18172 |
| Project Name | Exploratory Analysis of Rainfall Data in India for Agriculture |
| Maximum marks | 4 Marks |

**Components & Technologies:**

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| **S.No** | **Component** | **Description** | **Technology** |
| 1. | Mobile | Downloads and installs the 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:**

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| **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:**

