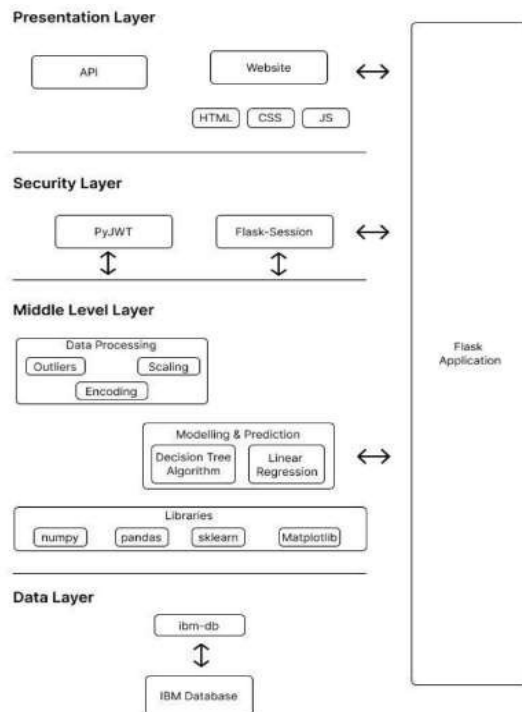


## Project Design Phase-II Technology Stack (Architecture & Stack)

|               |  |
|---------------|--|
| Date          | 16 October 2022  |
| Team ID       | PNT2022TMID18408   |
| Project Name  | Exploratory Analysis of Rainfall Data in India for Agriculture |
| Maximum Marks | 4 Marks  |

### Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



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

| S.No | Component              | Description   | Technology   |
|------|------------------------|---|--|
| 1.   | Website                | User interacts with the prediction model through website to predict the rainfall data | HTML, CSS, JavaScript  |
| 2.   | Cloud Database         | The model is provided with data from IBM cloud database                               | IBM Cloud DB, ibm_db(python package)                           |
| 3.   | API                    | Used to extend the service to other applications                                      | Flask Application  |
| 4.   | JWT & Sessions         | It is used for Handling JSON web tokens (signing, verifying, decoding)                | PyJWT, Flask-Sessions  |
| 5.   | Machine Learning Model | This model is developed to predict the rainfall using ML algorithms.                  | Sklearn, Algorithms - DT & MLR                                 |
| 6.   | Data processing        | Data is pre-processed and then used for prediction.                                   | Pandas, Numpy, Matplotlib                                      |
| 7.   | File Storage           | File storage requirements   | IBM Block Storage or Other Storage Service or Local Filesystem |

**Table-2: Application Characteristics:**

| S.No | Characteristics          | Description   | Technology                          |
|------|--------------------------|---|-------------------------------------|
| 1.   | Open-Source Frameworks   | Backend Framework, CSS Styling framework, Relational Database         | PyJWT, Flask, IBM Cloud DB          |
| 2.   | Security Implementations | Request authentication using JWT Tokens                               | HS-256, Encryptions, SSL Certs      |
| 3.   | Scalable Architecture    | Support for Multiple Sample prediction using Excel File               | Pandas, Numpy                       |
| 4.   | Availability             | Availability is increased by Distributed Servers in Cloud VPS         | IBM Cloud Hosting                   |
| 5.   | Performance              | The application is expected to handle multiple predictions per second | Load Balancers, Distributed Servers |

**References:**

<https://c4model.com/>

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