Project Design Phase-I
Solution Architecture

Date	15 November 2022
Team ID	Team-591644
Project Name	Machine Learning Approach For Predicting The Rainfall
Maximum Marks	4 Marks

Solution Architecture:

Data Collection Layer:

- **Weather Stations:** Gather real-time meteorological data.
- **Satellite Imagery:** Collect satellite data for broader coverage.
- **Historical Databases:** Retrieve past weather records.

Data Preprocessing:

- **Cleaning & Transformation:** Handle missing values, outliers, and format data for analysis.
- **Feature Engineering:** Extract relevant features like temperature, humidity, wind speed, etc.

Machine Learning Model Development:

- **Training and Validation:** Train models using historical data.
- **Model Selection:** Experiment with various algorithms like Random Forests, Neural Networks, etc.

Model Deployment:

- **Real-time Prediction:** Deploy the trained model to predict rainfall for specific regions and timeframes.

Monitoring and Feedback Loop:

- **Performance Monitoring:** Continuously assess model accuracy and performance.
- **Feedback Mechanism:** Incorporate new data to retrain and improve the model periodically.

User Interface (Optional):

- **Dashboard/Interface:** Provide a user-friendly platform to access predictions.

Scalable Infrastructure:

- **Cloud Services:** Utilize scalable cloud infrastructure to handle varying computational demands.

Solution Architecture Diagram: