Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	19 February 2026
Team ID	LTVIP2026TMIDS62229
Project Name	Exploratory Analysis of Rain Fall Data in India for Agriculture
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	**Functional Requirement (Epic)**	**Sub Requirement (Story / Sub-Task)**
FR-1	Weather Data Input	User enters MinTemp value
		User enters MaxTemp value
		User enters Rainfall value
		User enters WindGustSpeed value
		User enters Humidity3pm value
FR-2	Rainfall Prediction	System processes input using trained ML model
		System predicts Rain / No Rain
		System calculates probability percentage
FR-3	Data Preprocessing	System scales input using StandardScaler
		System validates numeric input values
FR-4	Model Integration	Load trained model (.pkl file)
		Load saved scaler (.pkl file)
		Generate prediction output
FR-5	Result Display	Display prediction result on web page
		Display probability percentage
FR-6	Error Handling	Display error message for invalid inputs
		Handle missing or empty fields
FR-7	Web Application Interface	Home page loads successfully
		Predict button triggers model prediction
FR-8	Deployment	Application runs on local server (Flask)

Non-functional Requirements:

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FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The application shall provide a simple, clean, and user-friendly web interface allowing users to easily enter weather parameters and receive prediction results without technical knowledge.
NFR-2	Security	The system shall securely handle user inputs and prevent malicious data entry. Model files (.pkl) must be stored securely and not exposed publicly.
NFR-3	Reliability	The application shall consistently provide accurate predictions based on the trained machine learning model without crashes or unexpected failures.
NFR-4	Performance	The system shall generate rainfall prediction results within 2 seconds after user submission.
NFR-5	Availability	The application shall be accessible through a web browser whenever the server is running (local or deployed server).
NFR-6	Scalability	The system shall support future enhancements such as additional weather features, real-time API integration, or deployment to cloud platforms without major redesign.