Project Design Phase-II Data Flow Diagram & User Stories

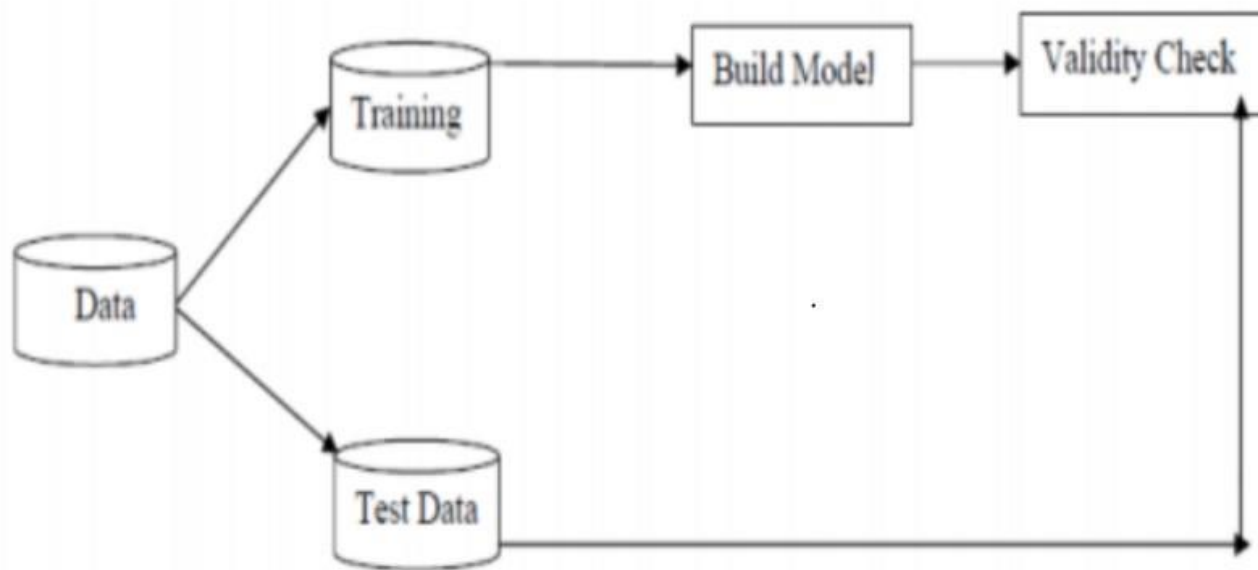| Date	23-10-2023
Team ID	592670
Project Name	Machine Learning Approach For Predicting The Rainfall
Maximum Marks	4 Marks

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.
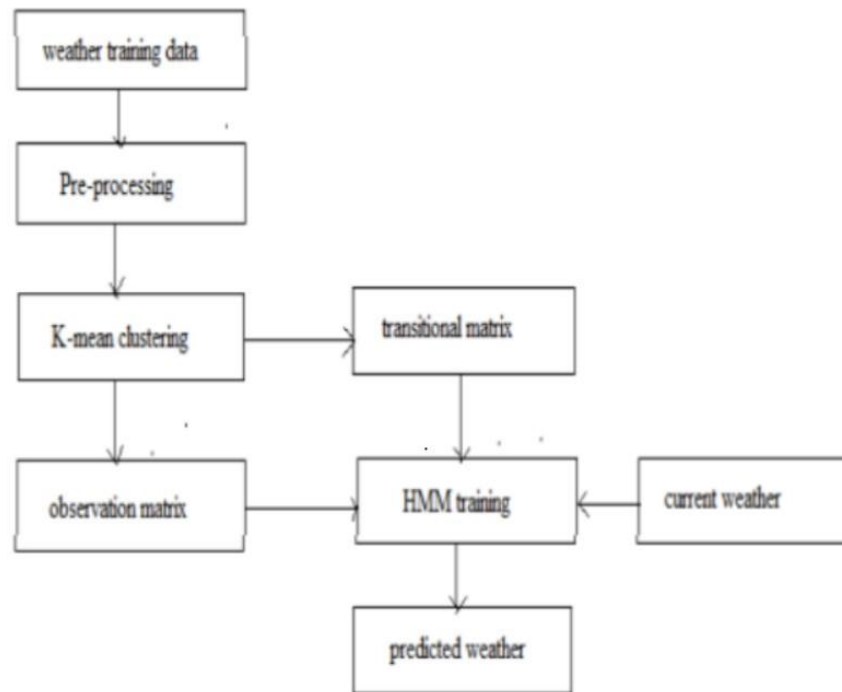
LEVEL - 0
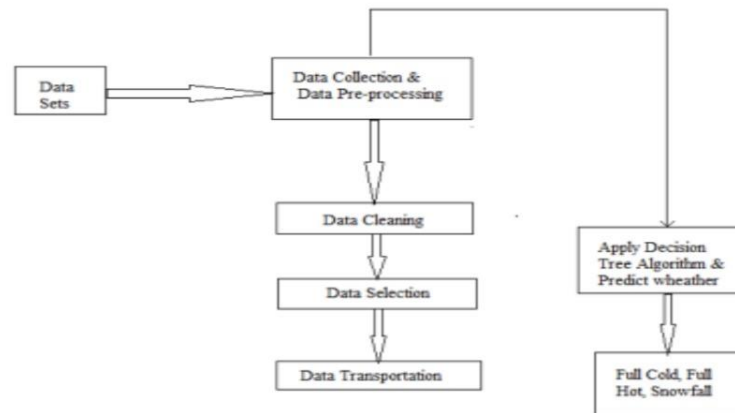
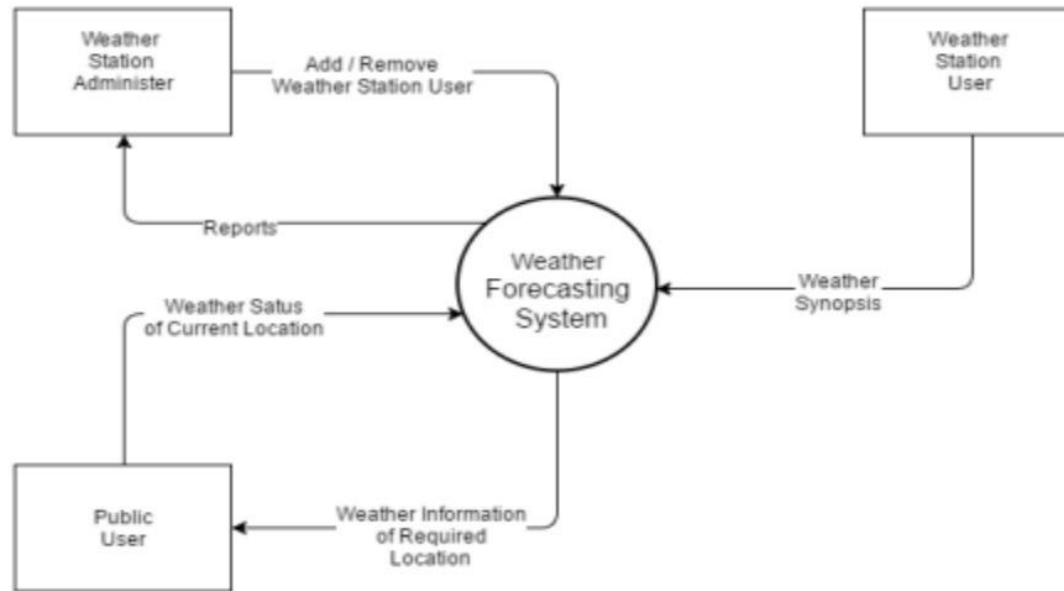**3.5.1 DATAFLOW DIAGRAM 1**

LEVEL - 1

3.5.2 DATAFLOW DIAGRAM 2

LEVEL - 2

```
┌──────────────────────┐
│ weather training data │
└──────────────────────┘
            │
            ▼
┌──────────────────────┐
│    Pre-processing     │
└──────────────────────┘
            │
            ▼
┌──────────────────────┐      ┌──────────────────────┐
│   K-mean clustering   │─────▶│  transitional matrix  │
└──────────────────────┘      └──────────────────────┘
            │                            │
            ▼                            ▼
┌──────────────────────┐      ┌──────────────────────┐      ┌──────────────────────┐
│  observation matrix   │─────▶│     HMM training      │◀─────│    current weather    │
└──────────────────────┘      └──────────────────────┘      └──────────────────────┘
                                         │
                                         ▼
                               ┌──────────────────────┐
                               │   predicted weather   │
                               └──────────────────────┘
```

3.5.3 DATAFLOW DIAGRAM 3

LEVEL – 3

3.5.4 DATAFLOW DIAGRAM 4

User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Farmer	daily rainfall predictions for the farmer's specific geographic location.	USN-1	I want to receive daily rainfall predictions for my area so that I can make informed decisions about when to plant or harvest my crops.	user-friendly interface that allows the farmer to input their location.	Low	Sprint 1
Flood management agencies	real-time rainfall predictions	USN-2	I want to receive real-time rainfall predictions to monitor and prepare for potential flooding events.	ability to track rainfall in real-time	High	Sprint 1
Water resource manager	access to historical rainfall data	USN-3	I want to access historical rainfall data and predictions to plan the distribution of water resources effectively.	provide trend analysis and visualizations of historical rainfall patterns.	High	Sprint 1
Meteorologist	system should offer advanced modelling tools	USN-4	I want to have access to advanced modeling tools to improve the accuracy of rainfall predictions and provide more reliable forecasts to the public.	system should provide data visualization capabilities	Medium	Sprint 2
Hiker	system should provide weekend rainfall predictions	USN-5	I want to know the expected rainfall for the upcoming weekend in a specific location so that I can plan my outdoor activities accordingly.	Rainfall predictions should include the expected rainfall amount, the probability of	Low	Sprint 2

				precipitation, and the timing of the rainfall		
Researcher	access to historical rainfall data and advanced modelling tools.	USN-6	I want to access historical rainfall data and prediction models to conduct climate change and weather pattern studies.	provide visualizations and statistical analysis tools for studying climate change and weather patterns.	medium	Sprint 3