

**MINI PROJECT TITLE:**

Weather Station Data Network Using Data Structures

**AIM:**

To design and implement a Weather Station Data Network using Graph, Queue, Stack, Tree, Linked List, and Hash Table for efficient data management and processing.

**OBJECTIVES:**

- Represent weather stations using Graph
- Process sensor data using Queue
- Implement undo operations using Stack
- Maintain hierarchy using Tree
- Manage sensors using Linked List
- Enable fast lookup using Hash Table

**DATA STRUCTURES USED:**

Graph – Station network connectivity  
Queue – Sensor data processing (FIFO)  
Stack – Undo operations (LIFO)  
Tree – Administrative hierarchy  
Linked List – Sensor management  
Hash Table – Location ID mapping

**ALGORITHMS:**

1. Add Station using Hash Table
2. Connect Stations using Graph
3. Enqueue Sensor Data
4. Dequeue Sensor Data
5. Undo Operation using Stack
6. Add Sensor using Linked List
7. Display Hierarchy using Tree Traversal

**APPLICATIONS:**

- Weather monitoring systems
- Meteorological departments
- Disaster management systems

**CONCLUSION:**

This project demonstrates real-world implementation of data structures for efficient weather data organization, processing, and retrieval.