

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.