Data Lifecycle Scenario: Climate Data Monitoring

You are given a short scenario to analyze.

Step 1: Individual work Draw the lifecycle diagram, indicating:

- the sources of data,
- potential issues with quality, trustworthiness, or usability,
- the expected type(s) of data (structured / semi-structured / unstructured)

Step 2: Group Discussion: Compare your individual diagrams and notes with group members. Reflect on each stage of the lifecycle with your team and answer the guiding questions provided, completing the **lifecycle-step boxes** together. Prepare a brief summary (keywords or 1–2 sentences) to present.

Time guideline: 5 minutes individually, 10 minutes in groups.

Scenario Description: Climate Data Monitoring

A citizen-science network and weather stations collect data on temperature, rainfall, wind speed, cloud cover, and other environmental factors. Scientists analyze these data streams to detect trends, understand climate change, predict extreme weather events, and inform policy decisions. Data is collected at different resolutions and frequencies, often in multiple formats (e.g., CSV, images, sensor logs). Data quality may vary due to sensor errors, missing values, or calibration issues. Researchers need to combine heterogeneous sources, detect anomalies, and ensure reliable long-term monitoring while providing accessible reports for policymakers and the public.

Scenario Analysis (individual work): Draw the lifecycle diagram, indicating:

- Source(s) of the data (human/machine, internal/external)
- Data type (structured / semi-structured / unstructured)
- Any obvious quality, reliability, or trustworthiness issues

Lifecycle diagram

Data Lifecycle Reflection (group work): For each stage, reflect on what it could involve in this scenario. Consider:

- How should erroneous or missing sensor readings be handled?
- How can data from different formats and resolutions be combined?
- What types of analysis help detect long-term climate trends?
- How can results be communicated effectively to the public or policymakers?

Collect

Clean / Preprocess

Store

Analyze

Communicate / Report