Assignment 1 — Problem & Background

What & Why

This assignment helps you identify a **real, researchable problem in Green Computing**. You will ground your problem in existing work, show why it matters, and prepare a clear, testable problem statement. The output is a short background study plus a one-sentence problem that sets up your methods in Assignment 2.

Do This

- Skim the 12-domain tables; star 2–3 domains that interest you.
- Pick 1–2 papers in each starred domain with clear data/methods.
- Evidence your problem using **2–3 real sources** (papers/reports).
- Write a **precise, one-sentence problem statement** (see template).
- Ensure the problem is **real, measurable, relevant, and feasible in 2–3 weeks**.
- Run the Guidance prompt (below) to refine and test your problem choice.

Tiny Example

Domain: Green Data Center Technology, Paper #3 — *GreenCloud Architecture*
Problem: Static server workloads waste energy.
Statement: *Can predictive VM migration reduce cooling costs in mid-size data centers?*

Pick Your Lane

1. Open the **12-domain tables** document.
2. Skim all domains; star 2–3 that match your skills or interests.
3. Within each, note 1–2 papers with clear methods/data.
4. Draft a **one-sentence problem** (template: "In [context], [X] causes [Y]. Can [Z] help?").
5. Run the **Guidance prompt** on it.
6. If it fails badly (too vague, not measurable, not feasible), switch to another domain/paper.
   ☞ Don't reproduce the tables here—open the file directly.

Prompts (run these before submitting)

A1 Guidance Prompt (verbatim from pack)

Role: Expert research mentor with internet access.
Objective: Help define a valid, real-world Green Computing research problem, anchor it in existing literature, and outline a feasible plan.
Steps:

1. Apply the litmus test for a valid problem: real-world based, measurable, relevant to Green Computing, feasible in 2–3 weeks.
2. Explore 12 pre-vetted Green Computing subdomains (e.g., Green Data Centers, Green IoT, Smart Grids). For each candidate idea, provide:
   - Problem and its real-world importance.
   - Gap in existing work (with 2–3 real citations).
   - Tools/datasets needed.
3. Recommend the best option for scope and novelty.
   Rules:

- Use only verifiable, real references.
- Encourage measurable, reproducible outcomes.

A1 Evaluation Prompt (verbatim from pack)

Role: Research evaluator with unified rubric.
Input: A1 draft (background, problem statement, methodology outline).
Evaluation Criteria:

- Problem clarity & importance (20%)
- Motivation strength (20%)
- Novelty & gap identification (25%)
- Related work accuracy (20%)
- Method outline completeness (15%)
  Steps:

1. Score each criterion.
2. Flag unverifiable claims or weak citations.
3. Suggest 2–3 specific improvements.
   Mandatory Check: External search for novelty validation.

Quick Checklist (mirror of Evaluation prompt)

- Is the problem clear, specific, and important?
- Did I explain why it matters (motivation)?
- Did I show what's missing in past work (novelty/gap)?
- Did I cite **2–3 real papers/reports** accurately?
- Did I list 3–5 tools/methods by name?
- Is my statement feasible to explore in 2–3 weeks?

What to Submit

- **Filename pattern:** `GC_A1_GroupX.pdf`
- **Deliverables:**
  - 1–2 page PDF including:
    - Background study (2–3 papers, short summary)
    - Real-life relevance (4–6 sentences)
    - One-sentence formal problem statement
    - 3–5 method/tool names

        - (Optional) group roles
- **Format:** PDF (preferred) or DOCX.
- **Honesty note:** Use only real, verifiable sources. If you insert a hypothetical example, clearly mark it as **Hypothetical**.