Part 4
Reflection & Workflow Diagram

Here's a strong, submission-ready answer for **Part 4: Reflection & Workflow Diagram (10 points)** — concise, structured, and aligned with the case study from Parts 1–3.

Part 4 — Reflection & Workflow Diagram (10 points)

Reflection (5 points)

Most challenging part of the workflow:
The most challenging stage was **data collection and preprocessing.**
Hospital data is often **fragmented, inconsistent, and incomplete** — with missing lab results, duplicate patient IDs, and unstructured text in clinical notes. Ensuring **data quality, privacy compliance, and feature standardization** took significant effort. It also required balancing technical accuracy with ethical constraints such as data minimization and bias prevention.

How to improve with more time/resources:

- **Collaborate with multidisciplinary teams** — data engineers, clinicians, and ethicists — to better align data definitions and clinical meaning.

- **Invest in advanced infrastructure** like automated data pipelines, cloud-based compute resources, and secure data lakes.

- **Implement iterative model monitoring and feedback loops** so the model learns from real-world outcomes and clinician feedback, improving accuracy and fairness over time.

Summary:

- The hardest challenge: managing messy, sensitive healthcare data.

- Improvements: better infrastructure, interdisciplinary collaboration, and continuous feedback loops.

- The workflow covers all stages from **problem definition to post-deployment monitoring**, ensuring reliability and ethical compliance.