Objective

Imagine you have implemented three types of recommender systems (RS) using the same dataset:

1. Random RS
2. Popular RS
3. Collaborative filtering RS
4. (Optional) Content-based RS

Your task is to analyse how these recommender systems are expected to perform across different evaluation metrics:

- Accuracy
- Coverage
- Personalization
- Diversity

While the actual performance of a recommender system depends on the specific dataset, we can generally anticipate certain trends based on their underlying mechanism. The goal of this assignment is to reason about how each type of RS is expected to perform in a broad, general setting.

Instructions

- Write a report where you propose a performance ranking for each metric. For example, for accuracy, I expect that the random RS will perform best, followed by the popular RS, with collaborative filtering performing worst.
- Justify your rankings based on the characteristics of each recommender system. Your grade will be based on the strength and clarity of your arguments.

Submission:

- Submit your report as a PFD file.
- Name the file using the following format:
  - **A3_Lastname_Firstname.pdf**. For example: A3_Smith_John.pdf

Grading criteria

Foundational tasks:

- Accuracy: Weight 15%
- Coverage: Weight 25%
- Personalization: Weight 25%
- Diversity: Weight 25%
  - Provides a logical ranking of the three recommender systems for each metric.
  - Justifies the expected performance of each system with clear reasoning.
  - Explains key factors influencing each metric and the trade-offs involved.

Advanced tasks:

- Content-based RS (Bonus): Weight 10%
  - Integrates content-based RS into the analysis.
  - Justifies its expected performance across all four metrics.
  - Compares its behaviour to the original three.