

# Take-Home Assignment: Bank Statement Reconciliation

## Objective

Bank statement reconciliation is the process of comparing a company's bank statement with its general ledger (GL) to ensure that all transactions are accounted for and no discrepancies exist. The goal of this assignment is to develop a program that performs reconciliation and categorization of bank transactions.

## Task Overview

You will build an application that:

1. Identifies discrepancies between a bank statement and a general ledger report.
2. Categorizes unmatched bank transactions using a provided chart of accounts.

## Input Files

- **Bank Statement (CSV)**
    - Columns: `Date`, `Description`, `Amount`
  - **General Ledger Report (CSV)**
    - Columns: `Distribution account`, `Transaction date`, `Transaction type`, `Line description`, `Category/Product/Service amount`
  - **Chart of Accounts (CSV) (for Part 2)**
    - Columns: `Account Name`, `Type`, `Description`
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## Part 1: Transaction Reconciliation

- Read both the **bank statement** and **general ledger report**
  - Identify transactions that exist in one source but not the other
  - Output:
    - Print out a list of:
      - Transactions missing from the bank statement
      - Transactions missing from the general ledger
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## Part 2: Transaction Categorization

Each bank transaction that is not already matched to a general ledger entry needs to be booked into the correct account.

- Using the **Chart of Accounts**, determine which account a transaction should be booked to, in the given **bank statement**
- Categorization should be based primarily on the **transaction description** and **amount**.
  - Since descriptions may vary or be inconsistent (e.g., “Uber Eats #123” vs. “UBER EATS”), your solution should be able to reason about the intent or nature of the transaction, not just perform exact string matches.
- For transactions that can't be confidently matched to an account, suggest the most likely account and optionally provide a short justification.
- Output:
  - Print out the list of unmatched transactions with your account suggestion

*Hint: This part of the exercise is designed to test your ability to extract meaning from natural language descriptions — your solution doesn't need to be perfect, but it should show your approach to handling ambiguity and variability in real-world financial data.*

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## Deliverables

- A Python script or application that executes the reconciliation and categorization, given the input files. You may use any libraries that you like, and send the solution in a compressed zip file
  - A zip can also include a README with the following:
    - Clear instructions on how to run the application
    - Any assumptions made
    - The approach taken, any high-level design decisions made - a short write-up should suffice
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## Bonus (Optional)

- Implement a simple UI or CLI interface for interaction.
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## Evaluation Criteria

- **Correctness**: Does the program correctly identify discrepancies
- **Code quality**: Is the code clean, well-structured, and documented

- **Efficiency:** Can the solution perform well for large datasets
- **Extensibility:** Can it be modified to handle additional data formats (eg. excel, API, db etc)