

## Cosequential Processing: a Ledger Program

**Last Time :** Indexing, Introduction to Cosequential Processing (Match and Merge).

**Today :** Cosequential Processing: A General Ledger Program.

**Reference:** Folk, Zoellic and Riccardi, Section 8.2.

### Cosequential Processing - Application to a General Ledger Program

Ledger = A book containing accounts to which debits and credits are posted from books of original entry.

Problem: design a general ledger posting program as part of an accounting system.

Two files are involved in this process:

**Master File:** ledger file

- monthly summary of account balance for each of the book keeping accounts.

**Transaction File:** journal file

- contains the monthly transactions to be posted to the ledger.

Once the journal file is complete for a given month, the journal must be **posted** to the ledger.

**Posting** involves associating each transaction with its account in the ledger.

**Sample Ledger Fragment**

Account Number	Account Title	Jan	Feb	Mar	Apr
101	checking account #1	1032.00	2114.00	5219.00	
102	checking account #2	543.00	3094.17	1321.20	
510	auto expense	195.00	307.00	501.00	
540	office expense	57.00	105.25	138.37	
550	rent	500.00	1000.00	1500.00	
⋮	⋮	⋮	⋮	⋮	⋮

**Sample Journal Entry**

Account Number	Check Number	Date	Description	Debit/Credit
101	1271	April 2, 01	Auto expense	- 79.00
510	1271	April 2, 01	Tune-up	79.00
101	1272	April 3, 01	Rent	- 500.00
550	1272	April 3, 01	Rent for April	500.00
102	670	April 4, 01	Office expense	- 32.78
540	670	April 4, 01	Printer cartridge	32.00
101	1273	April 5, 01	Auto expense	- 31.00
510	1273	April 5, 01	Oil change	31.83
⋮	⋮	⋮	⋮	⋮

### Sample Ledger Printout

```
101 Checking account #1
    1271    | April 2, 01      | Auto expense      - 79.00
    1272    | April 3, 01      | Rent              - 500.00
    1273    | April 5, 01      | Auto expense      - 31.00
           Prev. Bal.: 5,219.00      New Bal.: 4,609.00
```

102 Checking account #2

⋮

510 Auto expense

⋮

540 Office expense

⋮

550 Rent

⋮

How to implement the Posting Process?

- Use account number as a **key** to relate journal transactions to ledger records.
- Sort the journal file.
- Process ledger and sorted journal **co-sequentially**.

Tasks to be performed:

- Update ledger file with the current balance for each account.
- Produce printout as in the example.

From the point of view of ledger account :

    Merging (unmatched accounts go to printout)

From the point of view of journal account:

    Matching (unmatched accounts in journal constitute an error)

The posting method is a combined merging/matching.

**Algorithm:**

Item(1): always stores the current master record

Item(2): always stores the current transactions record

- Read first master record
- Print title line for first account
- Read first transactions record

While (there are more masters or there are more transactions) {

  if item(1) < item(2) then {

    Finish this master record:

- Print account balances, update master record
- Read next master record
- If read successful, then print title line for new account

  }

  if item(1) = item(2) {

    Transaction matches master:

- Add transaction amount to the account balance for new month
- Print description of transaction
- Read next transaction record

  }

  if item(1) > item(2) {

    Transaction with no master:

- Print error message
- Read next transaction record

  }

}