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
    }
}
```