**FS Investments - Pseudocode for DataDeveloper Challenge**

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Having been engaged in roles of ‘Enterprise Architect’ and ‘Chief Engineer’ the last couple of years, I haven’t done a lot of direct coding as I have been focused on infrastructure. I’ve worked in python, Java Script, K-Shell, PowerShell and SSIS, but my syntax recall is not current. So I’ve decided to do this exercise as “Pseudocode”. I most recently used this method at Comcast Spotlight Operational Reporting group. After review of the business requirements with the LOB, I provided guidance to the BI developer and designed the “data flow” to complete the requirement. This allowed me focus on the other business requirement which was to provide an additional server for dimensional cube builds. Combining this requirement with the audit issue of limited disaster recovery, I proposed to add AlwaysOn database replication to the 20TB data warehouse and utilize the read-only replica for an additional cube process.

Looking at the input file, I first used the SQL Server import wizard to pull the data into a database. Depending on how this data is obtained and what is the source, I might consider “normalizing” the tables: creating a “Transaction” table, a “Sales\_rep” table and an “Investor” table. This would allow additional attributes for each entity.

For this exercise, I simply put into a single table, but added a calculated field for (TXN\_SHARES \* TXN\_PRICE).

CREATE TABLE [dbo].[Data](

[TXN\_DATE] [date] NOT NULL,

[TXN\_TYPE] [nvarchar](50) NOT NULL,

[TXN\_SHARES] [float] NOT NULL,

[TXN\_PRICE] [money] NOT NULL,

[FUND] [nvarchar](max) NOT NULL,

[INVESTOR] [nvarchar](max) NOT NULL,

[SALES\_REP] [nvarchar](50) NOT NULL,

[TXN\_DOLLARS] AS ([TXN\_SHARES]\*[TXN\_PRICE]) PERSISTED

) ON [PRIMARY] TEXTIMAGE\_ON [PRIMARY]

The Pseudo coding for the reporting is below:

Import CSV file

#Initialize

SALES\_REP\_list = SALES\_REP.sort.unique

FUND\_list = FUND.sort.unique

INVESTOR\_list = INVESTOR.sort.unique

#calculations

Loop foreach CSVrow

#Assets under management

If TXN\_TYPE is BUY, ADD (TXN\_DOLLARS) to ${SALES\_REP}\_SUMMARY

If TXN\_TYPE is SELL, SUBTRACT (TXN\_DOLLARS) from ${SALES\_REP}\_SUMMARY

#Investor Profit

If TXN\_TYPE is BUY, ADD (TXN\_DOLLARS) to ${INVESTOR}\_${FUND}\_PROFIT

If TXN\_TYPE is SELL, SUBTRACT (TXN\_DOLLARS) from ${INVESTOR}\_${FUND}\_PROFIT

Endloop

#Generate reports

#Assets under management by Sales\_rep

Loop for EACH SALES\_REP\_LIST

PRINT “Asets under management by” ${SALES\_REP\_LIST} ${SALES\_REP}\_SUMMARY

End loop

#Investor Profit

Loop for EACH ${INVESTOR\_LIST}

PRINT “Investor Profit for” ${INVESTOR}\_${FUND}\_PROFIT

End loop

#Sales Summary

INPUT ‘AS\_OF\_DATE’

LOOP foreach SALES\_REP\_list

#Month-to-date

Select SALES-REP, SUM(TXN\_DOLLARS)

Where SALES\_REP=$(SALES\_REP\_list) and TXN\_TYPE=’SELL’ and TXN\_DATE in (SELECT DATEPART(QUARTER, $INPUT\_DATE)

PRINT $SALES\_REP month-to-date, SUM(TXN\_DOLLARS)

#Year-to-date

Select SUM(TXN\_DOLLARS)

Where SALES\_REP=$(SALES\_REP\_list) and TXN\_TYPE=’SELL’ and TXN\_in ( SELECT DATEPART(YEAR, $INPUT\_DATE))

PRINT $SALES\_REP year-to-date, SUM(TXN\_DOLLARS)

#Quarter-to-date

Select (TXN\_Shares \* TXN\_Price)

Where SALES\_REP=$(SALES\_REP\_list) and TXN\_TYPE=’SELL’ and TXN\_DATE in (SELECT DATEPART(QUARTER, $INPUT\_DATE)

PRINT $SALES\_REP Quarter-to-date, SUM(TXN\_DOLLARS)

#Inception-to-date

Select SALES-REP, SUM(TXN\_DOLLARS)

Where SALES\_REP=$(SALES\_REP\_list) and TXN\_TYPE=’SELL’ and TXN\_DATE <= $INPUT\_DATE

PRINT $SALES\_REP Inception-to-date, SUM(TXN\_DOLLARS)

EndLoop

#Break Report

Select \* from Data

Where [TXN\_SHARES] is less than zero

Or [TXN\_PRICE] is less than zero

PRINT

Challenges:

* Newlines within fields
* Date or Datetime conversions
* Created computed column for total $$ - defaults to float
* How to count BUY & SELL?
* Zero for some Investors & funds
* Not all funds SOLD – no net profit to calculate

Questions:

* Is “John Doe, Jane Doe JTOWROS” and “John Doe & Assoc. A Professional Corporation” to same corporation? ANSWER - Assume different string, different entity
* Sales Summary – is amount calculated on funds SOLD ONLY or is BUY’s included in “net” summary?

Testing

Manual testing with limited data in spreadsheets. Smoke test, negative testing, obscure data

Maintainability

After initial functionality testing, add edit checks, error output identifying section of failure, security

Only one loop for calculations – should scale