Case Studies for the MCA Training 2015

Problem Statement: *SECURITY MASTER SOLUTION FOR A FUND*

CREATE A WEB-BASED SYSTEM TO DISPLAY AND SAVE THE SECURITY INFORMATION FOR A HEDGE FUND.

Security Master is a Repository of all securities that a fund is interested in buying. It maintains data of security fields necessary for various purposes which can be Identifiers, Terms and Conditions, Schedules, Reference data, etc.

Security data is needed for multiple purposes:

–Trading

–Risk Management

–Accounting

–Corporate Actions

A solution to this from programming perspective would ask for the following:

1. A database system to store all the relevant data.
2. A system (business layer) that can interact with database to commit and retrieve data from the database as and when required.
3. An analysis of different Security types and various security fields that are required to service the different requirements for the funds.
4. A C# Process to load a CSV / Excel File
5. A Windows Service based File watcher to pick and load the files.
6. A nice Web User Interface to assist users to create and update security type information.
7. GUI to add securities to the security types created in the above process.

Security Types for the exercise:

1) Equities:

Attribute Name	Tab Name
Security Name	Security Summary
Security Description	Security Summary
Has Position	Security Summary
Is Active	Security Summary
Round Lot Size	Security Summary
Bloomberg Unique Name	Security Summary
CUSIP	Security Identifier
ISIN	Security Identifier
SEDOL	Security Identifier
Bloomberg Ticker	Security Identifier
Bloomberg Unique ID	Security Identifier
Bloomberg Global ID	Security Identifier
Bloomberg Ticker and Exchange	Security Identifier
Is ADR	Security Details
ADR Underlying Ticker	Security Details
ADR Underlying Currency	Security Details
Shares Per ADR	Security Details
IPO Date	Security Details
Price Currency	Security Details
Settle Days	Security Details
Shares Outstanding	Security Details
Voting Rights Per Share	Security Details
20 Day Average Volume	Risk
Beta	Risk
Short Interest	Risk
YTD Return	Risk
90 Day Price Volatility	Risk
Form PF Asset Class	Regulatory Details
Form PF Country	Regulatory Details
Form PF Credit Rating	Regulatory

Attribute Name	Tab Name
	Details
Form PF Currency	Regulatory Details
Form PF Instrument	Regulatory Details
Form PF Liquidity Profile	Regulatory Details
Form PF Maturity	Regulatory Details
Form PF NAICS Code	Regulatory Details
Form PF Region	Regulatory Details
Form PF Sector	Regulatory Details
Form PF Sub Asset Class	Regulatory Details
Issue Country	Reference Data
Exchange	Reference Data
Issuer	Reference Data
Issue Currency	Reference Data
Trading Currency	Reference Data
Bloomberg Industry Sub Group	Reference Data
Bloomberg Industry Group	Reference Data
Bloomberg Industry Sector	Reference Data
Country of Incorporation	Reference Data
Risk Currency	Reference Data
Open Price	Pricing Details
Close Price	Pricing Details
Volume	Pricing Details
Last Price	Pricing Details
Ask Price	Pricing Details
Bid Price	Pricing Details
PE Ratio	Pricing Details
Declared Date	Dividend History
Ex Date	Dividend History
Record Date	Dividend History
Pay Date	Dividend History
Amount	Dividend History
Frequency	Dividend History
Dividend Type	Dividend History

2) Corporate Bond:

Attribute Name	Tab Name
Security Description	Security Summary
Security Name	Security Summary

Asset Type	Security Summary
Investment Type	Security Summary
Trading Factor	Security Summary
Pricing Factor	Security Summary
ISIN	Security Identifier
Bloomberg Ticker	Security Identifier
Bloomberg Unique ID	Security Identifier
CUSIP	Security Identifier
SEDOL	Security Identifier
First Coupon Date	Security Details
Coupon Cap	Security Details
Coupon Floor	Security Details
Coupon Frequency	Security Details
Coupon Rate	Security Details
Coupon Type	Security Details
Float Spread	Security Details
Is Callable	Security Details
Is Fix to Float	Security Details
Is Putable	Security Details
Issue Date	Security Details
Last Reset Date	Security Details
Maturity Date	Security Details
Maximum Call Notice Days	Security Details
Maximum Put Notice Days	Security Details
Penultimate Coupon Date	Security Details
Reset Frequency	Security Details
Has Position	Security Details
Duration	Risk
Volatility 30D	Risk
Volatility 90D	Risk
Convexity	Risk
Average Volume 30D	Risk
Form PF Asset Class	Regulatory Details
Form PF Country	Regulatory Details
Form PF Credit Rating	Regulatory Details
Form PF Currency	Regulatory Details
Form PF Instrument	Regulatory Details
Form PF Liquidity Profile	Regulatory Details
Form PF Maturity	Regulatory Details
Form PF NAICS Code	Regulatory Details
Form PF Region	Regulatory Details
Form PF Sector	Regulatory Details
Form PF Sub Asset Class	Regulatory Details
Bloomberg Industry Group	Reference Data

Bloomberg Industry Sub Group	Reference Data
Bloomberg Sector	Reference Data
Issue Country	Reference Data
Issue Currency	Reference Data
Issuer	Reference Data
Risk Currency	Reference Data
Put Date	Put Schedule
Put Price	Put Schedule
Ask Price	Pricing and Analytics
High Price	Pricing and Analytics
Low Price	Pricing and Analytics
Open Price	Pricing and Analytics
Volume	Pricing and Analytics
Ask Price	Pricing and Analytics
Bid Price	Pricing and Analytics
Bid Price	Pricing and Analytics
Last Price	Pricing and Analytics
Call Date	Call Schedule
Call Price	Call Schedule

Steps to follow:

Step 1 (SQL Server):

1. Create a **DATABASE** to store information about the security types.
2. Create Tables with columns mentioned above for security types. Can add more **Tables** on need basis. Security tables will have a unique column Security ID to uniquely identify the security
3. Create other Tables that are required for the exercise.
4. Create Stored Procedures to create securities, update securities, delete securities

Step 2 (C#):

- Develop a SQL Data Access Layer to save and retrieve security type and security information in tables. It will have all the methods that interact with data and return any type of security type information.

Step 3 (C#):

- Create a C# library to load the securities from a CSV/Excel File for the above security types.
- Based on Security ID, the securities will be created/ updated in the database.

Step 4 (Windows Service):

- Create a File Watcher process to pick the above files as they are dropped into a Folder.
- The file should be identified based on File Names (File name should relate to Security Type names) and loaded automatically into the tables.

Step 5 (UI):

- Create a Web Application to interact with the Data Layer built in above steps.
- User should be able to create new securities, modify securities and delete securities from Front End.
- UI should not be Form Based.

Step 6 (Review):

- Review of Case Study post completion.