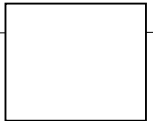# Sapient Hiring Exercise – Interviewer Guide

Name: _____   Date: _____

Start Time: _____   City: _____

End Time: _____

Instructions

- Duration of this exercise is 150 minutes. Please manage your time accordingly. There isn't any stipulated duration; only a guidance. However, sooner you complete the exercise, more marks you will get. Please work accordingly
- Make any necessary assumption, and clearly state the assumptions made.
- Do not seek any help – online or through any other source.

Expectations

- Write the compiling code using your choice of IDE.
- Wherever necessary, provide Unit Test Cases using JUNIT (if you're not conversant with JUNIT, just list down unit test cases)

Problem Statement

Sapient has won the contract to implement processing fee calculator for a major investment bank (hence forth referred as client). Client receives transactions from various external sources. These transactions are received in a pre-configured format, for example, CSV, EXCEL, XML or a simple pipe delimited format text file placed at a file location. The client needs to calculate the processing free for the transaction and generate a report which can be sent for invoicing.

Objective

The objective of the system is:
- To read the transactions into the system. The various transaction attributes are listed below.
- To execute the processing rules (mentioned below) over input transactions
- To provide API to get the summary report in a particular format (format mentioned below)

Transaction Attributes:

Attribute Name	Attribute Description
External Transaction Id	Unique Identifier
Client Id	Unique Id for each client
Security Id	Unique Id for the security for example RELIND for reliance industries
Transaction Type	Buy, Sell, Deposit, Withdraw
Transaction Date	Date in MM/dd/yyyy
Market Value	The current market value of this transaction
Priority Flag	Value Y,N

Processing Rules:

1. **Intraday transactions:** Intra-day transactions are the ones where security (like IBM Equity) is bought & sold on the same day. Intra-day transactions will have two transactions having same Client Id, Security Id, & Transaction Date but opposite Transaction Type i.e. one transaction would be '**Sell**' & other would be '**Buy**'. Each intra-day transaction should be charged $10 for both the Buy & Sell legs.

2. **Normal transactions**: A nominal fee is charged to process each transaction. Fee calculation is based on following rules:
   - $500 for a transaction with high priority (denoted by the priority field in the transaction)
   - $100 for a transaction with normal priority and Transaction Type is Sell and Withdraw
   - $50 for a transaction with normal priority and Transaction Type Code is Buy and Deposit.

Summary Report Definition:

The summary report should contain the processing fee to be charged from each client, for a particular transaction type, transaction date and priority. In other words, the processing free should be grouped by client Id, transaction type, Transaction date, & priority flag. Report should further be sorted by the Client Id, Transaction Type, Transaction Date and Priority.

Client Id	Transaction Type	Transaction Date	Priority	Processing Fee

Evaluation criteria

- Code Completeness/ Correctness
- Code Structure and quality: Modularity, usage of OO principles, size of classes/functions, class/function/variable names, package/class structure
- Choice of data structures
- Unit Test cases
- Coding productivity (more time you take to submit the exercise, lesser you will score)

Better you perform on these criteria, higher you will score.

Sample Data

External Transaction Id,Client Id,Security Id,Transaction Type,Transaction Date,Market Value,Priority Flag
SAPEXTXN1,GS,ICICI,BUY,11/23/2013,101.90,Y
SAPEXTXN2,AS,REL,SELL,11/20/2013,121.90,N
SAPEXTXN3,AP,HINDALCO,DEPOSIT,11/19/2013,120,Y
SAPEXTXN4,HJ,RELIND,WITHDRAW,11/30/2013,230,N
SAPEXTXN5,GS,RELIND,WITHDRAW,11/26/2013,330,Y
SAPEXTXN6,AP,ICICI,SELL,11/25/2013,100,Y
SAPEXTXN7,AS,REL,BUY,11/06/2013,121.10,N
SAPEXTXN8,GS,RELIND,DEPOSIT,11/11/2013,300,Y
SAPEXTXN9,AP,ICICI,BUY,11/12/2013,400,Y
SAPEXTXN10,AS,REL,SELL,11/13/2013,521.10,N

SAPEXTXN11,GS,ICICI,WITHDRAW,11/01/2013,101.90,Y
SAPEXTXN12,AS,REL,DEPOSIT,11/02/2013,121.90,N
SAPEXTXN13,AP,HINDALCO,BUY,11/03/2013,110,Y
SAPEXTXN14,HJ,RELIND,SELL,11/04/2013,330,N
SAPEXTXN15,GS,RELIND,WITHDRAW,11/05/2013,430,Y
SAPEXTXN16,AP,ICICI,DEPOSIT,11/06/2013,500,Y
SAPEXTXN17,AS,REL,SELL,11/07/2013,621.10,N
SAPEXTXN18,GS,RELIND,BUY,11/08/2013,500,Y
SAPEXTXN19,AP,ICICI,BUY,11/09/2013,100,Y
SAPEXTXN20,AS,REL,SELL,11/10/2013,721.10,N