# Customer Engineering Candidate – Interview Problems

### Problem 1: Data Transformation (Clojure Script)

* There are two sources excel files (Financial data, a lookup). (ERP Documents, ERP Lookup sheets in sample data)
* Read data from the excel file and apply the below mentioned rule and generate the output sheet in the given format.
* Script should efficiently work on large data sets (around 10 lakh records) (Optional)

**Mappings:**

ERP Documents:

* Bill Number
* Document Number
* Assignment Number
* Customer Code
* Customer Name
* Type
* Doc Date
* Due Date
* Amount

ERP Lookup:

* Bill Number
* Document Number
* Assignment Number
* Customer Code
* Customer Name
* Type
* Field1
* Field2
* Field3
* Field4

Result Sheet:

* Doc ID
* Doc Number
* Type
* Doc Type
* Customer Code
* Customer Name
* Doc Date
* Due Date
* Amount
* Balance
* Field1
* Field2
* Field3
* Field4

Mapping Rules (Result sheet):

* Doc ID: This is a unique ID and will be generated like this

***<Bill Number>+"-"+<Document Number>+"-"+<Assignment Number>+"-"+<Customer Code>+"-"+<Type>***

* Lookup Scheme: Doc ID will be used as a key for creating lookup.
* Type can have values Credit or Debit only. Only Debit entries need to be exported to the result sheet, corresponding credit entries will only be used for calculation of Balance.
* There can be duplicate entries in the source data, aggregate duplicate entries (on the basis of Doc ID) in single entry by summing up amount values.

Result sheet fields:

* **Doc ID**:

***<Bill Number>+"-"+<Document Number>+"-"+<Assignment Number>+"-"+<Customer Code>+"-"+<Type>***

* **Doc Number**:
  + Document Number
  + If Document Number empty then Bill Number
  + If Bill Number empty then Assignment Number

Need to be checked in order, if Document Number is empty then Bill Number and then Assignment number)

* **Type**: Type
* **DocType**:
  + Field 1 (ERP Lookup) contains string "debitmemo" then DEBIT\_MEMO, "debitnote" then DEBIT\_NOTE
  + If the above rule is failed then populate INVOICE as the default value
* **Doc Date**: Doc Date
* **Due Date**: Due Date
* **Customer Code**: Customer Code
* **Customer Name**: Customer Name
* **Amount**: Amount
* **Field1**: Field1 (ERP Lookup)
* **Field2**: Field2 (ERP Lookup)
* **Field3**: Field3 (ERP Lookup)
* **Field4**: Field4 (ERP Lookup)
* **Balance**:
  + If a debit entry has corresponding credit entry then the balance of debit entry is (Debit Entry Amount - Credit Entry Amount)
  + If corresponding credit entry is not present then Balance is same as Amount.
  + Identifier used for looking up credit entry

***<Bill Number>+"-"+<Document Number>+"-"+<Assignment Number>+"-"+<Customer Code>***

* + For a debit entry find the corresponding credit entry with the same identifier and Type as Credit. If present then subtract the amount values as mentioned above, else used amount as balance

.....Problem 2 in the next page

### Problem 2: System Design Problem (High level Design Document)

* There is an accounting software which provides CRM features for the sales and finance teams
* Customer stores data in different ERPs. They export data in a fixed format in an excel format.
* Design a utility which will take data from the excel file and write it in the database.
* Give the high-level design (Code implementation is not required) of the utility.

Requirements:

* The data import will be triggered from the UI and status, progress needs to be shown in UI.
* Postgres is used as a database for storing financial data.
* Volume of data can scale up to 10 lakh of records in the source sheet
* Utility should be able to concurrently handle up to 4 imports at a time.
* Before writing it to the database certain fields are computed like balance, payment status etc.
* If saving of any record is failed due to any reason (Missing fields, duplicate ids etc.), it should not stop the import process.
* Failed records list should be exported after the import and it should give information about the record and failure reason.

**If you have any questions or need clarification, please send an email to ashish@numebrz.co, giri@numberz.co and CC pooja@numberz.co**