**tcs – Retail Product Engineering**

**SALES TAX PROBLEM SOLVING**

**Overview**

The solution has been designed to calculate the sales tax on a set of items provided as input to the application. A small interactive application is being built , which prompts the user to feed in some choice to interact with the application. Based on the choice provided as input, the app decides which flow to execute. It takes in input of a list of items from the user for which the sales tax is to be calculated.Then the list of items are being scanned one by one, and are being fed to an identifier(Classifier) system, which tries to check whether the item falls under the 3 categories (food,medicine&books) of sales tax exclusion. As of now the identification system uses a naïve approach of splitting the line into tokens and checking whether the item belongs to any of such category or not. As the identifier system, uses an exhaustive approach of checking the tokens against the maps , so to gain some improvement, the concurrent architecture has been designed, which checks for 3 categories concurrently thereby saving time. Finally after calculation of the tax, the entire list of items are displayed.

**Assumptions & Key Points**

1. For detecting the type of item being fed to the system , the following pattern has been considered for extracting the information:

**<No of items>@pos1** <description of the items> **<Shelf Price of items> @ last position**

Ex: **1** book at **12.50 , 2** books at **25.00**

1. The classifier or the identifier is based on the naïve approach which uses the Bag of Words approach, in which three different maps are being used to store the topic related keywords.As of now in the current architecture , only a handful of words have been added, but in future the architecture can be extended, to provide methods to update and add more words to the collection.
2. For better efficiency of performance a concurrent architecture has been designed, in which the word matching is based on concurrent approach.
3. For rounding to 0.05 purpose, the sales tax amt when calculated from the shelf price is itself rounded off before proceeding with any further operations.
4. In addition to all the above, an extra choice (choice 0)has been provided to the user, which allows for entering any new tags to the word collection for the items to be classified as under exclusion from sales tax.

**Example of one Sample Input & Output**

Sample Input:

1 book at 12.49

1 music CD at 14.99

1 chocolate bar at 0.85

Desired Output:

1 book : 12.49

1 music CD: 16.49

1 chocolate bar: 0.85

Sales Taxes: 1.50

Total: 29.83

Snapshots of application run:

