COEN 352 Summer 2020 Assignment 3

Assignment 3 further expands the development on WarehouseInventory database. Please refer to Assignment 1 for WarehouseInventory database description and Assignment 2 for the term *index*. In this assignment, the goal is to create an index on the field of SKU. The index is designed and developed using *hash function* and *hash table*.

Problem 1. (10 marks) Develop a hashing function that follows the s-fold approach in lecture slides Chapter Hashing slide 10. The return value is the position of the inventory in the WarehouseInventory database.

```
public int hasingSKU(String key, int length)
```

Problem 2. (10 marks) Add one new member function below to the Dictionary ADT as below. Such a member function creates a *HashTable* class that contains the mapping between Key as *SKU* string and the position of the inventory in the *WarehouseInventory* database. *createSKUHashingIndex()* should invoke *hashingSKU()* and store the return value of position into the *HashTable* class.

```
public HashTable createSKUHashingIndex();
```

Problem 3. (10 marks) Add one new unction to your WarehouseInventory class as below

```
public String findBySKU (String key)
```

This function takes a SKU string as the input and retrieves the inventory object using the hashing utilities built up in Problem 1 and 2. It returns a string representation of all the fields of the inventory object found following the JSON format as below:

{"inventory":{"SKU":"SP7875", "DESCRIPTION":"item 1","BIN #":"T345"}..."REORDER":"no"}

If the SKU key does not exist, then return *null*.

Problem 4. (10 marks) In your WarehouseInventory class application, in the main() function, invoke Problem 3's function on each of the SKU value in the excel sheet, and print out the string representation. This is an executable test of Problem 1, 2, 3.

Submission Specification

1. Program the solution in a single project, thus under one ***src*** folder
2. The src should contain all the Java files
3. The src folder should be archived together as a single file, following the naming convention [SID_1]_[SID_2]_A3.zip or
   [SID_1]_[SID_2]_A3.gz or
   [SID_1]_[SID_2]_A3.tar

No .rar file is accepted. Do not following the naming convention will cause delays in releasing the marking grade.

4. Submission is due on **August 14th 23:59**. Grace period is 6 hours later. Cut off data with 20% penalty is 24 hours later. Submission is through Moodle site ONLY. Submission in emails is not accepted.