Algorithm Used：

1. Bubble sort ( to sort all the inventory numbers which are always sorted)
2. Quick sort (sort the items by the price)
3. Priority queue (provide the employee the next order need to be proceed by the priority of each item)
4. Binary tree (included in Priority queue)

Test instruction:

**Please put the ‘main final.rb’ , ‘inventory.txt’ and ‘orderbook.txt’ in the same folder.**

This code will perform several operations on this kind of smart inventory code:

3883 C 012 XS 080 MI









1 2 3 4 5 6

1. The first four letter is the cloth model number. In that the first number will indicate which category it is belongs to, for example 0 is T-shirt, 1 is sweater, 2 is dress, 3 is shorts and so on. The following three digits are random numbers to distinguish different model.
2. The first letter ‘C’ shows it is in clearance. ‘N’ means not in clearance.
3. The followed three number shows the price.012 means 12 dollar.
4. The followed two letter ‘XS’ will provide the information about the size. Size S is SS. Size M is MM. Size L is LL. Size XLL is XX.
5. The last three numbers mean the stock. ‘080’ means 80 in total.
6. The last two letters mean the location of the stock. ‘MI’ shows in the code is in Michigan.

**I only create 20 items of each type to avoid large size of the inventory.txt file.**

**So the valid model number will be:**

**0001, 0002 , ……0020**

**1001, 1002 , ……1020**

**….**

**….**

**….**

**9001,0002,……0020**

If you input 0021, the code will show this is not a correct number unless you use the functions in the code to create a new number.

Brief introductions of the function this code have:

* Press 0: to exit this system
* Press 1: for check an item style

Input: four digit model code

Result will be : T-shirt or Dress and so on

* Press 2: for check whether this item is in clearance or not

Input: four digit model code

Result will be : Yes it is a clearance or No it is not a clearance

(x001 is all clearence)

* Press 3: for check the location and stock of certain item

Input: four digit codes and two digit letter indicate the size of the cloth

Result will be : Location:xx Stock:xx

* Press 4: for the price of certain item

Input: four digit model code

Result will be : for example $11

* Press 5: to add a new item into inventory

Input: which type will this cloth be (tshirt or shorts or …), how much is this new item

Result will be : new model number will be: for example 5001 , if you check the inventory will see the new items will initial four digit as 5001.

*The new numbers will be added at the bottom of the file at first and then the code will automatically sorted this smart numbers and rewrite them into inventory file.*

* Press 6: to delete an item from inventory

Input: four digit model code

Result will be : all the information which contain the input as the first 4 digit code will be delete . So if after delete this item all the inquire will be “wrong input ”.

* Press 7: to provide 10 cheapest model number which is sorted by price

Input: which type of cloth you will check

Result will be : 10 cheapest items which is sorted by the price.

* Press 8: to make an order

Input: information of an order

Result will be :

Order is made successfully and the stock will be decreased corresponded.

Or : There is not enough stock of this item.

* Press 9: show next order to be processed

Input: hit enter

Result will be : 0001SS1CA

Which means next order need to be processed is cloth0001, size small , 1 piece in total, the location is CA