Home Assignment On Threading:

Consider the following scenario. There are three salesperson at a shop. All of them are working concurrently. That means each one of them are

- Accessing the inventory,
- Removing items from it and,
- Adding items to the inventory.

Assume that they are serving a queue of customers. Let's assume they take 30s,20s,and 40s respectively to sell items to one customer. While serving the customers each one them can order to buy new items at any time. At this step we will assume buying occurs instantaneously.

Your task is to implement the above scenario assuming each salesperson is a different thread. You should note the following,

- You cannot create multiple inventory or multiple FruitShop.
- To pass inputs to your threads, create different input files for each thread and read different files from different threads.
- Follow the provided I/O format.
- Perform proper use of synchronization. Don't use it extraneously. Apply synchronization only where it is necessary.
- Apply proper amount of sleeps.

You can follow the following steps to complete this assignment.

1. Write a class named SalesmanThread that either extends Thread or implements Runnable. SalesmanThread class will have two member variable. One is a FruitShop that denotes, on which shop the Salesman is working. The other one is an integer that denotes the number of the salesman (1,2 or 3).
2. Create 3 input files named input1.txt, input2.txt, input3.txt. The format of the input is described later.
3. Override or implement the run function inside SalesmanThread. Inside run function start reading from the file whose suffix matches with the number of salesman. That is if the thread is for salesman 1 you should read inputs from input1.txt.
4. You have to execute buy,sell, getBalance functions based on the input inside the run function.
5. To ensure synchronization you can either update functions inside FruitShop class or you can implement SalesmanThread accordingly. But you should provide appropriate justifications.
6. Use the following main function to test your code.

```
public static void main(String[] args) {
        FruitShop fs=new FruitShop(20, 70);

        SalesmanThread salesmanThread[]=new SalesmanThread[3];
```

```
        for (int i = 0; i < salesmanThread.length; i++) {
                salesmanThread[i]= new SalesmanThread(fs,i+1);
                salesmanThread[i].start();
        }
}
```

Input Format:

The first line of the input contains an integer N that denotes the number of input lines that follows. After the first line there will be exactly N sets of input. These inputs will indicate one of three operations,

a. Buy: If the first integer is 1 then it indicates a buy operation. The first integer will be followed by two more integers that indicate the type and amount of item to buy.
b. Sell: If the first integer is 2 then it indicates a sell operation. The first integer will be followed by two more integers that indicate the type and amount of item to sell.
c. Get Balance: If the first integer is 3 then it indicates a get balance operation. Get balance doesn't need any additional information so we don't need any more integers.

```
Sample Input:
3
1 1 10
2 1 5
3
```

** A sample code to read the input is uploaded.
** Sample codes to implement thread is uploaded.
** A java template for SalesmanThread class is uploaded.
** For any question feel free to contact rakinhaider@gmail.com