Seneca College **March 22, 2018**

Applied Arts & Technology

SCHOOL OF COMPUTER STUDIES

JAC444 **Due date: April 3, 2018**

Workshop 9

Description:
This assignment lets you practice Multi-Threaded programming in Java and includes concepts such as Threads, Guarded Blocks, and Synchronization.

Give a solution to the following problem:
You want to help your friend with some money. You and your friend have access to a shared account, but in a "Strange Bank."

The Strange Bank has the following rule for the accounts: once you deposit some money in some currency (to an account with an initial balance of zero,) you are not allowed to deposit money in another currency, unless the account balance would be zero (again.)

You have: one Dollar, two Euros, and three Pounds and you want to transfer these amounts to your friend. Write a Java program that simulates you depositing to and your friend withdrawing them from the shared account.

Hints: You and your friends are Java `Thread`s that try to access the bank account concurrently (you to deposit, your friend to withdraw). You must communicate through `wait` and `notify` methods.

This is a classical problem in thread theory called "Producer/Consumer" in which there is a container that accepts only one object at a time. Producer wants to put in the container as many objects as it produces but must wait until the consumer consumes the already-shared object from the container.

Marking criteria:
Please note that you should:

a- have appropriate indentation.
b- have proper file structures and modularization.
c- follow Java naming conventions.
d- document all the classes properly.
e- not have debug/useless code and/or file(s) left in assignment.
f- have good intra and/or inter class designs.

in your code!

Task: Developing and running the desired solution: **5 marks**.

Deliverables:
You are supposed to hand in your solution (run the solution and/or answer related Qs) in labs 10.

In case you don’t hand in/run the required task in the lab, you could submit your final solution (described below) but note that there would be a 50% penalty!

In this case, you should zip *only the Java files* to a file named after your Last Name followed by the first 3 digits of your student ID. For example, if your last name is **`Savage`** and your ID is **`354874345`** then the file should be named **`Savage354.zip`**. Finally email your zip file to me at reza.khojasteh@senecacollege.ca

Reminding Some Important Notes:

- Each assignment should be submitted before/on its due date. The (additional) deduction for late submission will be 10% each day or part of it. No assignments will be accepted after week 13.

- All the assignments should be done satisfactorily to pass the course. Moreover, to obtain a credit in this course, a student must achieve a weighted average of 50% or better on workshops.

- Students are encouraged to talk to each other, to the instructor, or to anyone else about any of the assignments, but the final solution may not be copied from any source.