

CS 612 - Software Architectures

Homework Assignment 3

Assignment 3c

Description

In this part of Assignment 3, you are required to provide the implementation of the initial increment of the CUSTOMER 1ST BANK system based on your architectural breakdown and C2SADEL description.¹

The required portion of the system should handle personal savings accounts and transactions associated with them (account addition, deletion, deposits, withdrawals, ...). Your application does not need to ensure the persistency of data for the time being. The system should handle access by bank representatives and ATMs, possibly concurrently. Support for single ATM, teller, and manager stations is sufficient for the time being. Of course, the system must prevent simultaneous access to a single customer's account.

The system must correctly calculate the interest at the end of each day and support a manager's ability to change the interest rate. The system must also enforce teller access constraints, as described in the requirements: a teller must be automatically logged out one hour after the bank is closed and may not log in until one hour prior to bank's opening the following day. For the purposes of this increment, you should simulate the passage of time (e.g., you should not actually wait for 24 hours before adding in interest, but should instead do so at regular intervals). One possible approach would be to simulate a day over a 12 minute period, where an hour would actually last 30 seconds.

Implementation Requirements

For this part of the assignment, you will use the implementation infrastructure (an OO class framework) discussed in class on March 2 and available (as a *tar* file) from the class Web site. The infrastructure is implemented in Java. The *tar* file contains a couple of example applications, as well as infrastructure documentation to help you with the assignment.

You may implement the entire application in a single thread of control (using the framework's "Component" and "Connector" classes) or in multiple threads (using "ComponentThread" and "ConnectorThread"). Your implementation *must* match your architectural decomposition. For example, if two components are separate in your assignments 3A and 3B, they also must be implemented as separate components.

1. This will be the only subset required for the class. CUSTOMER 1ST may issue you a separate contract to complete the implementation of the entire system.

Deliverables

For this assignment, you are required to turn in the following:

- your architectural diagram and C2SADEL specification (they must conform to the implementation)
- listing of the entire implementation with clearly marked (e.g., highlighted) main program and individual components. Your implementation must be documented well enough so that I could understand it if necessary.
- a hard-copy demonstration of the system's features (screen shots, printouts of execution sessions, etc.). You must demonstrate all of this system increment's main features.