

CS 578 – Software Architectures

Fall 2009

Individual Homework Assignment #3

Due: *Tuesday, November 10, 2009, 11:59:59pm*

In this assignment, you are expected to use a software architecture modeling and analysis tool, called DRADEL, to check the syntactic correctness as well as structural and behavioral soundness of the C4 C2SADEL specification you developed in assignment #2. You are expected to make the necessary changes to your specification to enable

1. parsing (i.e., syntactic checking),
2. checking structural constraints,
3. type checking (i.e. behavioral checking), and
4. code generation

in DRADEL. Your C2SADEL specification must be able to “pass” all four of these steps. For example, if you are not able to pass the structural constraint checking or type checking steps, you will not get credit for your implementation.

The generated code skeletons are compilable on top of PrismLite, a simple architectural middleware platform, but they do not provide any application logic (also known as business logic), which in your C2SADEL specifications is reflected in the pre- and post-conditions. You are expected to implement the application-specific logic of a subset of C4, by “filling in the blanks” of the automatically generated PrismLite code. The implementation of the Offline Database, Billing System, and BillingUI components from assignment #2 is not required (although their specification and analysis in DRADEL is!). The application must run with at least two user interface components, but the actual GUI can be relatively simple. Any changes you find that you need to make to the C2SADEL specification must be made to the C2SADEL files and separately documented (see below). If you change your C2SADEL files, you should rerun all of the above four steps and use the newly generated skeletons for your implementation.

The files required to complete the assignment are located at

http://csse.usc.edu/classes/cs578_2009/HW3_Package.tar.gz

This package contains two directories, one for DRADEL and the other for PrismLite. Read carefully the available documentation. Demos of DRADEL and PrismLite will be given in class on Thursday, October 22, 2009 to help you get started.

Deliverables

You are required to turn in a single tarred and gzipped file that contains five separate directories, containing:

1. your original C2SADEL specification (the same one from homework assignment #2),
2. the corrected C2SADEL specification (reached prior to the implementation),
3. the final C2SADEL specification and a document summarizing the changes made to the corrected specification as a result of the implementation step,
4. the implementation files,
5. a script showing your system’s execution and snapshot of the GUI.

Your C2SADEL files must be packaged such that they can be incorporated into DRADEL without any changes. Your Java files must be packaged such that they can be deployed on PrismLite and executed without any changes.