CS 578 – Software Architectures
Spring 2009
Homework Assignment #1
Due: *Thursday, February 12, 2009*
– see course websites for submission details –

The Call Center Customer Care (C4) Case Study provided in the supplementary readings for this assignment presents an initial high level ("Level 1") architectural breakdown for the system used by a large telecommunications company. This system comprises several subsystems, one of which is C4 itself.

1. By now, you have read about the architectural design process, including the selection of architectural styles. Not all styles are applicable to all systems and any choice of style will involve making trades on various system attributes. Pick any two styles that you have read about and design two different architectures for the C4 system, one that adheres to each style. In order to apply a style, you will need to create a detailed architectural breakdown (a "Level 2" architectural breakdown) for C4. In other words, "expand" the C4 box shown the figure present on page 1 in the Case Study into an architecture. It is, of course, difficult to decide on the exact degree of detail to be provided in a "Level 2" architecture, such as the one required for this assignment. Also, there is no such thing as the "correct" or "optimal" architecture. However, as a granularity guideline, your decomposition of C4 should consist of no less than 10 distinct components.[1] Note that you are not required to select a style from the course text book, but you must let us know what style you are attempting to apply and provide a reference if the style in not one from the course text. **Submit one diagram for each architecture you design.**

2. Give a brief rationale for your architecture: why did you select the styles that you did? Weigh the pros and cons of each architectural style. We will not grade you based on how accurately you apply each style so much as your rationale for selecting a particular style and understanding its limitations. **Please limit your answer to 2 paragraphs.**

3. Compare each of your architectures: give one example of a system property/requirement described in the Case Study that is addressed in a superior manner by one of your architectures. Be sure to not only name the property/requirement, but explain how each architecture addresses the property/requirement and give rationale for why you think one system in superior to the other. **Please limit your answer to 2 paragraphs.**

4. From each of your architectures, compose a hybrid architecture which addresses individual shortcomings. Discuss any tradeoffs which may have been made. What particular changes in each of your architectures caused the loss or gain of desired properties?

5. Since C4 is a very large system with many different, possibly conflicting, requirements, your architecture may only directly address a subset. To demonstrate this, for one of your architectures, select two of the key architectural challenges and requirements (listed in bulleted items on page 4 of the Case Study) and argue/discuss how your architecture DOES NOT support them in an acceptable fashion. **Again, please limit your answer to 2 paragraphs.**

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[1] This is only a guideline. There is nothing magical about this number, nor do we have a specific solution in mind.