CS578: Software Architectures
Spring 2006

Homework #4

Due Date: Thursday, March 2
before Noon – *no exceptions*

1. (10%) The REST style is a rare style that directly refers to and leverages all of Perry & Wolf's architectural elements.

a) List the relative importance attached by REST to these elements (from most important to least important).

b) Give an example from the REST style for each Perry & Wolf element.

2. (10%) Discuss the roles of *(a)* channels and *(b)* broadcasters in push-based systems.

3. (5%) What is the difference between routine and innovative design?

4. (15%) DSSA

a) What are reference requirements?

b) Briefly discuss one benefit and one challenge of using product-family architectures.

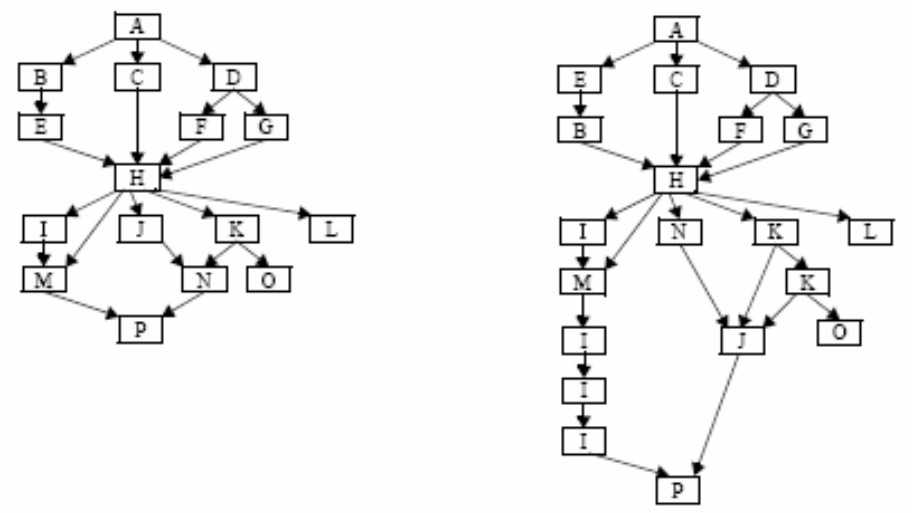
5. (15%) Discuss how an architectural style aids

a) design reuse

b) understandability

6. (20%) GenVoca

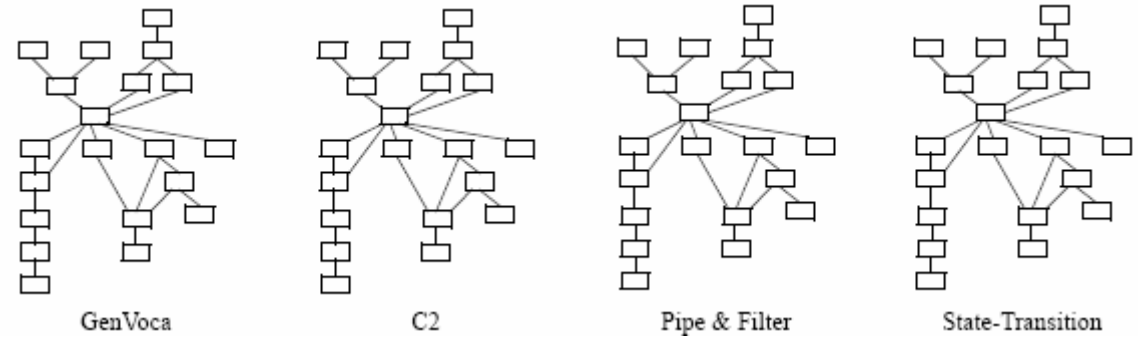
a) The below diagrams represent GenVoca architectures. Are the architectures on the left and right the same? If so, why? If not, why not?



b) Under what circumstances can component P invoke components J and A in the architectural configuration shown on the right?

c) What is the GenVoca type expression corresponding to the diagram on the right?

7. (15%) Identify the components and connectors in each below diagram in the manner that respects the rules of the labeled style. If necessary, you may assume that the outermost boxes represent components. Mark the appropriate (non-component) boxes directly in the diagram.



8. (10%) You are tasked with building several new software modeling tools to support the modeling of different architectural styles. Since you are already familiar with ArgoUML (an UML modeling tool) you want to first build a DSSA to support these projects.

a) Is this a good strategy?

b) How would you go about building the DSSA?

Submission Instructions: see class web site at http://sunset.usc.edu/classes/cs578_2006/