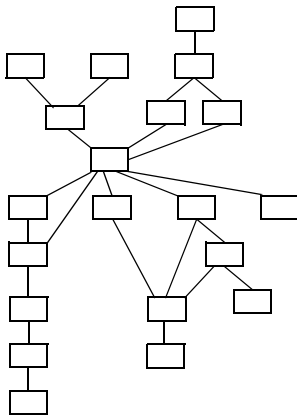*(10 pts)* IBM/Rational Rose provides software designers support for modeling their systems using (a variant of) the Unified Modeling Language. However, as the UML standard changes, Rose has to change as well: new notations are added, existing notations are modified, and some may even be eliminated. Suggest an appropriate architectural solution that will ensure that any changes to Rose are minimized. Make sure to state your assumptions.

(8 pts) Discuss one major difference among the GenVoca, C2, peer-to-peer, and pipe-and-filter styles. For example, how would the architecture described by the topology shown in the diagram below differ if it were a GenVoca, C2, peer-to-peer, and pipe-and-filter architecture, respectively? You can assume that all four styles are represented using a vertical topology (i.e., top-to-bottom, rather than left-to-right). Each unlabeled box represents a different element. You may express your answer in terms of the components, connectors, or topological constraints imposed by each style.

(6 pts) We have discussed several extensible ADLs in class. Name one such ADL. What makes it extensible? Why is ADL extensibility important?

(6 pts) Define the following terms.

    (a) Separation of concerns*(3 pts)*

    (b) Isolation of change *(3 pts)*

(10 pts) Name the three types of architectural *elements* identified by Perry and Wolf and discuss how separation of concerns and isolation of change impact each element.

    (a) _____ *(3 pts)*

    (b) _____ *(3 pts)*

    (c) _____ *(3 pts)*

    (d) Give an example from the REST style for each Perry & Wolf element. *(1 pts)*

(9 pts) **(a)** What are the "three and a half" major sources of architectures/designs? *(3 pts)*

(b) What is the difference between routine and innovative design? Express your answer in terms of the sources identified in part *(a)*. *(6 pts)*

(6 pts) To have an architecture adopted, the architect needs to convince others. Several such stakeholders are mentioned in Question 1. What types of arguments will the architect typically have to use? Is it enough merely to develop a good architecture for a given problem? Discuss at least three facets of the architect's likely arguments.

(10 pts) You are tasked with building several new software modeling tools to support different architectural styles. You are familiar with one software modeling tool (e.g., IBM/Rational Rose), so you decide to first build a DSSA to support these projects. Is this a good strategy? Does it make a difference whether you were integrally involved with Rose's development? In what ways and how much?