Bruegge 99, Object Design, Chapter 7

Bernd Bruegge   **Quiz No. 11**   **November 2, 1999**

1. **What are application frameworks? What is the difference between application frameworks and design patterns? (4 points)**

   Application frameworks are reusable partial applications that can be specialized to produce custom applications. It provides hook methods, which are overwritten by the application to extend the application framework. The difference between application frameworks and design patterns is that frameworks focus on reuse of concrete designs, algorithms and implementations in a particular programming language, which means that it focuses on a particular application domain. In contrast, patterns focus on reuse of abstract designs and classes, which could be seen as building blocks for frameworks.

2. **What is the difference between inheritance and delegation? Which is better and why? (3 points)**

   Inheritance is the reuse of attributes and operations from higher level classes. Delegation is the implementation of an operation by resending a message to another class. It is better to use delegation because it makes explicit the dependencies between the reused and the new class, which makes it easier to make later changes. Inheritance has the problem of depending too much on the reused class, so that changes in the reused class affect greatly the new class, and it also makes it necessary to know the details of the reused class.

3. **Give at least 3 examples of optimization activities during object design? (3 points)**

   - Addition of associations for optimizing access paths.
   - Collapsing of objects into attributes
   - Caching of the result of expensive computation
   - Delay of expensive computation