CptS 464/564 Homework #1

Given: Tuesday, January 21, 2003
Due: Tuesday, January 28, 2003 at the beginning of class
Weight: ~5% of final grade

Note: This homework should not be handwritten: it **must** be done with a word processor, printed, and turned in.

1) [50 points] Real Distributed Applications

Pick 2 real distributed application programs that you are familiar with (or could become familiar with if you don't know any (!!!)). For each application, write

- A paragraph or so giving an overview of the application. Make sure to include which generic architecture (remote access, client-server, event-based) you believe best categorizes the application, and why it does so. Be sure also to describe what application-specific activities the various pieces in that architecture (clients, servers, whatever) are doing: what they are requesting, etc.
- A paragraph or so describing whether you believe the following runtime issues are important to users of this application, and why you believe it (e.g., what happens in its absence):
    - Low latency network connections
    - High bandwidth available
    - Perfectly "consistent" and "correct" replies/answers/service versus an inconsistent or approximate reply/answer/service

To get full credit, your two applications should be different from each other in a number of ways (though not necessarily all possible ways): application architecture, latency and other runtime issues, etc. Your answers must clearly demonstrate your understanding of bandwidth, latency, and consistency.

2) [30 points; 564 students only] Local versus Remote Objects

Obtain and read the Sun Microsystems Laboratory Report SMLI TR-94-29, "A Note on Distributed Computing" by Jim Waldo, et al.
http://citeseer.nj.nec.com/waldo94note.html
On page 4 this report claims: (quote)

> This vision is centered around the following principles that may, at first glance, appear plausible:
>
> - There is a single natural object-oriented design for a given application, regardless of the context in which that application will be deployed;
> - Failure and performance issues are tied to the implementation of the components of an application, and consideration of these issues should be left out of an initial design; and
> - The interface of an object is independent of the context in which that object is used.
>
> Unfortunately, all of these principles are false. (end quote)

Take one of these principles, and summarize in 2-3 paragraphs the authors' main reasons for believing they are false. Then add 1-2 paragraphs stating why you find the authors' arguments compelling or not.