Assignment 1

Q1: Basic Understanding

a. Give three common examples of distributed and central systems, respectively. Make a brief sketch of them, together with a short explanation of their functions and usage.

b. Name two major drawbacks and two major benefits of distributed systems (DS) and explain them in your own words.

c. Why can the absence of a common system clock be a big problem for running applications on a DS?

Q2: Transparency

a. Try to define transparency using your own words.

b. What is the difference between migration and relocation transparency?

c. Is it always reasonable to provide maximum transparency in a distributed system?

d. Enumerate problems a DS has to deal with. Discuss possible solutions for these problems and point out in how far the presented approach is transparent for the applications.

Q3: Scalability

a. What is the relation between the performance and the scalability of a DS?

b. Can the relation between the number of servers and the total system performance be linear? Explain your answer.

c. State the guiding principles for the design of scalable systems.

Q4: Hardware/Software

a. What are the differences between multiprocessor and multicomputer systems, and which similarities do exist?

b. How does this affect the applications running on such systems with respect to estimated performance and development costs?

Q5: Communication

a. What are the three major orthogonal design parameters for an IPC, according to the lecture?

b. Explain reliable communication. How can the reliability of a communication facility be improved?