1 Foundations

1.1 Name the essential criteria which motivate the distribution of application functionality.

1.2 Which of the following systems can be considered as distributed systems?
   a) a decentrally organized office environment on a workstation network  
   b) the central computer of an airline company with 10,000 worldwide, simple booking terminals connected in a star-shaped formation  
   c) a multiprocessor system with common memory  
   d) a Grid system

1.3 What is described by the term “Middleware”? Which fundamental concepts and basic services are provided by a middleware for distributed systems?

1.4 In the given application example, product orders are pre-processed on different servers and balanced with the warehouse management department. Which basic services can be used to fulfill the following requirements?
   a) The pre-processing of product orders will involve both the customer management and warehouse management departments. The dispatch of goods from the warehouse and payment for these goods are performed as part of the pre-processing. It should be ensured that either all of the individual processing steps are executed or none at all.
   b) Particular product orders should only be allowed to be executed by business customers.
   c) Order information should be confidentially handled and especially communicated across a network without the possibility of third party access.
   d) The order service should be findable by any means via the internet.