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Class: ICT.02-K61

**Class Exercises**

**Module: Distributed Systems**

**Chapter 1: Overview of Distributed System**

**Theoretical Exercises:**

Question 1: What is the role of middleware in a distributed system?

To enhance the distribution transparency that is missing in network operat- ing systems. In other words, middleware aims at improving the single-system view that a distributed system should have.

Question 2: Explain what is meant by (distribution) transparency and give examples of different types of transparency.

Distribution transparency is the phenomenon by which distribution aspects in a system are hidden from users and applications. Examples include access transparency, location transparency, migration transparency, relocation trans- parency, replication transparency, concurrency transparency, failure trans- parency, and persistence transparency

Question 3: Why is it sometimes so hard to hide the occurrence and recovery from failures in a distributed system?

It is generally impossible to detect whether a server is actually down, or that it is simply slow in responding. Consequently, a system may have to report that a service is not available, although, in fact, the server is just slow.

Question 4: Why is it not always a good idea to aim at implementing the highest degree of transparency possible?

Aiming at the highest degree of transparency may lead to a considerable loss of performance that users are not willing to accept.

Question 5: What is an open distributed system and what benefits does openness provide?

An open distributed system offers services according to clearly defined rules. An open system is capable of easily interoperating with other open sys- tems but also allows applications to be easily ported between different imple- mentations of the same system.

Question 6: Describe precisely what is meant by a scalable system.

A system is scalable with respect to either its number of components, geo- graphical size, or number and size of administrative domains, if it can grow in one or more of these dimensions without an unacceptable loss of performance.

Question 7: Scalability can be achieved by applying different techniques. What are these techniques?

Scaling can be achieved through distribution, replication, and caching.

**Lab**:

Question 1: What is the path of the html file that contains the content of the default website apache?

/var/www/

Question 2: What is the default port on which webserver is listening?

Port 80

Question 3: Explain what permission 755 means.

Permission for:

* User: Read, Write, Execute
* Group: Read, Execute
* Others: Read, Execute

Question 4: What do you see after typing these 2 addresses? Explain it.

The contents that are specified in the html files

Question 5: Try to make other machines in the same LAN access to these 2 addresses.

Question 6: What is the code of the while loop?

while (!message.isEmpty()) {  
 out.println(message);  
 String output = in.readLine();  
 System.out.println("Sorted array: " + output + "\n");  
 message = scanner.nextLine();  
}

Question 7: What is the role of the method run? When is it called?

The method run specifies what the thread will do. It is called when a thread call start() method.