

Assignment 2

Networking

Due : 11 October 2016, 13 :00

Exercise 1

What is the task of an Ethernet switch ? What tables does it maintain ?

Exercise 2

Explain the principle of encapsulation in communication. Why is this principle used in communication systems ?

Exercise 3

Explain why standards are important for communication systems and hence for distributed systems.

Exercise 4

TCP/IP Protocols :

1. Explain why :
 - (a) The checksum of an IP packet only covers the header part.
 - (b) The maximum length of the options field of the TCP segment is 40 bytes.
 - (c) TCP is a reliable transport protocol.
 - (d) An IP address is associated with an interface and not with a machine.
 - (e) The TCP header includes a header length field, but why UDP does not.
2. Explain how IP routing prevents packets from circulating indefinitely in case they cannot be delivered.

3. Describe the function and use of port numbers in a TCP/IP environment.
4. Compare connectionless (UDP) and connection-oriented (TCP) communication for the implementation of each of the following application-level or presentation-level protocols :
 - (a) Virtual terminal access (for example, Telnet) ;
 - (b) File transfer (for example, FTP) ;
 - (c) User location (for example, rwho, finger) ;
 - (d) Information browsing (for example, HTTP) ;
 - (e) Remote procedure call.

Exercise 5

Discuss the centralized aspects of the Web. How could the Web be further decentralized ?