

L11-Introduction to Computer Networking

Homework 9 Answers

Due Date: Jan.30, 2017 by 23:59PM on Google Drive

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Problem 1 (20 pts, 10 pts for each correct answer):

Give 2 examples of protocol or service that use UDP. Explain why those protocols/services use UDP.

Example:

- Domain Name System (DNS)
- Dynamic Host Configuration Protocol (DHCP)

Explain:

In case of DNS, it's only necessary to return packets quickly. So it uses UDP because although it may losses some packets, this protocol can send a packet quickly. And in case of DHCP, it needed to assign information to access network for computer before it establish a connection. So it uses UDP because in this protocol, it's not needed to set those connections before transfer data.

Problem 2 (20 pts, 5 pts for each correct answer): Complete following sentences

1. LAN is the network that spans a small geographic area, such as a single building or buildings.
2. Preamble is the 8-byte field located at the beginning of an Ethernet frame and is used for synchronizing receiver, sender clock rates
3. MAC address has 48 bits and it is used to get frame from one interface to another physically-connected interface in the same network.
4. A device that operates at the network layer and can select the best route for a packet to travel over dissimilar network is called a router

Problem 3 (20 pts)Let's consider 4 hosts, A, B, C, D. A process is

running on host A with port number 2000.

Each of B, C, D sends segments to the process in host A, with the port number 2000.

If those segments are UDP segments, should they be sent to the same socket of the process on port 2000, or to different sockets?

If those segments are TCP segments, should they be sent to the same socket of the process on port 2000, or to different sockets?

In case of UDP: **same sockets**

In case of TCP: **different sockets**

Problem4(20pts). Please compute the 1's complements of two bytes: 11110101 and 01101001

Complement of 11110101: 00001010

Complement of 01101001: 10010110

Problem 5 (20pts).

Catch udp packets on your PC, copy one udp packet below, and pick up the

- **source port:** 0x0100
- **dest port:** 0x5e7f
- **length:** 0xffffa
- **checksum:** c025

0x0000: 0100 5e7f fffa c025 a28c 2868 0800 4500 ..^....%..(h..E.

0x0010: 016c 08c8 0000 0411 fc15 c0a8 0001 efff .I.....

0x0020: fffa 076c 076c 0158 e7c1 4e4f 5449 4659 ...l.l.X..NOTIFY

0x0030: 202a 2048 5454 502f 312e 310d 0a48 4f53 *.HTTP/1.1..HOS

0x0040: 543a 2032 3339 2e32 3535 2e32 3535 2e32 T:.239.255.255.2

0x0050: 3530 3a31 3930 300d 0a4e 543a 2075 726e 50:1900..NT:.urn

0x0060: 3a73 6368 656d 6173 2d75 706e 702d 6f72 :schemas-upnp-or
0x0070: 673a 6465 7669 6365 3a57 414e 436f 6e6e g:device:WANConn
0x0080: 6563 7469 6f6e 4465 7669 6365 3a31 0d0a ectionDevice:1..
0x0090: 4e54 533a 2073 7364 703a 616c 6976 650d NTS:.ssdp:alive.
0x00a0: 0a55 534e 3a20 7575 6964 3a36 3932 3838 .USN:.uuid:69288
0x00b0: 6361 322d 3936 6437 3733 3632 3a3a 7572 ca2-96d77362::ur
0x00c0: 6e3a 7363 6865 6d61 732d 7570 6e70 2d6f n:schemas-upnp-o
0x00d0: 7267 3a64 6576 6963 653a 5741 4e43 6f6e rg:device:WANCon
0x00e0: 6e65 6374 696f 6e44 6576 6963 653a 310d nectionDevice:1..
0x00f0: 0a43 4143 4845 2d43 4f4e 5452 4f4c 3a20 .CACHE-CONTROL:..
0x0100: 6d61 782d 6167 653d 3132 300d 0a4c 6f63 max-age=120..Loc
0x0110: 6174 696f 6e3a 2068 7474 703a 2f2f 3139 ation:.http://19
0x0120: 322e 3136 382e 302e 313a 3238 3639 2f75 2.168.0.1:2869/u
0x0130: 706e 702f 726f 6f74 6465 7669 6365 2e78 pnp/rootdevice.x
0x0140: 6d6c 0d0a 5345 5256 4552 3a20 4947 442d ml..SERVER:IGD-
0x0150: 4854 5450 2f31 2e31 2055 506e 502f 312e HTTP/1.1.UPnP/1..
0x0160: 3020 5550 6e50 2d44 6576 6963 652d 486f 0.UPnP-Device-Ho
0x0170: 7374 2f31 2e30 0d0a 0d0a st/1.0....