ITS323 – Quiz 7 Answers

Name: _____

ID: _____ Mark: _____ (out of 10)

Question 1 [4 marks]

Consider two hosts with the following properties:

- Client
  - IP: 64.32.16.1 Application port: 40096 Initial Sequence Number (ISN): 205
- Server
  - IP: 22.33.44.1 Application port: 123 Initial Sequence Number (ISN): 456

The 1st column in the table below gives the names of selected fields in a TCP segment. The 2nd column gives the length of the field (in bits). Answer the following questions by writing the field values in the the table. If the field value is not relevant, then write a cross 'X' in the table.

Consider TCP connection establishment. What are the field values for:

a) 1st TCP segment sent in the connection establishment

b) 2nd TCP segment sent in the connection establishment

Assume the connection establishment was successful. What are the field values for:

c) 1st TCP segment sent by client/server that contains data (the data is 2000/3000B)

d) 2nd TCP segment sent by client/server that contains data (the data is 1000B)

Field	**Size (bits)**	**(a)**	**(b)**	**(c)**	**(d)**
Source port	16	40096	123	40096	40096
Dest. port	16	123	40096	123	123
Sequence number	32	205	456	206	2206
Ack. number	32	X	206	X	X
SYN flag	1	1	1	0	0
ACK flag	1	0	1	0	0

Consider two hosts with the following properties:

- Client

- IP: 64.32.16.1 Application port: 12456 Initial Sequence Number (ISN): 96

- Server
  - IP: 22.33.44.1 Application port: 205 Initial Sequence Number (ISN): 123

Field	Size (bits)	(a)	(b)	(c)	(d)
Source port	16	12456	205	205	205
Dest. port	16	205	12456	12456	12456
Sequence number	32	96	123	124	3124
Ack. number	32	X	97	X	X
SYN flag	1	1	1	0	0
ACK flag	1	0	1	0	0

Question 2 [6 marks]

Assume classless addressing is used. Computer A has IP address 129.129.129.129/13 66.66.66.66/20 33.33.33.33/18 36.36.36.36/12.

a) What is the address of the network for computer A?

b) What is the directed broadcast address for the network?

c) How many IP devices can be attached to the network?

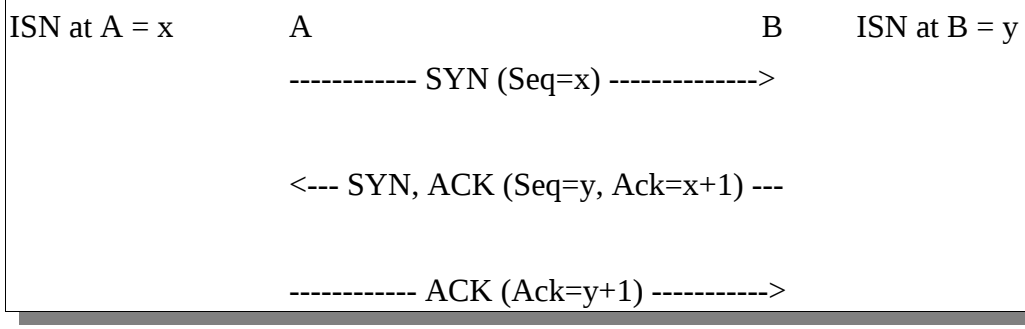
d) If Computer B with IP address 129.130.1.1 66.66.64.1 33.33.66.66 36.30.30.36 sends an IP datagram to destination 255.255.255.255, will Computer A receive the datagram? Explain you answer.

IP of A	129.129.129.129	66.66.66.66	33.33.33.33	36.36.36.36
Subnet mask	/13	/20	/18	/12
Network address	129.128.0.0	66.66.64.0	33.33.0.0	36.32.0.0
Directed broadcast	129.135.255.255	66.66.79.255	33.33.63.255	36.47.255.255
Devices	$2^{19} - 2$	$2^{12} - 2$	$2^{14} - 2$	$2^{20} - 2$
IP of B	129.130.1.1	66.66.64.1	33.33.66.66	36.30.30.36
Same network	Yes	Yes	No	No

Question 1 [4 marks]

Draw a diagram to illustrate the TCP connection setup process between client A and server B. You must show the important flags for each segment, as well as the sequence and acknowledgement numbers when relevant. Assume A chooses an initial sequence number of 105/263/412/91, and B chooses 63/58/206/115.

Answer



Question 2 [2 marks]

If you have three web browsers (Internet Explorer, Firefox, Chrome) open on your computer with IP address 103.64.2.1, and you use all three browsers to transfer data with the web server at www.google.com (which has IP 216.239.61.104), then when the operating system on your computer receives data from the web server, how does it know which web browser to send the data to? Explain your answer.

Answer

Each client application will use a different port number. When TCP receives the data it looks at the destination port number to determine which web browser application it must deliver the data to.