زمستان۹۶-حل تمرین شماره ۲

سوال اول:

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The Web: HTTP; file transfer: FTP; remote login: Telnet; e-mail: SMTP; BitTorrent file sharing: BitTorrent protocol

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The IP address of the destination host and the port number of the socket in the destination process.

۳-

a) Reliable data transfer
TCP provides a reliable byte-stream between client and server but UDP does not.

b) A guarantee that a certain value for throughput will be maintained
Neither

c) A guarantee that data will be delivered within a specified amount of time
Neither

d) Confidentiality (via encryption)
Neither

۴-

The applications associated with those protocols require that all application data be received in the correct order and without gaps. TCP provides this service whereas UDP does not.

۵-

The message is first sent from Alice's host to her mail server over HTTP. Alice's mail server then sends the message to Bob's mail server over SMTP. Bob then transfers the message from his mail server to his host over POP3.

۶-

FTP uses two parallel TCP connections, one connection for sending control information (such as a request to transfer a file) and another connection for actually transferring the file. Because the control information is not sent over the same connection that the file is sent over, FTP sends control information out of band.

۷-

Recall that in BitTorrent, a peer picks a random peer and optimistically unchokes the peer for a short period of time. Therefore, Alice will eventually be optimistically unchoked by one of her neighbors, during which time she will receive chunks from that neighbor.

۸- پاسخ در صفحه ی ۱۰۰ کتاب موجود است.

سوال دوم:

a) The document request was http://gaia.cs.umass.edu/cs453/index.html. The Host : field indicates the server's name and /cs453/index.html indicates the file name.

b) The browser is running HTTP version 1.1, as indicated just before the first <cr><lf> pair.

c) The browser is requesting a persistent connection, as indicated by the Connection: keep-alive.

Mozilla/5.0. The browser type information is needed by the server to send different versions of the same object to different types of browsers.

سوال سوم:

Cache-Control: server به cache میگوید که تا چه مدت فایل ارسال شده را ذخیره کند (به ثانیه.)
Last-Modified: آخرین زمانی که فایل فرستاده توسط server تغییر کرده است.
Keep-Alive: برای connection های persistent مورد استفاده است و به مقصد اعالم میکند که پس از دریافت پیام، connection را همچنان باز نگه دارد .
Timeout: مدت زمانی که host اجازه میدهد connection بدون استفاده باز بماند .
Max: حداکثر تعداد request هایی را بیان میکند که client میتواند در connection مورد نظر ارسال کند.

سوال چهارم:

مدت زمان مورد نیاز برای به دست آوردن آدرس IP: RTT1 + RTT2 + … + RTTn

مدت زمان مورد نیاز برای برقراری TCP connection و دریافت فایل مورد نظر:

RTT0 + RTT0

در کل : 2RTT0 + RTT1 + RTT2 + …. + RTTn

سوال پنجم:

For calculating the minimum distribution time for client-server distribution, we use the following formula:

$$D_{cs} = max\{NF/u_s, F/d_{min}\}$$

Similarly, for calculating the minimum distribution time for P2P distribution, we use the following formula:

$$D_{P2P} = max\{F/u_s, F/d_{min}, NF/(u_s + \sum_{i=1}^{N} u_i)\}$$

Where, F = 15 Gbits = 15 * 1024 Mbits

u_s = 30 Mbps

$d_{min} = d_i$ = 2 Mbps

Note, 300Kbps = 300/1024 Mbps.

Client Server

		N		
		10	**100**	**1000**
	300 Kbps	7680	51200	512000
u	**700 Kbps**	7680	51200	512000
	2 Mbps	7680	51200	512000

Peer to Peer

		N		
		10	**100**	**1000**
	300 Kbps	7680	25904	47559
u	**700 Kbps**	7680	15616	21525
	2 Mbps	7680	7680	7680

سوال ششم:

پاسخ در صفحه 109 کتاب است.

سوال هفتم:

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۱- Root DNS Server

۲- Top-level domain (TLD) server

۳- Authoritative DNS server

۲ -صفحات 137و 138کتاب.

۳-

الف-

- <foo.com, dns.foo.com, NS> و <dns.foo.com, IP_ADDRESS, A>

ب-

- <foo.com, mail.foo.com, MX> و <mail.foo.com, IP_ADDRESS, A>