COMS3200/7201 Assignment 1 Part AB Solutions

Part A
Questions

All answers should be in milliseconds(ms) rounded to four decimal places.

1. At what time does D receive the DNS request from Client C? (2 marks)

   297.2785

2. At what time does C receive the DNS response from D? (2 marks)

   594.5570

3. At what time does V receive the TCP SYN request from Client C? (2 marks)

   876.5749

4. At what time does C receive the TCP SYN/ACK acknowledgement from Server V? (2 marks)

   1158.5927

5. At what time does V receive the HTTP GET packet from Client C? (2 marks)

   2880.7546

6. At what time does C receive the first packet of the HTTP response from Server V? (3 marks)

   4602.9165

7. At what time does C receive the fifth (last) packet of the HTTP response from Server V? (3 marks)

   11002.9165

8. At what time is the connection between Client C and Server V closed? (4 marks)

   12130.9880

Part B (25 marks)

1. What is the web browser being used by the sender? (-1mark)
   See http.user_agent **Mozilla**/5.0 (X11; U; Linux x86_64; en-US; rv:1.9.2.3) Gecko/20100423 Ubuntu/10.04 (lucid) **Firefox**/3.6.3

2. What is the web server software being used in the remote server? (1 mark)

   See http.server Microsoft-**IIS**/6.0

3. Is protocol offloading being used at the client ? (-1 mark)

   No. OS leaves the header checksum blank (zero) for the NIC to compute and fill in as the packet is sent. A checksum of 0 typically indicates that protocol offloading is in use. In this case the checksums are computed.

4. How many routers are there between the client and server? (1 mark)

    8   64 (start TTL) – 56 = 8

5. What is the raw TCP sequence number of

    a. the packet initiating the TCP connection. (1 mark)   **3851697578**
    b. the acknowledgement from the server for the above packet? (1 mark) **2747564191**

6. What are the values of the 8 TCP flags (CWR to FIN) as a single 8-digit binary number? For example, if FIN was set and the others unset, you would write 00000001. (2 marks)

    00011000 (ACK and PSH flags set)

7. The GET request is for a javascript file resource. What is the address of the web page that requested this javascript file resource? (1 mark)

    See HTTP Referer   **http://abc.go.com**

8. How long should the recived javascript file be considered fresh (in seconds) ? (-1 mark)

    101 No cash-control in GET. Server sets   Cache-Control: max-age=101

9. What is the initial value of the window scale shift count indicated by

    a. the client? (1 mark)   **7** See SYN packet tcp.options.wscale
    b. the server? (1 mark) **5** See SYN/ACK packet tcp.options.wscale

10. The GET packet from the client to the server has an advertised window size of 46. What is the true window size in bytes? (3 marks)

    5888   = (46 * (2^7))

11. How many bytes are lost? (4 marks)

    1448   In DUP ACK,   left edge = 2747583016   - Acknowledgment number: 2747581568

12. How many duplicate acknowledgments are sent by the client regarding the missing bytes? (2 mark)
    3

13. In which frame is the lost frame retransmitted? (2 marks)

    38

14. In which frame does the receiver indicate that all missing frames have been received? (2 marks)

    39