CS 176a HW 1

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1 Problem 1

(a) A whois database is a database of the contact information of every registered domain name.

(b) Kevin Schmidt is listed as the administrative contact for USB.edu. The UCSB servers are named NS2.UCSB.EDU, NS1.UCSB.EDU, BRU-NS2.BROWN.EDU.The domain name was obtained on 27-Apri I used ICANN whois server to find this.

(c) bing.com has two IP addresses, 204.79.197.200, and 13.107.21.200.

(d) No its only adddress is 23.185.0.2.

(e) Csil machine 32's IP address is 128.111.43.255.

2 Problem 2

(a) If the TCP client is run before TCP server, it won't connect to the server and fail because no TCP connection is made.

(b) When you run UDPClient before running UDPServer, the code does not connect with the server and nothing happens.

(c) If the client side and the server side are running on different ports they wont connect to each other and the same thing will happen as if the client was run without the server running.

3 Problem 3

It will be necessary to change UDPServer.py. This is because UDPClient.py is trying to communicate through port 5432 now and thus UDPServer.py has to compensate for that and its port number need to be changed from 16000 to 5432.

4 Problem 4

(a) In DNS, operations can be repeated harmlessly, so if a certain length of time has passed since a DNS request without a response, it will just make the request again.

(b) Yes, an IP address consists of a network number and a host number. If a machine has two ethernet cards it can be on two separate networks and as such has two IP addresses.

5 Problem 5

Yes you can configure your browser to open simultaneous connections to a website. The advantage of having many TCP connections is that the data is transferred reliably and the packets will be in order and all packets will be transmitted. However the disadvantage is that TCP has congestion control which will slow down the transfer of data.

6 Problem 6

(a) The amount of time it takes to get the IP address is $RTT_1 + RTT_2 + ... + RTT_n$. Once we have the IP address there are two more communications of length RTT_0 one to set up the TCP connection with the server and another to request and receive the small object. The total length of time is $2 * RTT_0 + RTT_1 + RTT_2 + ... + RTT_n$.

(b) Now we need to do 2 connections for each of the small objects that are referenced in the HTML file. So the total length of time is $16 * RTT_0 + RTT_1 + RTT_2 + ... + RTT_n$.

(c) $6 * RTT_0 + RTT_1 + RTT_2 + ... + RTT_n$.

(d) $3 * RTT_0 + RTT_1 + RTT_2 + ... + RTT_n$.

7 Wireshark Lab

Part 2.1

1. The DNS query and response messages are sent over UDP.

2. Both the destination port for the query and the source port of the response message are 54.

3. 128.238.29.23 is the IP addess to which the DNS query message is sent.

4. The DNS query is a standard query, and it does not have any answers.

5. No, there's only one set of DNS query and response.

Part 2.2

1. They are both 53.

2. 128.238.29.22

3. There is only one answer, and it contains the IP address of mit.edu, which is 18.7.22.83

Part 2.3

1. It responds with 3 MIT nameservers, bitsy.mit.edu, strawb.mit.edu, w20ns.mit.edu. However it does not give you the IP addressses of these nameservers.