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HW 2

1.

a. A whois database is a publicly accessible directory that contains info about domain name registrations. It is maintained by ICANN to provide transparency about who owns and manages domain names and IP addresses.
b. ETS Network & Communications Services at UCSB is in charge of UCSB network. The names of UCSB name servers are n1.ucsb.edu, bru-ns2.brown.edu, and ns2.ucsb.edu. UCSB obtains its original DNS entry in 1987-04-27. I got the whois database from Educause,
c. Name: reddit.com. Address: 151.101.1.140, 151.101.65.140, 151.101.129.140, 151.101.193.140
d. UCSB web server (ucsb.edu) does not have multiple IP addresses
e. Machine #16: 128.111.30.216

2.

a. When a TCP client attempts to establish a connection the server and TCP server is not running, you get a connection refused error [Error 61]. Well, TCP requires a 3 way handshake to establish a connection between its client and server and since the server is not running/listening on that port at all, the client can't complete the handshake and fails to connect.
b. The UDP client sends its message a specified server and port where the UDP server is not even running, so the UDP connect (since its connectionless) is sent into the void, and the client does not receive an acknowledgement or error. Why? UDP is a connectionless protocol that sends its data to a destination without establishing a handshake. So when no server is running, the client's message will go into the void

c. If you use different port numbers for the client and server side, the client and server will not be able to communicate. In TCP, the handshake protocol will lead the client to fail to establish a connection with the server while in UDP, the client will send a message, but the server does not receive it.

3. It is not necessary to change UDPServer.py as the server continues to listen on port 12000 and responds to the client using client's source port (5432). Before, the client's port number was a randomly assigned ephemeral port and the server was 12000. After, the client's source port was 5432 and server's port continued to be 12000.

WireShark Lab (Part 2)

Part 2.1:

1) TCP
2) Destination port for DNS query message and source port of DNS response message is both 53.
3) The DNS query message is sent to IP address 169.231.148.207
4) The DNS Query type is A. THe query message doesn't contain answers as DNS queries are requests for information, and the answers are provided in the server's response.
5) Yes, the host issues new DNS queries before retrieving each image.

Part 2.2:

1) Both destination port for DNS query message and source port for response message is 53
2) 128.111.5.227
3) 2 Answers: www.mit.edu is a CNAME (Caonical Name) pointing to www.mit.edu.edgeke.net; A record: The IP address associated with www.mit.edu.edgekey.net is 23.56.123.79

Part 2.3:

1) ers: asia1.akam.net, eur5.akam.net, ns1-37.akam.net, asia2.akam.net, use2.akam.net,Response message provides MIT nameserv use5.akam.net, usw2.akam.net, ns1-173.akam.net

- The response message doesn’t provide the IP addresses of the MIT nameservers as the DNS response only includes the nameserver names (NS records) not their corresponding A records.