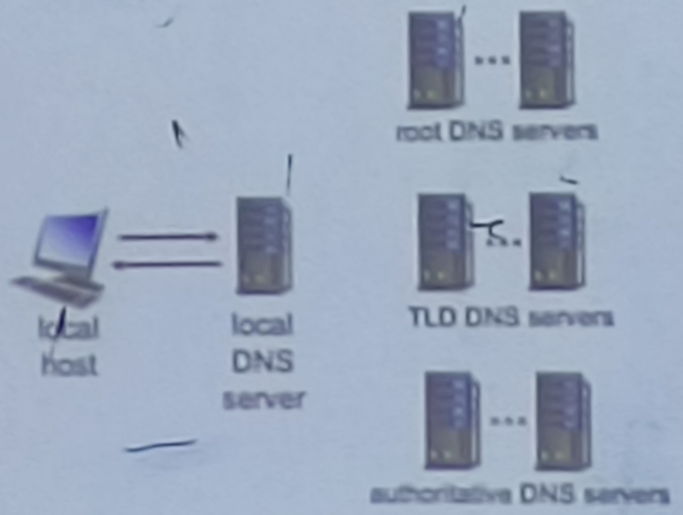
III. DNS Part Two (5 pts)

Suppose that the local DNS server caches all information coming in from all root, TLD, and authoritative DNS servers for 20 time units only before the record will expire. (Thus, for example, when a root server returns the name and address of a TLD server for .com, the cache remembers that this is the TLD server to use to resolve a .com name for 20 time units). Assume also that the local cache is initially empty, that iterative DNS queries are always used, that DNS requests are just for name-to-IP-address translation, that 1 time unit is needed for each server-to-server or host-to-server (one way) request or response, and that there is only one authoritative name server (each) for any .ph or .com domain. Please note that the local host's machine does not cache any records inside the machine, all IP resolution by the host will be asked to its local DNS server.



Consider the following DNS requests, made by the local host at the given times:

- *t=0*, the local host requests that the name ccs.dlsu.edu.ph be resolved to an IP address.
- *t=1*, the local host requests that the name creative.arts.org be resolved to an IP address.
- *t=5*, the local host requests that the name coe.up.edu.ph be resolved to an IP address.
- *t=10*, the local host *again* requests that the name ccs.dlsu.edu.ph be resolved to an IP address.
- *t=12*, the local host requests that the name ust.edu.ph be resolved to an IP address.
- *t=30*, the local host *again* requests that the name ccs.dlsu.edu.ph be resolved to an IP address.

3-1. What is the total time units need to resolve ccs.dlsu.edu.ph at t=0? _____

3-2. What is the total time units need to resolve creative.arts.org? _____

(2)

VII. DHCP (7pts)

```
▾ Dynamic Host Configuration Protocol (Offer)
    Message Type: Boot Reply (2)
    Hardware type: Ethernet (0x01)
    Hardware address length: 6
    Hops: 0
    Transaction ID: 0x00003d1d
    Seconds elapsed: 0
  › Bootp flags: 0x0000 (Unicast)
    Client IP address: 0.0.0.0
    Your (client) IP address: 192.168.0.10
    Next server IP address: 192.168.0.1
    Relay agent IP address: 0.0.0.0
    Client MAC address: Grandstr_01:fc:42 (00:0b:82:01:fc:42)
    Client hardware address padding: 00000000000000000000
    Server host name not given
    Boot file name not given
    Magic cookie: DHCP
  ▾ Option: (53) DHCP Message Type (Offer)
      Length: 1
      DHCP: Offer (2)
  ▾ Option: (1) Subnet Mask (255.255.255.0)
      Length: 4
      Subnet Mask: 255.255.255.0
  ▾ Option: (58) Renewal Time Value
      Length: 4
      Renewal Time Value: (1800s) 30 minutes
  ▾ Option: (59) Rebinding Time Value
      Length: 4
      Rebinding Time Value: (3150s) 52 minutes, 30 seconds
  ▾ Option: (51) IP Address Lease Time
      Length: 4
      IP Address Lease Time: (3600s) 1 hour
  ▾ Option: (54) DHCP Server Identifier (192.168.0.1)
      Length: 4
      DHCP Server Identifier: 192.168.0.1
  ▾ Option: (255) End
      Option End: 255
    Padding: 000000000000000000000000000000000000000000000000
```

host

$2^8 \Rightarrow 256$

7-1 What is the message operation code of the DHCP payload? Boot Reply (2)

7-2 What is the current client's IP address? 0.0.0.0

7-3 What is the gateway IP address?

7-4 What is the value of the offered IP address?

7-5 What is the value of client hardware address?

7-6 What is the DHCP IP address?

7-7 What is the subnet's IP address range?

192.168.0.0 – .255

MC Questions (10 pts)

1. Why is interoperability in networking essential?

A. It increases data transfer speeds.	C. It hardens network security.
B. It allows devices from different vendors to [illegible]	D. It simplifies network management.

2. How is consensus for protocol standardization achieved?

A. Protocols are randomly selected.	C. Protocols are voted by standards organizations.
B. Protocols are implemented by major vendors.	D. Protocols are thoroughly discussed and reviewed.

3. Who sends and what is the purpose of a DHCP DISCOVER message?

A. Server, to offer an IP address	C. Client, to locate a DHCP server
B. Server, to acknowledge a request	D. Client, to request an IP address

4. What is/are the consequence/s of a rogue DHCP server in a network?

A. Provide incorrect IP address configuration	C. Intercept client messages
B. Exhaust the address pool	D. All of the above (options A, B, and C)

5. What is the purpose of a DNS registrar?

A. To host DNS servers	C. To manage DNS zones
B. To register domain names	D. To resolve domain names

6. Which of the following is an example of an FQDN?

A. https://www.dlsu.instructure.com	C. https://dlsu.instructure.com
B. www.dlsu.instructure.com	D. www.dlsu.instructure

7. Which of the following is NOT a typical use of Syslog?

A. Security incident detection	C. Early failure detection
B. Network usage reporting	D. Data encryption

8. Which layer of the Syslog architecture puts messages on the wire and takes them off the wire through a chosen transport layer protocol?

A. Encryption	C. Transport
B. Authentication	D. Compression

A. Server, to offer an IP address
C. Client, to locate a DHCP server
B. Server, to acknowledge a request
D. Client, to request an IP address

4. What is/are the consequence/s of a rogue DHCP server in a network?

A. Possible incorrect IP address configuration
C. Intercept client messages
B. Exhausting the address pool
D. All of the above (options A, B, and C)

5. What is the purpose of a DNS registrar?

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9. What TFTP message should be used to initiate a file download request?

A. RRQ
C. DATA
B. WRQ
D. ACK

10. Which scenario is NOT a typical use case for TFTP?

A. Transferring firmware updates
C. Transferring large databases
B. Backing up network device configuration
D. Booting thin clients