

**CNT 4704: Analysis of Computer Communication Networks**  
**Homework 1 (Fall 2014)**

**Assigned Oct. 1<sup>st</sup> ; Due midnight Oct. 8<sup>th</sup> via WebCourse**

1. Perform "traceroute" from your computer at home (not do it in campus!) to <http://en.ustc.edu.cn/> (If use Windows, please use tracert). If you live in student dorm inside campus network, you are allowed to use the online traceroute <http://www.tracert.org/traceroute/> to do the traceroute.

a). Copy the SCREENSHOT image showing the traceroute result in your homework.

b). find out the two edge routers that in between lies the Pacific Ocean line.

b). Try to identify the regions or ISP networks that the traceroute packets pass through from the source to the destination.

2. True or false? If a statement is false, explain briefly why it is wrong:

a). If a web request is not going through a proxy, then the HTTP GET request does not need to have the "Host:..." field.

b). If we know the IP address of an email server, we can use "telnet hostname 25" to connect to it and send out a spam email manually to any email address.

c). DNS request and response usually rely on TCP packet for reliable data transfer.

d). When a user uses Microsoft Outlook to check his email, his computer relies on SMTP protocol for both sending and retrieving emails from his email server.

e). DNS database has more than 4 types of resource records.

**3. HTTP protocol practice:** In class I have demonstrated how you can use telnet in Eustis machine to setup TCP connection to a webserver on port 80, and conduct HTTP GET command manually. This question requires you to log in Eustis or Eustis2 machine, then use "telnet www.ucf.edu 80" to issue the GET command to get the base HTML file of the webpage: <http://www.ucf.edu/locations/>

You must make sure your GET command is issued correctly, and with response message starting with "HTTP/1.1 200 OK". In your assignment report, you must include the SCREENSHOT image showing the telnet interaction with the GET command lines you issued and the "HTTP/1.1 200 OK" message header lines (you don't need to show the entire content of the base html file since it is very long).

4. Suppose you open a non-profit organization called "flashNet" and want to set up your organization's network. Your network has the following servers:

1. Two Authoritative DNS server: "thunder.flashNet.org" with IP as "128.119.1.44" and "lightning.flashNet.org" with IP as "128.119.1.60"
2. Web server: "flashNet.org" with IP as "128.119.1.10".
3. Email server: "mail.flashNet.org" with IP as "128.119.1.10" (i.e., the same server machine serves as both web server and email server)

Your organization's email address is "username@flashNet.org".

- a). What resource records (RRs) do you need to provide to the upper-level ".org" Registrar?
- b). What RRs do you need to put in your company's authoritative DNS servers?

**5. DNS query practice:** please log in to Eustis or Eustis2 machine in our department, then use "dig" command to get answer for this question:

- a). For UCF student email account [username@knights.ucf.edu](mailto:username@knights.ucf.edu), find out what is the email server's name, and its IP address (or list of addresses).
- b). Find out what are the authoritative DNS server(s) name(s) and IP address(es) for our CS division "cs.ucf.edu".

For these two questions, in addition to provide answers, you should also attach the SCREENSHOT images of your dig commands in your report file.