

CS138 Homework Assignment 2

Due: 11:59pm, March 11, 2009

1. 24.248.56.68 is an IP address.
 - a. What DNS name has this as at least one of its associated addresses? (Hint: use the `nslookup` command on Linux — do a “man nslookup” to discover how to use it. In particular, you’ll want to run it interactively and use the “set query=ptr” command to look for ptr records.)
 - b. To determine the answer to part a, you used nslookup. What name servers were contacted to do this lookup? Assume the query was iterative (and thus starts at the root). (Hint, consider the “set query=ns” command.)
2. In class we wondered how reverse lookups are done when one is in one part of the world, looking up an IP address in another.
 - a. 203.125.49.10 is an IP address in Singapore. What outfit appears to have assigned the address? (Hint: after using nslookup, use google.)
 - b. Note that there is no reverse lookup available for this address, perhaps because its owners don’t want you to know what it is (it’s actually *extdns.dns3.gov.sg*: for really minimal extra credit, how did I figure this out?). 137.132.21.117 is another IP address in Singapore. What DNS name has this as at least one of its associated addresses?
 - c. What name servers were contacted to give you the answer to the previous question?
 - d. How do you reconcile the answer to part a with those of b and c?
3. The Needham-Schroeder protocol is discussed in lecture 7. In slide VII-10 we mention that the third message could be replayed by Mallory so as to make Bob think he’s talking to Alice, when it’s really Mallory. Show how this can be done and explain why the version of the protocol given in slide VII-11 prevents it from happening.
4. The concept of hierarchical trust is discussed in slide VII-24. Assuming each realm has its own privilege server (consisting of a Kerberos KDC and additional functionality), explain how a client at `../../acme.com/east_coast` would obtain a ticket that authenticates it at `../../college.edu/CS`. Be sure to indicate where the restrictions imposed by hierarchical trust (as opposed to transitive trust) are enforced.
5. We discussed the concepts of strict consistency, sequential consistency, and entry consistency in lecture 9.
 - a. Which form of consistency do clients of GFS see? Explain.
 - b. NFS’s file protocol is weakly consistent. If all its clients use its lock protocol, do they then see entry consistency? Explain. (Hint: be careful.)