UNIVERSITY OF CALIFORNIA, DAVIS

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EEC173A/ECS152A Computer Networks **Winter 2022**

Project 2 (Due: March 6, 2022)

Submission Instructions:
Prepare a joint report with all three parts together in a PDF format. Answer all the questions clearly with succinct explanation and relevant screenshots required, along with the question you are answering. Attach code for part B at the end of your report.

Part A (25 points). Wireshark Lab: HTTP
Please refer to: Project2A_Wireshark_HTTP_v7.pdf

Part B (50 points). Web Proxy Cache.

a. Please refer to instructions: Project2B_ProxyServer.pdf
   Explain your results in a few sentences and in addition to that, explain briefly how your program works in not more than two paragraphs.
b. Analyze your proxy cache: Compare the load times of webpages from web sites before and after caching. You will need to build on top of part (a) to include code to make time measurements, write a paragraph briefly explaining how you did that. Hint: The load times for pages should be lower when cached than when they are not. Also think of a graphical way to show your results.

Part C (25 points). DNS and *dig*.
We will use the useful *dig* tool available on Unix and Linux hosts to explore the hierarchy of DNS servers. A DNS server in the DNS hierarchy delegates a DNS query to a DNS server lower in the hierarchy, by sending back to the DNS client the name of that lower-level DNS server. First read the man page for dig, and then answer the following questions.

a. Starting with a root DNS server (from one of the root servers [a-m].root-servers.net), initiate a sequence of queries for the IP address for your department's Web server by using dig. Show the list of the names of DNS servers in the delegation chain in answering your query.
b. Repeat part (a) for several popular Web sites, such as google.com, yahoo.com, or amazon.com.