CSC 41200 computer networks

Lab assignment 1

Due Date Wednesday, 28, February 2024

IMPORTANT!

Please follow the submission guidelines below or your submission will receive no points.

1. You are expected to submit two files (a PDF lab report and a ZIP file containing the screenshots) to Blackboard. Note that both files must be uploaded in the same submission attempt.
2. The PDF file must include the solutions and explanations regarding the questions.
3. The zip file must contain at least three (you may not be able to fit all the traces on one screenshot so you may need more screenshots)
4. Each screenshot must be named with the time and the date of the experiment, for example, Test1,2:45PM, Feb22.jpg (or any other format).
5. Naming convention:
   1) Report: "FirstName_LastName_Lab**XX**.pdf"
   2) Source: "FirstName_LastName_Lab**XX**.zip".

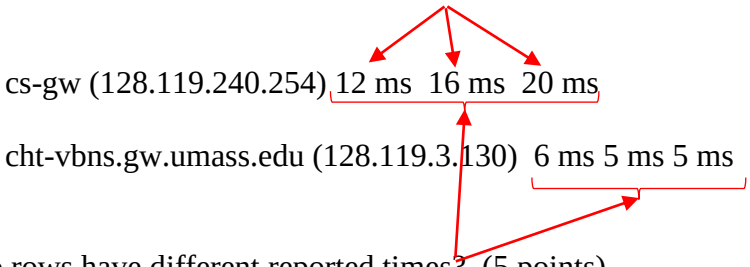
   *Please replace "XX" with the actual project number (2 digits), and "Y" with the section number, i.e. CC1 or CC2.
6. After the due date, all submissions are final. You cannot change it for any reason. Double-check before you make the submission.
7. If you don't follow the naming convention, your report will not be graded.

We learn about traceroute in class and how it reports the actual delay between the sender and the receiver. In the path of source and destination, the source will send three packets and then it will receive it back and then it will calculate the delay of the path.

Attention! For this lab, you **don't** need to do any **programming**. You just need to find out how to do traceroute**.**

Perform a Traceroute between a university server (i.e., .edu website) within the continental United States at three different hours of the day (one in the morning, one in the afternoon, and one at night). Attach the screenshots of the outcomes and answer the following questions.

1. What is the university you are trying to research? (2 points)
2. Explain why the reported times are different in any trace back. You will have a time report like below. Please explain the reasons why these numbers are different.
   (a) Why the three numbers are different in any row? (3points)



   (b) Why do two rows have different reported times? (5 points)

3. Find the average and standard deviation of the round-trip delays at each of the three hours. (5 points)
4. Find the number of routers in the path at each of the three hours. Did the paths change during different hours? (2 points)
5. Try to identify the number of ISP networks that the Traceroute packets pass through from source to destination. In your experiments, do the largest delays occur at the peering interfaces between adjacent ISPs? (Hint: Routers with similar names and/or similar IP addresses could be considered as part of the same ISP). (3 Points)