Design Document
Q1 - Traceroute

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PROBLEM STATEMENT:

Consider the design of traceroute program discussed in the class. The program operates by sending UDP datagrams at increasing TTL and receiving the ICMP replies to determine the router's address at respective TTL.

1. Now let us modify the program by introducing threads into the process to quicken the finding of route. There is one thread per one TTL i.e. one thread for TTL=1, another thread for TTL=2, another thread for TTL=3 etc. There are group of threads (at least 3) which read ICMP replies. Design this multithreaded program including how the coordination will happen among all the threads. Implement this. Run your program with only one thread for sending and receiving replies and measure time taken. Run your program with the above implementation and measure time taken. Plot this for different destinations.
2. Consider the 13 DNS root server IP addresses. Goal is to find maximum overlapping path between all 13 root servers. Write a program that identifies paths to all 13 root servers and prints the maximum overlapping path. Does this change when you run your program at different times? Does this change when you run your program from different continents? Plot the length of maximum overlapped path from different contents namely West coast America, East coast, Europe, South India.

Solution:

We have implemented the normal traceroute program with the thread implementation. It includes all the implementations like Raw socket, recvfrom, sendto etc.

We haven't plotted graphs though.