

Department of Network Engineering and Security

Network Programming (NES 416)

MID Exam – Spring 2021

Time: 60 minutes

Submission: upload your solution as one file containing required code. Also, include screenshots of compiling and running samples on your own machine. the name of your file should be your student_ID.
Make sure he file is not corrupted and opens correctly

Description: [CLO2] [100 pts]

You need to write a C program that lists the TCP ports that are open on a given target machine. (An open port is a port number that a machine is actively listening on.)

The program requirements are as follows:

- The program accepts on the command line the following arguments:
 - The IP address of the target machine.
 - Two integers (separated by space) representing the lower and the upper port numbers between which port numbers need to be scanned. For example, a command line similar to the following
`./program_name 1.2.3.4 1 20000`
means that your program should find and list all open TCP ports on the machine with IP address 1.2.3.4 in the range from 1 to 20000, inclusive.
 - If the target is up and running, the program's output should look similar to the following
Open TCP ports on '1.2.3.4' are: 1 7 9 13 19 22 37 80 111 8090
 - The program needs also to report whether the target machine is down or unreachable.
- ***Write your OWN code. You are not allowed to use libraries or tools developed by any third party.***

Hints:

To determine whether a given machine has a specific TCP open port number, your client will try to establish a connection to that machine on the specific port number, and determine whether it is open or not based on whether the connection is successful; and if not, on the error occurring.