Grading Guidelines:

A right answer will get full credit when:

1. It is right (worth 25%)
2. It is right **AND** neatly presented making it easy and pleasant to read. (worth an **extra** 15%)
3. There is an **obvious and clear link** between 1) the information provided in the exercise and in class and 2) the final answer. A clear link is built by properly writing, justifying, and documenting an answer (worth an **extra** 60%).
4. Calculation mistakes will be minimally penalized (2 to 5% of full credit) while errors on units will be more heavily penalized.

**Late Submission** : as specified in the syllabus. Days counting starts one minute after the deadline.

**Check Your Submission:**  after submitting, download your submission to check whether it is the right version and it is complete.

You are welcome/encouraged to discuss exercises with other students or the instructor. But, ultimately, **personal** writing is expected.

* USE THIS FILE AS THE STARTING DOCUMENT YOU WILL TURN IN. **KEEP IN THE QUESTIONS** AND INSERT YOUR ANSWERS.
* IF USING HAND WRITING (STRONGLY DISCOURAGED), REWRITE THE QUESTIONS.
* FAILING TO FOLLOW TURN IN DIRECTIONS /GUIDELINES WILL COST A 30% PENALTY.

Objectives of this assignment:

* to learn independently about an important topic
* to answer questions about the independently studied topic
* to empower you: you can learn any networking topic on your own
* to learn independently new concepts

What you need to do:

Answer the questions and/or solve the exercises described below.

KEEP THE GRADING GUIDELINES ABOVE TO REMEMBER THE DIRECTIONS AND HOW THE HOMEWORK IS GRADED. Make sure the show the date. No credit will awarded without showing the date when the work was done.

Objective: The first objective is to learn independently about *monitoring traffic* on your machine. I invite you to download, install, and use *Wireshark*. Wireshark is a popular sniffing tool that will allow you to monitor the traffic on any interface of your machine. After you figure out the basic functions of Wireshark, you will have to find out what a "secret agent" running on your machine sends out.

The second objective is to help you debug the socket programming assignments. Consider using Wireshark to check whether the protocols you implement meet the requirements.

Resources:

1. Internet.
2. Wikipedia, Youtube (for short getting started tutorials on Wireshark)
3. Your TA and instructor

**Problem**

A program ***secretSender*** (executable only) is provided with this assignment on Canvas. We know that this program ***secretSender***, if executed, sends a secret message to some node with IP address IPx on Port Px. The objective is to find out

1) the message ***Ms*** sent,

2) the transport protocol used,

3) the IP address IPx of the destination host targeted by *secretSender.*

The only information we know is that *secretSender* sends **either** a datagram **or** a segment to Port number = 10076.

and 2) the IP address of the destination host.

You are required to perform the following tasks:

1) Download, install, and execute *Wireshark*.

2) Use any *Wireshark* tutorial for beginners. You will find some tutorials on *Youtube*. Try to learn only basic functions such that you know how to set a simple filter and display/examine captured packet(s).

3) (15 points) Take a snapshot showing that you ran *Wireshark* on your machine.

Insert snapshot here .... (The READABLE screenshot must show is some way the date you took the snapshot. No credit without the date)

This should be able to show the date in the bottom right and a window of the Wireshark Network Analyzer running in a window. I also have a command window open and simply entered for a date and then time command to show in 2 different ways this.

A screenshot of a computer

Description automatically generated

4) (10 points) Prepare *Wireshark* with the right filter to capture the secret message sent by *secretSender*. Insert snapshot here showing and highlighting the filter used....

Here I circled where I added the display filter. I used one for tcp and then also for udp to make sure the port signal would being recognized.

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5) Execute *secretSender* by typing "java secretSender" on your command prompt.

6) (35 points) Take a snapshot that clearly shows the filter expression you used and the packet that contains the secret message ***Ms***. Highlight on the snapshot the filter function.

Insert snapshot here .... (The READABLE screenshot must show is some way the date you took the snapshot. No credit without the date)

Here you can see the packet I have circled that has the secret message and then the display filter I used to show the info for just this java program.

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7) (20 points) Highlight on the snapshot the information we required you to provide, i.e, the message ***Ms*** sent, the transport protocol used, and the IP address IPx.

Insert snapshot here with the highlighted required information.... (The READABLE screenshot must show is some way the date you took the snapshot. No credit without the date)

I have circled the IP address of the where the secret message was sent. Then I circled the protocol type which is UDP. Then I circled the secret message sent which was “Peace Eagle”.

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8) (20 points) Provide the message ***Ms*** sent, the transport protocol used, the IP address IPx, and the IP address of the machine on which *secretSender* was executed.

Insert snapshot here highlighting the message Ms .... (The READABLE screenshot must show the date. No credit without the date).

Here you can see when I prompted through the command line the java program to execute. I had first setup the proper filter. I found out that the protocol used was UDP. The secret message was “Peace Eagle”. The source IP of where the program first ran was 192.168.1.172. And then the IP of where the secret message was sent is 131.204.14.247.

**A screenshot of a computer

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**What you need to turn in**:

* Electronic copy of this file (including your answers) (standalone). Submit the file as a Microsoft Word or PDF file.
* Recall that answers must be well written, documented, justified, and presented to get full credit.
* How this assignment will be graded:
* A right answer will get full credit when:
* It is right (worth 25%)
* It is right AND neatly presented making it easy and pleasant to read. (worth 15%)
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