

# BLG433E

## COMPUTER COMMUNICATIONS

### HOMEWORK2

Prof. Dr. Sema F. OKTUĞ  
R&T Asst. Yusuf ÖZÇEVİK

#### OBJECTIVES

The purpose of this homework is to give you experience on network analyzing with the Wireshark tool. You will meet different protocol types, and performance metrics such as Throughput, Round Trip Time (RTT) and Window Size.

#### QUESTIONS

You are expected to answer the following questions by providing the Wireshark screenshots:

**1. (20 Points)**

Use Wireshark to investigate DHCP protocol on your computer while getting an IP address from a DHCP server. Show the communication between your computer and the DHCP server with a sequence diagram and briefly describe each of the four messages seen in the diagram. (**Hint:** You can take on/off the airplane mode if you are not able to see discover and offer messages.)

**2. (20 Points)**

Try to capture a video traffic and a voice traffic over Wireshark on your computer. You can use one of the video/music sharing platforms. Please, state the protocols used by investigating packet headers. Is there any retransmission during the sessions using TCP or UDP protocols? Please, indicate and interpret the results.

**3. (20 Points)**

Try to capture a session that uses TCP protocol while listening to music or visiting a webpage. Using "Statistics" pane in Wireshark, Provide drawings for Throughput, RTT, and Window Size parameters over the session. Interpret the figures considering/referring TCP congestion control mechanism.

**4. (20 Points) File transfer:**

Download a file on your browser and try to capture **ftp** packets over Wireshark. If you can't capture any, what may be the reason for that? Try the process with the link given, "<ftp://speedtest.tele2.net/>", and take a screenshot of an ftp packet. Interpret the steps you covered during the file transfer process.

**5. (20 Points) Protocol analysis:**

- a. How many different traffic protocols do you capture in Wireshark? Please give them in a list.

- b. What are the specific protocol numbers of transport layer protocols (TCP, UDP, and ICMP)? Please provide screenshots from Wireshark to show them in packet headers.

## **REPORT DETAILS**

You are free to use any version of Wireshark you desired. Please, specify the Wireshark version used.

Your report should contain at least one screenshot about each of the questions provided above. Providing appropriate visual materials will make your work more understandable.

The outputs should be interpreted by giving a theoretical background and/or referring the lecture notes.

## **ORGANIZING YOUR SUBMISSIONS**

The homework should be prepared **individually**. There must be a report file to be uploaded on Ninova. This file should be named using the student number like "150150000.pdf". The delivery is accepted through Ninova until the submission deadline.