

# CSC 335

## Computer Networks

University of Michigan-Flint  
Computer Science



COLLEGE OF ARTS & SCIENCES  
COMPUTER SCIENCE, ENGINEERING, & PHYSICS

Fall 2021

November 8, 2021

## Homework 6

(100 points)

due by Nov 15, 2:30pm

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Remarks:

- No emailed homeworks will be accepted.
  - Only submission is via the Canvas system.
  - No late submissions will be accepted.
  - No submission means automatic 0.
  - Individual submission, not a group work!
  - Show your work in getting to your answer to get any credit.
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Questions for the deliverable:

1. Using the `ssh-keygen` tool from OpenSSH package (<https://www.openssh.com/>) create a key pair for PKI with the following algorithms:
  - (a) RSA with 4096-bit key
  - (b) DSA with 1024-bit key
  - (c) ECDSA with 521-bit key
  - (d) ed25519 with 4096-bit key

For your answer, submit

- (a) The commands you used to create the key pair,

- (b) Screenshots showing the directory listing of the public and private keys (dir command in Windows, ls -las in Linux/Mac)
- (c) The public key for each.

ssh-keygen is available out of the box in Linux (I believe for Mac too) and for Windows (it has been included in Windows 10 since version 1803, 2018). If not, you can download it from OpenSSH web site and for Windows with required Cygwin at <https://sourceforge.net/projects/sshwindows/>.

You can only upload one file for your answers. You can put everything in doc, pdf format, etc. or you can zip them into one file.

2. Read Chapter 8a, *Hands-on: Wireshark Packet Capture*. Complete the Hands-on Exercises on p. 291 of the textbook. Chapter 8a pdf is attached to this pdf.

For question 2, ignore the text there and do the following:

- (a) Go to Capture Filter and add a new filter to capture only those packets you are sending out. Please use the help on [https://www.wireshark.org/docs/wsug\\_html\\_chunked/ChCapCaptureFilterSection.html](https://www.wireshark.org/docs/wsug_html_chunked/ChCapCaptureFilterSection.html).
  - (b) Go to Options under Capture to select the filter you added in the previous step. Make sure the background is green on the area next to the Capture filter for selected interfaces. Submit a screenshot of your filter
  - (c) Click Start to start capturing.
  - (d) Browse a site or two in your browser.
  - (e) Stop the capture.
  - (f) Select all captured packets and export them all into a pcapng file. Submit your pcapng file.
3. End-of-Chapter questions 8-4 on p. 285: 8-4. A router that has the routing table in Figure 8-11 receives an incoming IPv4 packet. The source IPv4 address in the arriving packet is 10.55.72.234. The destination IPv4 address is 10.4.6.7. The TTL value is 1. The Protocol Field value is 6. What will the router do with this packet? (Hint: Carefully consider all the fields in the IP and TCP headers. Think like a router.)