Due Wednesday, August 12th 2020 (Week 6) at 11:55pm to Canvas **as .txt or .pdf**

Late submissions will be penalized by 10% per day (or part thereof), up to ==**6 days**==. After 6 days (August 18th 2020), the assignment will be given a 0%, as no later work can be accepted.

Requirements: Submit to Canvas a file named Homework2Answers.txt (or Homework2Answers.pdf, if using an application such as MS Word or Google Docs).

Answer all of the following **bolded** questions *in your own words*. No form of plagiarism will be tolerated (including copying answers from peers/internet)!

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1)

    a. If using a Windows machine, download putty.exe at its web page [www.chiark.greenend.org.uk/~sgtatham/**putty**/download.html](http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html)

        a. When you start PuTTY, connect to www.csun.edu on port 80, logging all session output to a local file (which you can copy/paste into your answers)
            i. You will want to use the following settings for successful connection…
                1. Session (Main options)->Connection type: **telnet**
                2. Session (Main options)->Close window on exit: **never**
                3. Terminal->Keyboard: **backspace is CTRL-H**
                4. Connection->Telnet: may need to switch to **Passive** mode (from Active)

    b. If not using PuTTY, you may launch telnet or netcat (nc) in your Mac terminal app or within a Linux shell, to connect to www.csun.edu on port 80 as follows:

```
telnet www.csun.edu 80
```

          or

```
nc -v www.csun.edu 80
```

Note: newer MacOS versions discourage use of telnet

    c. When the session starts, type the following **EXACTLY (making note of spaces)**:

```
GET / HTTP/1.1
Host: www.csun.edu
```

Then type 2 newlines.

(If needed, you can type ctrl-] and then type quit to exit telnet app.)

d. **What is the first line received from the server?**

_____

e. **What is the meaning of the numeric status code you receive in this line (from prior question)?**

_____

f. **In general, what does the command "GET /" do?**

_____

g. **Write the equivalent URL to access this site in part g…**

_____

h. **Now retry with the command "GET /index.html HTTP/1.1" (and be sure to put Host: www.csun.edu on the next line) What do you receive?**

_____

i. **In the received HTML part of the response in part i, what is the very last tag (after the </html>)?**

_____

j. **Does the command "GET /xxyz.html HTTP/1.1" (with Host: on the next line) return an HTML file? What is the first line received from the server now? What is the meaning of this status code?**

_____

    k. **What web-server type and version is being run at www.csun.edu from the info in Question 1 (this question), sections h and j?**

_____

2) A fictional webserver at adamkaplan.org is configured so that its DocumentRoot (root directory for web files) is /var/www

Consider the following URL… https://adamkaplan.org/the/last/djedhi.html

    a. **What is the complete path of the file *djedhi.html* on the server?**

_____

    b. **What is the domain name of the server?**

_____

    c. **What is the protocol being used?**

_____

    d. **What port (on the server) will the web browser try to connect to for this request?**

_____

3) Use the website mxtoolbox.com to run a DNS Lookup (*see tab labeled "DNS Lookup"*). At the prompt, enter a domain. Then, in the results, click **Transcript** (link toward lower right of results div) for full "Session Transcript" of the search.

    a. **What is the Session Transcript for the domain www.cs.ucla.edu?**

_____

    b. **What is the session transcript for the fictional domain adamkaplan.org?**

_____

4) Show the entire URL in the browser's address bar after the following form is submitted. Assume the user did not change any defaults before clicking the Submit button.
NOTE: copy/pasting this code will not work, because these quotes are Microsoft "smart quotes" You will have to change them for "straight quotes" in your code if you want to try this example. In general you will need to learn how a form of this type submits, and the style of query string it produces.

```
<form method="get" action="http://akaplan.edu/echo.php">
  <input type="hidden" name="a" value="b">
  <input type="hidden" name="q" value="15">
  <textarea name="d" rows="4" cols="20">funk</textarea>
  <input type="text" name="c" size="1" maxlength="1" value="4">
  <input name="b" type="radio" value="1">
  <input name="b" type="radio" value="2" checked>
  <input name="b" type="radio" value="3">
  <select name="e">
    <option value="z" selected></option>
    <option value="y"></option>
    <option value="x"></option>
  </select>
  <input type="reset" value="Reset">
  <input type="submit" value="Submit">
</form>
```

URL: _____

5) Using the tracert command in your Windows command prompt (or traceroute in a Mac terminal or Linux shell), trace the route through the internet to the following servers…

In your answer, write how many hops were needed from your machine to the destination.

      a) csun.edu

         _____

      b) youtube.com

         _____

      c) www.cs.vu.nl

         _____

6) Host A initiates a connection to host B via TCP, and A's random number generator provides sequence #42. Host B's random number generator provides sequence #109. What are the packets exchanged to establish the connection (i.e. the 3-way handshake packets)? For each packet, show the source host (A or B), the destination host (A or B), the sequence number, acknowledgment number (if applicable), and the flags that are set.

Packet #1: Source _____ Dest _____ Seq# _____ ACK# _____ flags: _____

Packet #2: Source _____ Dest _____ Seq# _____ ACK# _____ flags: _____

Packet #3: Source _____ Dest _____ Seq# _____ ACK# _____ flags: _____

The following section of the homework will be performed within a browser with modern inspection tools. Firefox and Chrome each have these capabilities, but in different places. You will have to locate the proper tool for the browser of your choice.

These questions make use of the production and sandbox (development) sites for CalStatePays, an app developed by CSUN students.

Production site: https://calstatepays.org

Sandbox site: https://www.sandbox.csun.edu/~calstatepays

7) Based on the URL of the Sandbox site, what is the likely directory/path arrangement on the web-server? (Hint: see Lecture 2, slide 6 on Paths in URLs)

_____

8) Using your web browser, find your default User-Agent request header. What does your browser report?

9) Try setting 5 other User-Agents, including one that reports your browser as being on a mobile device, and also one nonsensical User-Agent (example: the one on Lecture 2, Slide 19 showing an HTTP Post in raw ASCII). Try these User-Agents against both the Production and Sandbox sites and briefly report the results below.

List the User-Agents you used here, followed by the results…

   i.   User-Agent: _____

       a. How did this affect the user interface/user experience on the **Production** site?

       b. How did this affect the user interface/user experience on the **Sandbox** site?

   ii.   User-Agent: _____

       a. How did this affect the user interface/user experience on the **Production** site?

       b. How did this affect the user interface/user experience on the **Sandbox** site?

   iii.   User-Agent: _____

       a. How did this affect the user interface/user experience on the **Production** site?

       b. How did this affect the user interface/user experience on the **Sandbox** site?

   iv.   User-Agent: _____

       a. How did this affect the user interface/user experience on the **Production** site?

       b. How did this affect the user interface/user experience on the **Sandbox** site?

   v.   User-Agent: _____

       a. How did this affect the user interface/user experience on the **Production** site?

       b. How did this affect the user interface/user experience on the **Sandbox** site?

10) Using your browser's responsiveness design tools (Responsiveness Design Mode on Firefox, or Device Mode in Chrome Dev Tools) on the **Production** site, change your display size making it smaller and larger until the site responds. What screen sizes forced a change, and how did the site respond? *Did you encounter any bugs or issues with UI/UX as the page layout changed?*

11) Repeat Question 10 on the **Sandbox** site, changing your display size making it smaller and larger until the site responds. What screen sizes forced a change, and how did the site respond? *Did you encounter any bugs or issues with UI/UX as the page layout changed?*

12) On either the **Production** or Sandbox site, find the CSS @media rules (the media queries) that produce this responsiveness feature.

Where are these rules? (what file/location?)

What are these rules?

13) Open your browser's Console (under Developer Tools) and click around the **Production** site until you see Warning or Error messages in the Console?

For each set of warnings and errors you encounter…?

- What page did these appear on?
- What interaction did you perform (if any) to produce this error? Be specific. If this error occurred at page load, simply specify "page load"

14) Repeat Question 13 on the **Sandbox** site.

For each set of warnings and errors you encounter…?

- What page did these appear on?
- What interaction did you perform (if any) to produce this error? Be specific. If this error occurred at page load, simply specify "page load"