# Assignment 2-2: Recognizing Concepts in Network Communication

New Attempt

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**Due**  Apr 25 by 11:59pm       **Points**  10      **Submitting**  a text entry box or a file upload
**Available**  Apr 16 at 12am - May 9 at 11:59pm 24 days

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# Recap

(Download the Assignment Here: **_Ethical Hacking 200 - Assignment 2-2.pdf_** )

In class we reinforced certain concepts. The OSI model isn't just a way to describe technology, it forces you to understand the technology to be able to fill it out.
For example:
*"For connecting to a website, what is the difference in using HTTP at Layer 5 and layer 7?"*

- *Layer 5 = is a bit closer to simple grammar, for example HTTP is a text-based protocol, so the program looks for line endings and "new lines" to know how to parse the structured data. At layer 5 there are rules of how to start to add meaning to data, simple grammar.*
  *Where are the lines in HTTP.*
- *Layer 7 = is closer to semantics of a language, using the meaning of words. If I say hello, it means let's start talking. In HTTP it would be the structure of the text such as "HOST" specifies where the request goes.*
  *What are the lines in HTTP.*

# Your Assignment:

- Understand what you know and recognize what you do not know. Being able to recognize what you are missing to then ask the right questions is a strong skill.
- Reflect on what we learned about databases in class and the fundamental building blocks
- Practice your skills in finding and recognizing those building blocks when you must find them for yourself
  - *Hint – if for example you are doing "mysql" and you know a layer has something do with protocols search/google for "what protocol does mysql use" that will lead you to search for "MySQL protocol description" or "mysql protocol specification"*
- Based on the 8 Layers below, pick a database of your choosing and find an *example* specific to that database that fits into each of the layers below.
  - Layers 1-3 are likely going to be generic for all databases, however example are needed

- g: layer 1 – Using my wifi network card or ethernet port

| Layer | Description |
|---|---|
| Application Logic | **Logic of the application –** What to do with the data that is communicated |
| 7 – Application | **Communicating with Application**/program - aka "**abstraction**" layer – being able to send a "request", simply shipping a package without worrying about what it takes to make that happen. Not application logic, just communication.<br>*e.g: HTTP, FTP, Telnet, DHCP, etc* |
| 6 – Presentation | **Translate/transform data** so the application layer understands – aka "syntax" layer<br>*e.g: ASCII, Serialization, character encoding, etc* |
| 5 – Session | How to *manage* a session, not just send data but have a **conversation** – special rules/methods for connecting<br>e.g: when I say "over" it means I finished saying a sentence, simple rules or grammar<br>*e.g: pptp, SOCKS, RTP, SSH, DNS, HTTP, etc* |
| 4 – Transport | **How "structured" data is <u>transferred</u>**, variable-length data sequences<br>*e.g: TCP, UDP, etc* |
| 3 – Network | **How to interact with <u>multiple nodes</u>** - routing protocols, network-layer address assignment<br>*e.g: ipv4, ipv6, icmp, ipsec, etc* |
| 2 – Data link | Protocol/**How to handle <u>raw bits</u>**, protocol for flow control of 1 node to 1 node<br>*e.g: 802.3 Ethernet, 802.11 Wi-Fi, and 802.15.4 ZigBee* |
| 1 – Physical | **<u>Electrical</u> Connection** - raw bit streams over a physical medium<br>*e.g: Bluetooth, Ethernet, USB, etc* |

# What to turn in:

- **A List of the 7 Layers + Application Logic layer for a total of 8**
  - Each layer should have an example, e.g.:
    - layer 1 – Using my wifi network card or ethernet port
    - layer 5 – Using the HTTP protocol, search for line endings and new lines, e.g: "\n" to know how to parse the protocol, where a "header" begins and ends.
    - layer 7 – Using the HTTP protocol to specify where to connect to via "HOST" header and what to do with other headers.
    - Layer 8 – web browser then interprets data to show a user a webpage
  - **Submit:** Any reasonable text format is acceptable. (e.g: doc, docx, rtf, txt, etc).

# I'm having a really hard time because I don't understand half the things I research

- The best thing you can do in this case is reach out as soon as possible. This may be the first time looking at some of these concepts, you instructor can help to shortcut some learning and put you on track. Depending on how far the goal is however will dictate how long it will take.
  - The best way will be both to email the instructor and post the same question you have in group chat. Just please do **NOT** post question directly about an answer (e.g.: what is the string this protocol is looking for in this spot)

**This assignment is designed to be difficult for most, to get used to being uncomfortable and figure out what to do. E.g. "what do you do when a client says I have this new piece of technology never seen before, test it". You are not failing it is hard, don't give up.**

## To submit your assignment:

- Use the +Submit Assignment link located in the top right corner.
- Type your submission or find and upload your saved file.
- Click the Submit Assignment button to turn in your assignment.