Computer Networking
A Top-Down Approach (Pearson)

Exercises Solution

Source code is **available on GitHub**.
Made with **typst typesetting**.

Legends

- **Bold texts** are used for decoration or emphasis.
- ~~Strike-through~~ refers to out of syllabus/ context.
- Highlighted texts are some optional texts :)

Terms & Conditions

- This is just a **sample**, nothing more, nothing less :)
- I have tried to put things like **summary**, and obviously this is not the solution that I will submit or recommended! I am in no way responsible for any illegal use of this file.
- If you need direct solutions for submitting your assignment, please ask DeepSeek, ChatGPT, Google Gemini, Anthropic Claude, Hugging Chat, Le Chat Mistral or any other predictive models (LLM).

And yah, can be **inaccurate**! Feel free to **criticize**.

Contents

Revision 01
Try to directly open the file from Rising Flare, to avoid missing any updates.

Chapter 2: Domain Name System (DNS)

Section 2.1

1. List five nonproprietary Internet applications and the application-layer protocols that they use.

   Ans: Here's a list,

Name	**Protocol name**
Email	SMTP
Terminal shell sharing	SSH
File transfer	FTP
Websites	HTTPS
Streaming	DASH

2. What is the difference between network architecture and application architecture?

   Ans: Here's some key differences,

Application architecture	Networking architecture
1. Application architecture is not fixed 2. Application architecture is flexible, and developers can choose from multiple paradigms	1. Networking architecture is fixed 2. Networking architecture is not flexible, and developers have to follow one of the two paradigms, either client-server or peer-to-peer.

For a communication session between a pair of processes, which process is the client and which is the server? For a P2P file-sharing application, do you agree with the statement, "There is no notion of client and server sides of a communication session"? Why or why not? What information is used by a process running on one host to identify a pro- cess running on another host? Suppose you wanted to do a transaction from a remote client to a server as fast as possible. Would you use UDP or TCP? Why? Referring to Figure 2.4, we see that none of the applications listed in Figure 2.4 requires both no data loss and timing. Can you conceive of an application that requires no data loss and that is also highly time-sensitive? List the four broad classes of services that a transport protocol can provide. For each of the service classes, indicate if either UDP or TCP (or both) pro- vides such a service. Recall that TCP can be enhanced with TLS to provide process-to-process security services, including encryption. Does TLS operate at the transport layer or the application layer? If the application developer wants TCP to be enhanced with TLS, what does the developer have to do?

Section 2.2

Section 2.3

Section 2.4

"Never trust anyone too much; remember, the devil was once an angel."
— Ken Kaneki, Tokyo Ghoul