Challenge Exercise 8.2
In this exercise, you will design a simple firewall rulebase. This is a pencil-and-paper exercise, so you won’t need to use a computer or the Internet. Each firewall application uses its own syntax and procedures for entering rules, so we’ll work with a pseudocode-style rulebase for the purposes of this exercise. When designing rules, please use the following format:

\(<action> <protocol> from <source_address> <source_port> to <destination_address> <destination_port>\)

These fields should be completed as follows:
- \(<action>\) may be either deny or allow.
- \(<protocol>\) may be tcp, udp, or icmp.
- \(<source_address>\) and \(<destination_address>\) may be an IP address (including network addresses), an IP address range, or the keyword “any”.
- \(<source_port>\) and \(<destination_port>\) may be a port number or the keyword “any”.

For this exercise, complete the following steps. Unless otherwise mentioned, you should assume that all services are configured in a standard manner. Your protected network includes all hosts in the 129.71.0.9 class B network. The subnet 129.71.12.0 is configured as a screened subnet. The stateful inspection firewall’s IP address is 129.71.0.1.

8.1 Write a firewall rulebase that fulfills the following security requirements:
a. Allow anyone to access a Web site on a server located at 129.71.12.8.
b. Allow internal users to access their mailboxes via POP3 on the mail server located at 129.71.12.12.
c. Allow internal users to send mail via SMTP on the mail server located at 129.71.12.12.
d. Allow internal users to access any Web sites they wish except for that of a competitor located at 12.7.6.15.
e. Allow anyone to send mail into the network via SMTP to the mail server located at 129.71.12.15.

8.2 Ensure that your rulebase contains any “best practice” firewall rules that may not be explicitly stated here, but that are normally used in firewall rulebase design.

8.3 Recall that firewalls process rulebases in a top-down manner. Ensure that your rulebase is ordered in the proper manner.