

Homework #0

Due Time: 2016/2/24 (Wed.) 17:00

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Instructions and Announcements

- Discussions with others are encouraged. However, you should write down your solutions **in your own words**. In addition, for each problem you have to specify the references (the Internet URL you consulted with or the people you discussed with) on the first page of your solution to that problem.
- Please submit to
ftp://mvnl.csie.ntu.edu.tw:2016/ (anonymous user)
Using file name HW0_[student ID]_[version].zip (ex: HW0_bxx902xxx_ver1.zip).
- **NO LATE SUBMISSION IS ALLOWED.**

Network Administration Preliminary

True/False

In each of the following question, please specify if the statement is **true** or **false** and briefly explain why.

1. The same public IP may be assigned to two different devices on the Internet, while both devices are reachable.
2. In general, an end device judges whether itself is the recipient of a packet by its destination MAC address.
3. TCP and IP is in the same layer of the *OSI model*.
4. A switch is a hub with more ports.
5. The main difference between a router and a switch is their computational power.
6. In general, a firewall includes one or several devices that filter packets according to some rules.
7. If an end device gets its IP address from a DHCP server, all traffic associated to that address will definitely pass through the the DHCP server.
8. All traffic from end devices will definitely pass through their gateways.
9. Theoretically, a single NAT server can host an arbitrary number of NAT entries if equipped with unlimited memory.
10. Theoretically, a single DNS server can host an arbitrary number of DNS entries if equipped with unlimited memory.

Multiple Choice Question

In each of the following question, please choose the most appropriate answer.

1. Which of the following protocol does **NOT** belong to the Application Layer?
a) DHCP b) DNS c) IPsec VPN d) OpenVPN
2. Which of the following is **NOT** a valid IPv4 private subnet?
a) 10.252.0.0/14 b) 10.252.0.0/18 c) 192.168.0.0/14 d) 192.168.0.0/18
3. Which *valid* IP address is in the same subnet with 192.168.0.1/23?
a) 192.167.0.1 b) 192.168.0.0 c) 192.168.1.0 d) 193.168.0.1
4. Is it possible for a device with private IP to directly (without NAT) connect to another device with public IP? Assume both devices use the same router as their gateway.
a) No, since NAT is required to map between private IPs and public IPs.
b) No, since they are under different subnets.
c) Yes, since they use the same router as their gateway.
d) Yes, with proper routing configuration on the router.

5. The NA team is mainly using 48-port Cisco 2960S as edge switches in the CSIE building. How much does one cost? Choose the closest answer.
a) NT\$600 b) NT\$6,000 c) NT\$60,000 d) NT\$600,000

6. In an event, you deployed some wireless APs in the venue for attendees, but they are complaining that network is “slow.” Which of the following may **NOT** help dealing with the problem?
a) Add WiFi 802.11n/ac APs operating at 5GHz, and encourage attendees to connect to the 5GHz SSID if available.
b) Increase the wireless signal strength of each AP.
c) Set adjacent APs to operate at disjoint wireless channels.
d) Tell attendees to disable WiFi hotspot on their devices.

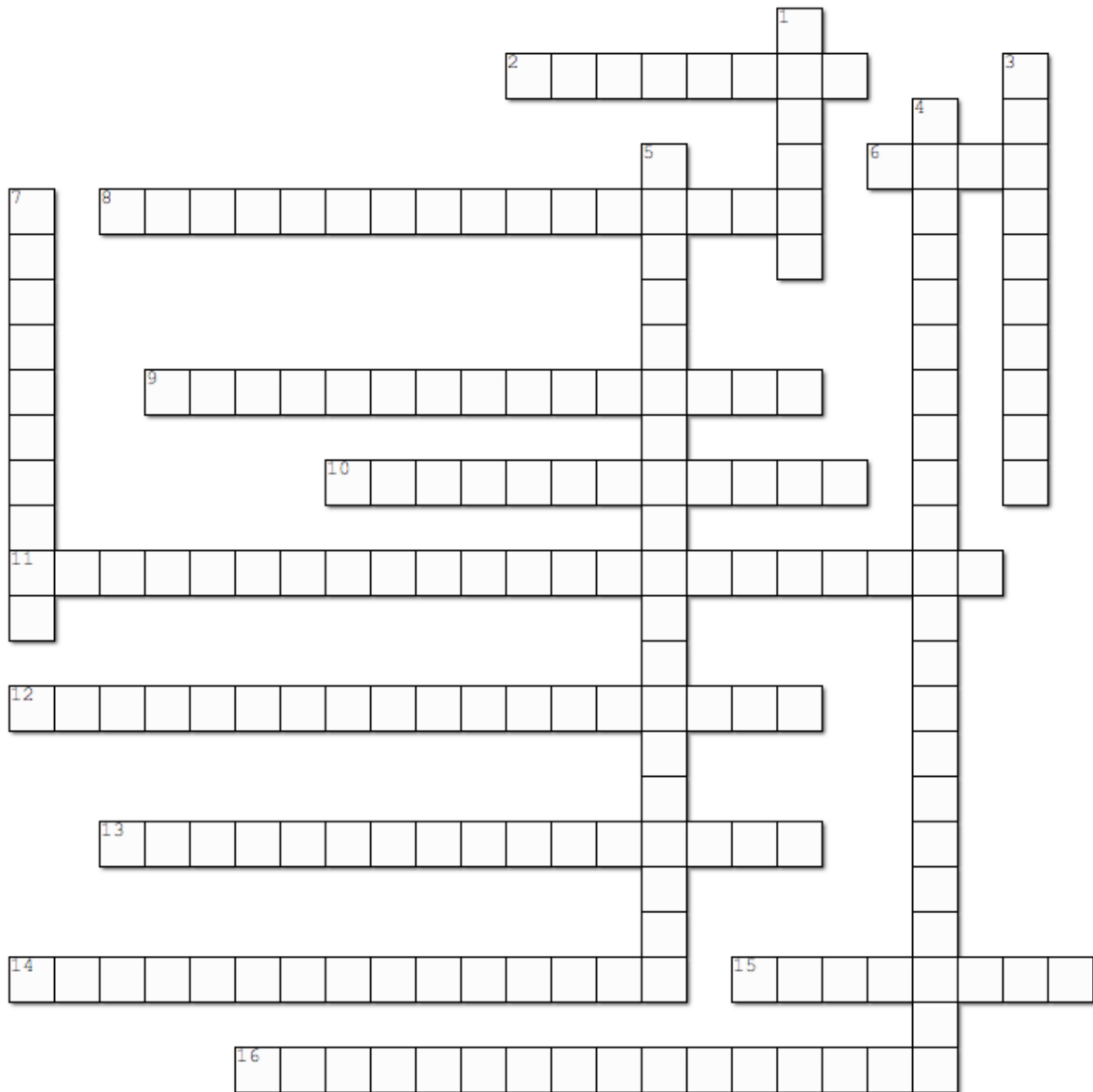
7. Which of the following term does **NOT** describe a kind of attack through network?
a) ARP spoofing b) DHCP snooping c) DNS spoofing d) DNS amplification

8. Which of the following can **NOT** be fully achieved by using a VPN?
a) Access remote servers in a private network.
b) Bypass firewalls that block access to certain sites.
c) Protect your identity on the Internet from being tracked.
d) Encrypt traffic when you don't trust your network provider.

System Administration Preliminary

Word Puzzle

Complete the word puzzle with the clues below. All characters including space, '@', '.', ... etc are needed to fill into the boxes.



Created on TheTeachersCorner.net Crossword Maker

Across

2. Print the entire content of the text file *olaf*.
6. This command can change the shell.
8. Create an archive *hw.zip* with the directory *hw* and all files in it.
9. Print the first 12 lines of the text file *elsa*.

10. Copy the file *nico* to a file named *bili*.
11. Create a new directory *taiwan/taipei* with the directory *taiwan* doesn't exist.
12. Rename the file *google* with the name *alphabet*.
13. Print all lines that **DO NOT** contain *info* of the file *log*.
14. Use ssh to surf ptt.cc with unicode encoding.
15. Change the working directory to the parent directory of the parent directory.
16. Change the permission of the file *run.sh* with owner can read/write/execute, and then both group and other can read/execute.

Down

1. This command can change the password of user.
3. Print the content of the environment variable *PATH*.
4. Give the file *legislator.sh* the permission of execution.
5. Install the package *gcc* using apt-get.
7. Remove the directory *kmt* and all files inside it without asking.

Common Words

Write a script or use unix (unix-like) commands to print the words that appear at least N (default: 1) times in both two files (respectively). Note that we don't care whether a character is uppercase or lowercase. In other words, the following words are the same: "BSD", "BSd", "bsd". Submit your script or write how you do this in detail, and make sure your script can be executed in CSIE Workstation.

Input

1. FILE1, FILE2: file names of the two files.
2. N: the threshold of the frequency of the word that we want to consider. (default 1)

Execution Example

```
./commonwords.sh file1.txt file2.txt 2
```