

Homework #7

Due Time: 2017/6/18 (Sun.) 22:00

Contact TAs: vegetable@csie.ntu.edu.tw

Submission

- Compress all your files into a file named **HW7_[studentID].zip** (e.g. HW6_bxx902xxx.zip), which contains two folders named **[studentID]_NA** and **[studentID]_SA** respectively.
- **Folder [studentID]_NA** should contain a pdf file named **na.pdf** of all your answers in *Network Administration Part*.
- **Folder [studentID]_SA** should contain a pdf file named **sa.pdf** of all your answers in *System Administration Part*.
- Submit your zip file to ceiba.
- You will get 5 points if you follow the assignment format specified above. Failure to follow any of the above requirements will result in deductions from your assignment mark.

Instructions and Announcements

- Discussions with others are encouraged. However, you should write down your solutions **in your own words**. In addition, for **each and every** problem you have to specify the references (the URL of the web page you consulted or the people you discussed with) on the first page of your solution to that problem.
- Problems below will be related to the materials taught in the class and may be far beyond that. Try to search for additional information on the Internet and give a reasonable answer.
- Some problems below may not have standard solutions. We will give you the points if your answer is followed by reasonable explanations.
- **NO LATE SUBMISSION IS ALLOWED.**

Network Administration

1. 2.5GHz vs. 5GHz

- (1) Why is 5GHz Wi-Fi **theoretically** faster than 2.4GHz Wi-Fi? (15%)
- (2) When connecting to the same AP that supports both 2.4GHz band and 5GHz band, do you always transmit your data faster using 5GHz Wi-Fi than using 2.4GHz Wi-Fi? Please write down your reasons in detail. (15%)

2. Wi-Fi encryption

- (1) Find out the encryption method that CSIE wireless networks, "csie" and "csie-5G", are using, and provide the evidence. (5%)
- (2) Provide the main differences between this encryption method and its older version, WPA. (7%)
- (3) Compare the current encryption method in question 2-(1) to WEP, which is the older encryption method. Please identify one advantage and one disadvantage of the current encryption method. (8%)

System Administration

1. Server status (15%)

`mod_status` is a apache module that allows administrators to monitor the server status. Try to turn the module on and enable it at `/server-status`. It should only allow the ip from the administrator (you) to access. Please write down what you do step by step.

NOTE: You should only use the `Require` directive, not the `Allow` and `Deny` directives. (They are used in the older version of apache.)

2. A small taste of PHP (15%)

Try to write a page that will show the client's ip.

3. Docker (15%)

In the class, we installed WordPress with LAMP in an old fashioned way which is using a VM to behave as a web server. There is a new light-weight virtualization solution called [Docker](#). This task is easy. Try to install docker, get the WordPress Docker image, and then run it on your machine. Please write down how you achieve the task step by step.

Hint:

- Docker has an official image for Wordpress. Just use it.
- You should run two containers. One is wordpress and the other is mariadb (mysql).
- You must use the browser on your machine to show the result.
- Make sure that after `docker restart <container name>`, the content of WordPress will stay the same.
- The connection between the database container and the WordPress container can be done by adding `-e` option to the command `docker run`, which sets environment variables in the container.