

National Taiwan Normal University
CSIE Information Security: A Hands-on Approach

Instructor: Po-Wen Chi

Due Date: 11/01, 2021, AM 11:59

Assignment 2

Policies:

- Zero tolerance for late submission.
- Please pack all your submissions in one zip file. **RAR is not allowed!!**
- I only accept **PDF**. MS Word is not allowed.
- Hand-writing is not allowed.

2.1 SEED Lab (50 pts)

Shellshock Attack Lab

https://seedsecuritylabs.org/Labs_20.04/Software/Shellshock/

Please record all your steps with screen captures and answer all questions.

2.2 Web CGI: Bash Script (15 pts)

Please implement a Web CGI that allows a user to upload its data. The CGI must be implemented in Bash script. Do not show me the code only. You need to show its function in the browser. Again, I want to see the screen captures.

2.3 Shell Function (15 pts)

Please explain the following command.

```
1 :(){ :|:& };:
```

Undoubtedly, you can run the command and describe the result. Please find a way to avoid the above command.

2.4 How to Patch Shellshock? (15 pts)

Shellshock is a famous and serious problem and has already been patched. How does the bash team fix this vulnerability? Please read the latest bash version and show how to patch this problem.

2.5 Linux Network Namespace (15 pts)

In this class, we will use lots of dockers. But how docker works? Everyone knows that Docker is a container technology, but how to implement Docker? This homework will bring you to see how docker works in the network part.

Docker uses many Linux namespace technologies for isolation, there are user namespace, process namespace, etc. For network isolation docker uses Linux network namespace technology, each docker container has its own network namespace, which means it has its own IP address, routing table, etc.

Please design a lab to show how to setup two virtual interfaces which belong to different network namespaces and add a virtual link between them. Undoubtedly, you have to make the two interfaces be able to ping each other.