CS 410: Web Security
A0: Labs

For these exercises, you only need to provide what is asked in the description. (There is no need to describe a vulnerability, the exploit, and prevention techniques)

Indirect reconaissance

- **Run https://www.pdx.edu and https://oregonctf.org/ through the sites below**
  - **https://observatory.mozilla.org/**
  - **https://builtwith.com/**
- **Answer the questions below**
  - **How do the two sites differ in what they find out about each site?**
  - **Provide a screenshot of the https://www.pdx.edu output**

Direct reconaissance

- **Set up pentest-vm**
  - **Log into console.cloud.google.com**
  - **Create a new project labeled (cs495winter19)**
  - **On Menu, find "Marketplace" and "Compute Engine" and pin them to the top**
  - **Click on "Compute Engine" and wait for it to be enabled**
  - **Click on "Create"**
  - **Create a new instance**
    - **Name: pentest-vm**
    - **Zone: us-west1-b**
    - **Machine type: micro**
    - **Boot disk: Ubuntu 18.04**
    - **Click on "Create" and wait**
  - **`ssh` into new instance and perform the following**

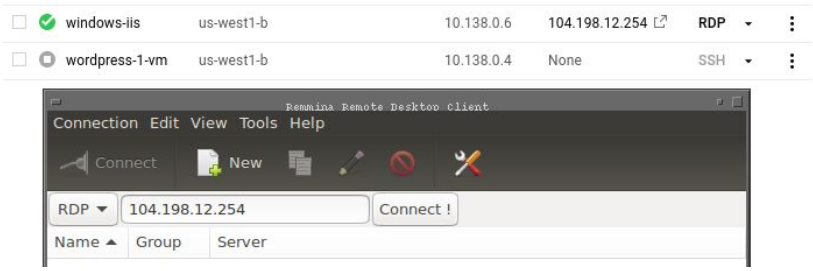
```
sudo apt update
```

```
    sudo apt install libcurl4-openssl-dev
libssl-dev python-pip wfuzz nmap -y
```

- **Use Google Marketplace to set up several web server VMs**
  - **Zone: us-west1-b**
  - **Machine type: micro**
  - **Deselect “Allow HTTPS traffic”**
  - **Visit the landing page for each VM to ensure it has been deployed properly**
  - **Note the “Internal IP address” of each instance**
  - **VMs to bring up**
    - **https://console.cloud.google.com/marketplace/details/bitnami-launchpad/lampstack**
    - **https://console.cloud.google.com/marketplace/details/bitnami-launchpad/nginxstack**
    - **https://console.cloud.google.com/marketplace/details/bitnami-launchpad/wordpress**
  - **`ssh` into each instance**
    - **Find where each server pulls its configuration from via a `"ps -ef | grep apache"` or `"ps -ef | egrep nginx"`**
    - **Examine the conf files, the `DocumentRoot` (`apache2`) or `/` (`nginx`) resides within and cd into it**
      - **`apache2: /opt/bitnami/apache2/htdocs`**
      - **`nginx: /opt/bitnami/nginx/html`**
    - **On the lampstack and nginxstack VMs, create directories named `secret`, `files`, `admin` (via `sudo mkdir`).**
    - **Then create `index.html` files in each directory `sudo touch {secret,files,admin}/index.html`**
    - **Web content must be readable and executable by the Linux account the web server is run from (typically `www-data`). Since you create these files with a different account, ensure that all files are readable**

and all directories are readable and executable by running this command in the location of the web server's document root: `sudo chmod go+rX .`

- Use Google Compute Engine, bring up a web server on a Windows Server 2012 R2 instance
  - https://cloud.google.com/compute/docs/quickstart-windows
  - To connect to your instance, use an RDP client
    - `remmina` on `linuxlab` machines. Enter the external IP address of your Windows instance



    - Google Chrome's RDP for Google Cloud Platform extension
      - Add via More Tools => Extensions => Get Extensions
      - Click on RDP button in console
  - Skip the clean-up step
  - Connect to your Windows Server 2012 instance and install the IIS component
    - https://cloud.google.com/compute/docs/tutorials/basic-webserver-iis
    - Note: Windows PowerShell can be accessed in the upper right corner under "Tools"

- **Within PowerShell, change directories into the webroot folder (`cd`) given in the `echo` command in the instructions**
- **Create directories named `secret`, `files`, `admin` using `mkdir`**
  - **Note that you may need to do "`mkdir` …" to be able to make the directory**
- **Then, in PowerShell copy the `index.html` file you created in the echo command into each of the directories**
  - **`cp .\index.html admin`**
  - **`cp .\index.html secret`**
  - **`cp .\index.html files`**
- **Create directories of your own using words of your choice and copy the `index.html` file into them as well**

- **Use wfuzz and nmap to automatically scan directories on each of the 4 web servers using their INTERNAL IP address**
    - **`wfuzz -c -w /usr/share/wfuzz/wordlist/general/common.txt --hc 404 http://10.x.y.z/FUZZ`**
    - **`nmap --script http-enum 10.x.y.z`**
    - **Answer the following questions**
        - **Do the nmap and wfuzz tools get similar results for each site?**
        - **Provide screenshots of each tool's output on the Windows web server VM**
- **Stop all VM instances when complete**