Lab 1: Virtual Machine, and Compiling and Testing Security Programs on Ubuntu Linux
12:00pm ~ 1:50pm 09/22/2016

Part I: Access the Virtual Machine from a Wireless Network or an Off-Campus Network via MSU Denver VPN

Work on the following tasks on a your own laptop that is wireless connected on campus or your computer at home:

1. According to IT, the user accounts and VPN access has already been setup for CS3750. The VPN setup is documented on the MSU Denver Website, please follow the directions for the Student VPN at the following link.
   https://www.msudenver.edu/vpn/
2. Following the instructions for the operating system on your computer, connect to the MSU Denver VPN using your VPN account, which is your MSU Denver NetID and password for student hub, etc.

Part I: Access the Virtual Machine via an On-Campus Wired Network or VPN

- If your computer is a Windows computer, you can download **PuTTY**, a free **SSH** client for Windows, and **PSFTP**, a free command-line **SFTP** tool for Windows. Then configure and use **PuTTY** and **PSFTP** for the following tasks using their online documents for reference.

- If your computer is a MAC or Linux computer, you can open a **Terminal** window to work on the following tasks.

1. Use the following command to connect to the virtual machine, cs3700.msudenver.edu, for **remote operation**

   `ssh <your MSU Denver NetID>@cs3750.msudenver.edu`

   – Once connected, you will be asked to input the password. The initial password is ABCDWXYZ, where ABCD is the last four digits of your 900 number and WXYZ is your birthday in the MMDD format.
   – After you type the initial password, you will be asked to change the password. Go ahead change it and make sure that you will memorize it.
   – After you change the password, you might be disconnected. Just go ahead use **`ssh`** for re-connection.
   – While connecting to the virtual machine, the following commands could be useful

```
mkdir  <name of the directory>      //to make a new directory
cd  <name of the directory>         //change the directory
pwd                                 //display the current directory
ls -l                               //list the files in the current directory
cp  <name of the file>  <name of the directory> //copy a file to a directory
mv  <name of the file>  <new name of the file>  //rename a file
rm  <name of the file>              //delete a file
rm -r <name of the directory>       //delete a directory
vi  <name of the file>        //use the text editor vi to edit a text file
man  <name of the command>          //display the manual of the command
```

2. Use the following command to connect to the virtual machine, cs3750.msudenver.edu, for **file transfer**

   `sftp <your MSU Denver NetID>@cs3700.msudenver.edu`

   – Once connected, you will be asked to input the password. Use the password you set in the above step.
   – After you type the password, you will see a prompt, **`sftp>`**. Now, there is a **`sftp`** channel connecting the MAC/Linux computer, the ***local*** end, and the virtual machine, the ***remote*** end. The following commands could be used for data transfer in the command-line window with the **`sftp>`** prompt.

```
!pwd              //display the current directory on the local end
!ls -l            //list the files in the current directory on the local end
lcd  <name of the directory>        //change the directory on the local end
pwd               //display the current directory on the remote end
ls -l             //list the files in the current directory on the remote end
```

```
cd  <name of the directory>          //change the directory on the remote end
put <file name>   //upload a file from the local end to the remote end
get <file name>   //download a file from the remote end to the local end
mput *.java //upload all .java files from the local end to the remote end
mget *.java //download all .java files from the remote end to the local end
quit        //close the sftp channel (disconnect)
```

Part III: Compile and Test Security programs on the Virtual Machine in the Cloud

1. Download the files from "Blackboard→Content→Security Programming in Java" to your local computer.
2. Connect to the virtual machine and create one folder, "Lab01" in your home directory on the virtual machine (see Step 1 in Part II)
3. Upload the .java files to "Lab01" on the virtual machine (see Step 2 in Part II).
4. Connect to the virtual machine, and use the following commands together with the ones given in Part II for compiling and testing the security programs on the virtual machine.

```
javac  <name of the .java file>  //compile this .java file
java  <name of the program>      //run the program
```

Part IV: Work on your project

Please follow the manual for Project 1 posted on Blackboard to work on your project 1.