Lab 1: Set up environment and test basic softwares

This tutorial describes how to install ubuntu VMs in Oracle VM VirtualBox. VirtualBox is a free and open source hosted hypervisor for x86 virtualization. VirtualBox may be installed on Windows, MacOS, Linux, etc.

1. Download Ubuntu18.04 from https://releases.ubuntu.com/18.04/
2. Install Ubuntu18.04 on VirtualBox. (Suggest at least 2G memory. Minimal installation should be OK.)
3. Create a host only network:
    a) First, open up your VirtualBox Manager GUI. Click the "Tools" button, then from the dropdown menu select "Network".
    b) In the Host Network Manager menu, you should see that a virtual, host-only network has been created for you, named "vboxnet0" or "VirtualBox Host-only Ethernet Adapter". If not, click the "Create" button on the top left corner.
    c) Make sure the "DHCP Server" box has been checked as "Enabled".
4. Add your VM to the host only network. This allows you to ssh to your VM from your host machine.
    a) Open up your VirtualBox Manager again. Make sure your VM is off. Select your VM, go to "Settings", and go to the "Network" tab.
    b) We're going to create a new network adapter. Go to the next available adapter (if you haven't set up any other adapters, this should be "Adapter 2"), and select "Enable Network Adapter". In the "Attached To:" dropdown menu, select "Host-only Adapter", and make sure that "vboxnet0" is selected.
    c) Hit "OK" to save your settings.
5. Reboot your VM. Open a terminal and install necessary softwares:
    a) sudo apt install net-tools
    b) sudo apt install openssh-server
    c) sudo apt install traceroute
    d) sudo apt install git
    e) sudo apt-get install -y iperf3
    f) install wireshark from "Ubuntu Software". You need to run wireshark as a root user.
6. Shutdown your VM and make a copy of your VM.