1 Things you need know before getting started

- Your CS account used on CLIC machines;
- VMware machine assigned to you:
  An email has been sent to you containing the following information:
  
  username machine name /vmware folder

  For example, zhao rabat /vmware1 means that user zhao is assigned to CLIC machine rabat.clic.cs.columbia.edu with vmware folder /vmware1 and ‘1’ is your vmware number. Each of you is assigned to a different machine in CLIC lab. Note that this username (UNI) may differ from your CS account username.

- A valid VMware license;
  This should have been distributed to you.

- The root account for VMware: user = root, passwd = osw4118;
  Please change your passwd for root immediately as you log into the vmware machine by typing passwd root, if you do not want your homework to be tampered by others.

2 How to start VMware in CLIC Lab

The easiest way to start VMware is to sit in front of any machine in CLIC lab and work from there directly. Each CLIC machine has a unique name, say paris.clic.cs.columbia.edu. It is not necessary to choose the physical machine that has been assigned to you since you can always run SSH through the high-speed network.

**Step 1**
Log into the CLIC machine with your CS account username and passwd. By now, you should be able to do that through the practice of homework assignment 1.

**Step 2**
Type hostname to check which machine you are sitting at.

zhao@amman /home/zhao: hostname
amman.clic.cs.columbia.edu

If it is the same as the machine assigned to you, skip step 3 and go to step 4 directly.
Step 3
Run SSH to log into the vmware machine assigned to you.
```
zhao@amman /home/zhao:  ssh -X zhao@rabat.clic.cs.columbia.edu
```
Try `ssh -Y zhao@rabat.clic.cs.columbia.edu` if Step 4 or Step 6 fails.

Step 4
Type `startx` to initialize a session of X window system which allows to view GUI.
```
zhao@rabat /home/zhao:  startx
```

Step 5
To open a terminal, right click anywhere on the desktop and select Open Terminal as in Figure 1.

![Figure 1: Open a terminal in Linux](image)

Step 6
Type `vmware /vmware#/linux.vmx` in terminal, where ‘#’ is your VMware number.
```
bash-3.00$  vmware /vmware1/linux.vmx
```
Then you will see the vmware window popped out as in Figure 2.

Step 7
If you are required to supply a valid license for VMware, click Help button on the VMware Workstation window, select Enter Serial Number and type the Serial Number, Name and Company Name as emailed to you (see Figure 3).

Step 8
Click the Power On button (press Ctrl + Alt to release cursor if you want), and hit the enter key from your keyboard to boot the Red Hat Linux kernel. The login window is displayed as in Figure 4.

Step 9
Log in with user root and passwd osw4118.
Figure 2: Open the vmware window

Figure 3: VMware registration
Figure 4: Power on vmware and boot kernel

Step 10
Type `useradd user1` to add the first user, and use `passwd user1` to setup a password for user1. Do it repeatedly for user2 (see Figure 5).

Figure 5: Adding users

Step 11
Make sure to change root passwd by typing `passwd root` for security. Now you have two valid users user1 and user2 on this vmware machine.
3 How to start VMware remotely

As many of you may want to work on your VMware machines remotely, you need to:

1. Start the `vncserver` on your assigned machine;
2. Install and run appropriate `vncclient` on your personal computer.

All the CLIC machines have `vncserver` installed already. You just need to start the server by typing the command `vncserver&` on your assigned machine. You only need to start the server once even you may remote login many times, and watch out the display number assigned to you. You will be also asked for a `passwd` by running the `vncserver` for the first time (it can be different from your CS account passwd). Both the display number and `passwd` are required when you run `vncclient` on your PC.

```
zhao@rabat /home/zhao: vncserver&
```

```
... ...
New 'rabat.clic.cs.columbia.edu:2 (zhao)' desktop is rabat.clic.cs.columbia.edu:2
Starting applications specified in /home/zhao/.vnc/xstartup
Log file is /home/zhao/.vnc/rabat.clic.cs.columbia.edu:2.log
... ...
```

In case you forget your display number, you can always check it by logging into the CLIC machine assigned to you, and type the following command, and 2 is the display number to you by VNC server in this example.

```
zhao@rabat /home/zhao: ps -ef | grep vnc
zhao 11518 1 0 00:19 ? 00:00:19 Xvnc :2
```

The `vncclient` is platform dependent. We will describe them for Window user, Linux user and MAC user respectively.

3.1 For Linux Users

Remote login from your own Linux machine is quite similar as using any machines in CLIC lab. Make sure you have `SSH` installed for your Linux system. Run `SSH` as specified in Step 3 Section 2, and the rest just follows.

3.2 For Windows Users

One of the available `vncclient` for Windows users is VNC Viewer from RealVNC, which can be downloaded here: [http://www.realvnc.com/products/free/4.0/winvncviewer.html](http://www.realvnc.com/products/free/4.0/winvncviewer.html).

Run VNC Viewer, enter the Server address as `machine_name:display_number`, and then type your `vncserver` Password. Note that both `display_number` and Password can be obtained through the first start of `vncserver` on your assignment machine. You do not need to supply a username since your identification is bounded with the assigned `display_number` (see Figure 6, 7).
Once you are remotely connected to your assigned machine, the rest just follows from Step 5 in Section 2.

3.3 For MAC Users

One of the available vncclient for MAC users is Chicken VNC, which can be downloaded here: http://sourceforge.net/projects/cotvnc/.

Run Chicken VNC, enter correct Host, Display and Password, then click Connect button (see Figure 8). Host is the machine assigned to you. Display and Password can be obtained through the first start of vncserver on your assignment machine. Once you are remotely connected to your assigned machine, the rest just follows from Step 5 in Section 2.