

This assignment assumes you have read Chapters 2, 3, 4 and 5 of Sobell. Some specific cross-references may also be given in the questions below.

For this assignment, you will set up a working local CentOS 7 installation on your own computer, and then perform some basic shell configuration tasks. You will duplicate the configuration tasks on your rlogin account. These are intended to make your Linux account more user-friendly and more secure.

Your satisfactory completion of the following tasks will be verified by showing your local CentOS 7 installation and your rlogin account to a TA. This must be completed and demonstrated by the deadline given on the course website.

Task 1

If you already have installed a CentOS 7 virtual machine, or you are running a CentOS 7 install as your primary OS, you may skip this part, unless you prefer to start off with a clean installation.

Install VirtualBox 6.0 (or later) and 64-bit CentOS 7.5^[1] on your own computer. Alternatively, you may run a bootable installation of CentOS 7 on your computer. Earlier distributions of CentOS and 32-bit versions are not acceptable, nor are other distributions, such as Mint or Ubuntu. Earlier distributions of VirtualBox are acceptable; so is running CentOS 7 as your host OS, or using other virtualization tools (such as VMware), but we do not support doing so.

There are copious notes on the course website showing how to install VirtualBox and then install CentOS on it. Most of the errors students encounter doing this can be solved by correctly following the instructions in those notes.

Task 2

Download the supplied tar file and unpack it in your home directory on your local CentOS 7 installation. Modify the `.bash_profile` and/or `.bashrc` files, and otherwise use Linux commands, so that the following hold for your local CentOS account:

1. Set the bash shell prompt so that it includes the current command number, your user name, the host name, and the current working directory, like so:

```
1020 wmcquain@centosvm in stuff >
```
2. Set the default file permissions so that newly-created files will allow NO access privileges for users in either category `group` or category `other`. (This is really important for your rlogin account. Hint: see `umask`.) You can test this by using the `touch` command to create a new, empty file and then using `ls` to view the permissions for that file.
3. Create a subdirectory `~/2505`, with a subdirectory `~/2505/L02` to use when working on the next Linux assignment.
4. Create a subdirectory `~/bin` to hold useful utility programs you may create or receive, and a directory `~/temp` to hold files you create for some temporary purpose.
5. Add the current working directory (`./`) to be the last directory in your path.
6. Add the directory `~/bin` to be the first directory in your path.
7. You will have to explore the available Linux commands for this part. Define some aliases so that:
 - a. the command shortcut `h` can be used to display a listing of recently-used commands
 - b. the command shortcut `hg` can be used to display history commands that contain a specified string; for example, to display recent calls to `tar`:

```
hg tar
```

Some of the changes required above are related to the discussion of aliases in Chapter 8 of Sobell.

Task 3

Make all of the changes from Task 2 in your rlogin account. Most of those changes are just a convenience or a matter of taste, but the default permissions are vital for accounts on a shared machine! The simplest way to apply these changes to your rlogin account is to use `scp` to transfer the relevant configuration files from your local CentOS to rlogin.

We will announce a partitioning of the students in the course among the course TAs. When you have completed the tasks above, demonstrate that to your assigned course TA during their office hours. There will be no partial credit for this. You must complete every requirement to receive any credit for this assignment.

- ^[1] My personal experience has been that VirtualBox 6.0.10 seems to be fine, and earlier versions of VirtualBox, such as 5.2.24 are probably fine.

The 1810 version of the CentOS 7.6 DVD ISO includes a kernel bug that leads to problems when installing on VirtualBox. You are strongly advised to use the 1804 version of the CentOS ISO, which is available here:

archive.kernel.org/centos-vault/7.5.1804/isos/x86_64/

To be fair, YMMV.