# Using UNIX

This lab is a tour of some key UNIX/MINIX/LINUX commands. The purpose of this lab is to get you used to the Unix command-line environment. Please take your time going through the steps. Don’t view this as a race to see how fast you can get out of the lab. Also note that some steps require you to remember a command that's been introduced in a prior step.

1. Start your virtual MINIX machine and log in as root
2. Note the command prompt is a #. This is a signal that you are logged in as the SuperUser and have full administrative rights.
3. Enter date
4. Change the password for the bin user account: **passwd bin**
5. Enter **cs330bin**
6. Retype **cs330bin**
7. Log out of the root account: exit
8. Press <enter> and log in as bin
9. Note the command prompt is now $.
10. Enter su (SuperUser) to temporarily act as the administrator
11. Note the prompt is a # again
12. Enter exit to end your SU status and to return to the user bin
13. Enter who am i. The response lists your user name (bin), your terminal (console), and the date/time.
14. Enter whoami. Do you get the same information?
15. Enter ls to see the just the names of the files in the directory
16. Enter ls -l to get a detailed listing of the contents of the directory. The columns displayed are:
    1. Type  
       d stands for directory  
       - appears for a plain file
    2. Access modes  
       three triplets of permissions (r – read, w – write, and x – execute) for three types of users (yourself, your group, and all others)
    3. Links  
       The number of files or directories linked to this one
    4. Owner  
       The user who created or owns the file or directory
    5. Group  
       The group that owns the file or directory.
    6. Size  
       Size of the direcotry or file in bytes
    7. Modification Date   
       When the file was last modified or the directory last changed.
    8. Name  
       The name of the file or directory
17. Enter finger to list information about logged in users. There is only one (bin).
18. Enter butterfinger. Note the response when you mistype a command.
19. Enter cd /usr/bin to change to the bin user's directory.
20. List the files in the directory. This folder has many user programs that you can execute. Try fortune.
21. Enter pwd (Print Working Directory) to display your current working directory
22. Enter cd to return to your home directory.
23. What is your home directory? What command do you enter to find out?
24. There are several other useful file commands:
    1. cp – copy a file
    2. mv – move a file
    3. rm – delete a file
25. Change the current directory to /boot. Note that if you include a / at the start of the address, then Linux starts at the top-level directory. This is called absolute addressing. If you omit the / at the front, then Linux uses relative addressing and starts in the current directory.
26. List the directory contents in a way that identifies which entries are directories and which ones are files. What are the two directories? What are the three files?
27. Create another terminal with <alt><right arrow> and log in as root.
28. Enter who and observe that there are now two users.
29. Enter <alt><left arrow> to go back to the other terminal. What command do you enter to find out which user you are?
30. Change your current directory to /usr/bin. Is this an absolute address or a relative address?
31. Enter su to change your status to a superuser
32. Start the vi editor using the command vi HelloWorld.c
33. Type i to enter insert mode (the i is not echoed back on the screen)
34. Enter the following program. Keep typing if you make a mistake – you'll correct all your typos in step 36 because the arrow keys don't work when vi is in insert mode.  
    #include <stdio.h>  
    #include <stdlib.h>  
    int main (int argc, char \*argv[])  
    {  
     printf("Hello, World!\n");  
     exit(0);  
    }
35. Leave insert mode by typing <esc>
36. Use the arrow keys to maneuver around your text. Use the Delete key to erase the character at the cursor's position. If you want to insert a character, type i to enter insert mode, enter your text, then type <esc> to return to command mode.
37. Save your program and exit vi with the command :wq
38. If you want to quit vi without saving your work, enter the command **:q!**
39. Display the contents of your program using cat HelloWorld.c
40. Compile your program using the command make HelloWorld
41. Run the program by entering HelloWorld
42. Shutdown MINIX, close the VMWare console, and shut down the system.