Name: _____

Individual Linux Unit: Linux Lab Checkoff

LINUX Learning Targets

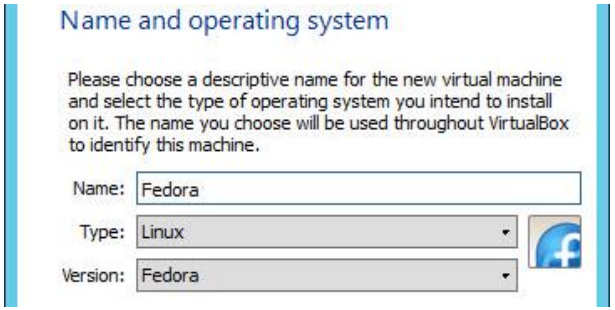
1. Understand the purpose of LINUX
2. Understand how to install Fedora in a virtual machine
3. Understand how to create a root user
4. Understand how to log into terminal as root
5. Understand how to use YUM
6. Understand how to update YUM to DNF
7. Understand how to use DNF packet manager
8. Understand how to add a repository via terminal
9. Understand how to add and change desktop environments
10. Understand how to install packets
11. Understand how to update through the terminal
12. Understand how to install Apache
13. Understand how to create users
14. Understand how to create groups
15. Understand how to set permissions on folders and files using chmod
16. Understand how to create a simple webpage
17. Understand how to set static IP through VI and sysconfig files
18. Understand how to test Apache
19. Understand how to set up a simple website

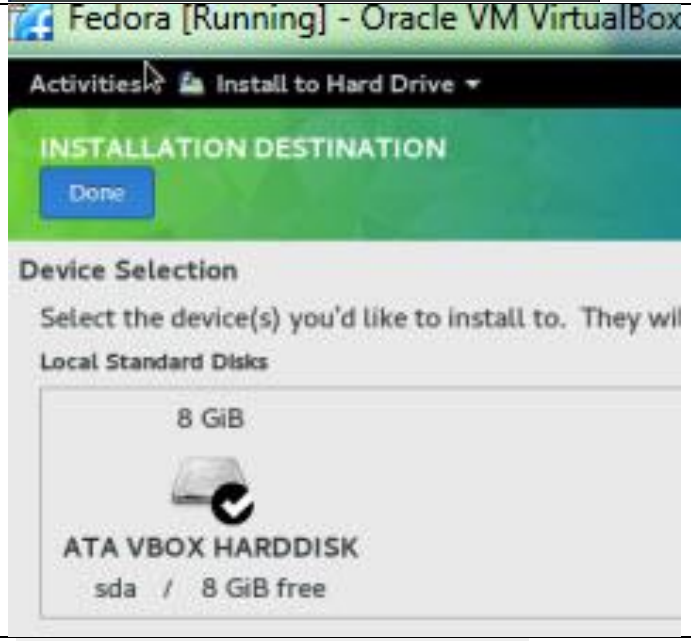
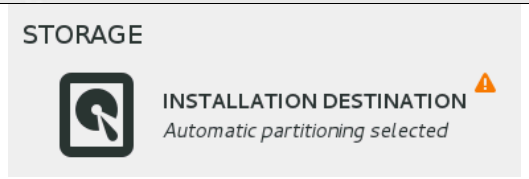
	Excellent	**Needs Work**	**Incomplete**
Lab L-1 Installing Linux			
• Create Linux VM			
• Install Fedora			
• Set up NIC			
• Demonstrate Firefox			
• Install all updates			
• Answered Questions			

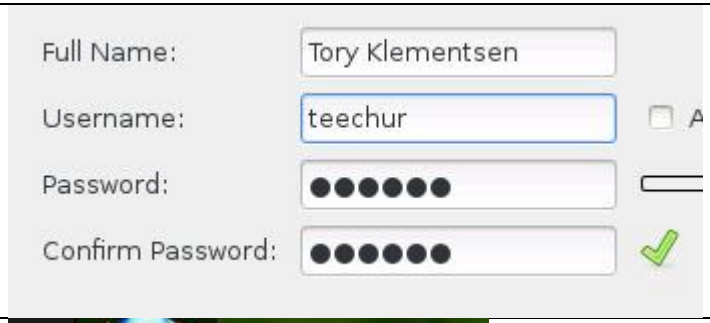
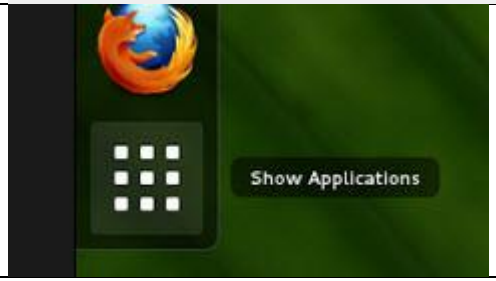
Lab L-2 Using DNF			
• Demo how to log into ROOT as a Super User (no cape required)			
• Show to change the proxy			
• Install KDE			
• Install Tuxpaint			
• Install one more package from the website given			
• Answered Questions			
Lab L-3 Install Apache			
• Install Apache			
• Install LibreOffice (complete)			
• Assign new IP addresses			
• Test apache in Firefox			
• Answered Questions			
Lab L-4 Creating Users and Folder Permissions			
• Create users			
• Create folders			
• Set permissions			
• Answered Questions			
Lab L-5 Linux Basics			
• Demonstrate the LS command			
• Demonstrate the WHOAMI command			
• Copy something			
• Use a command with a switch			
• Create a directory			
• Answered Questions			
Lab L-6 Creating a Website			
• Create a simple website			
• Serve the site			
• Get to it from another computer			
• Answered Questions			

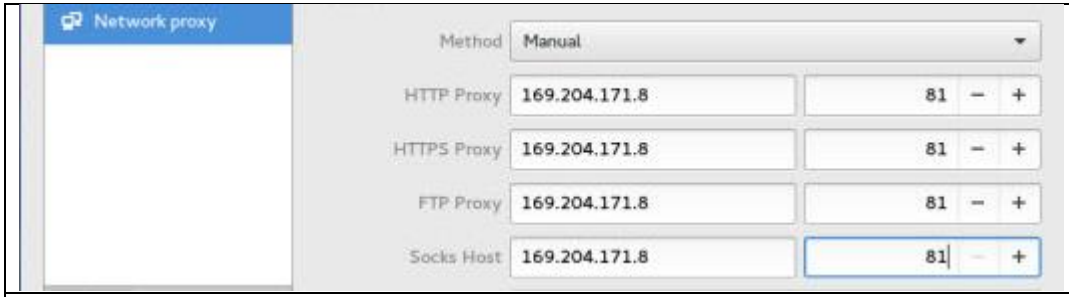
Lab L-1 Install Linux in your Network

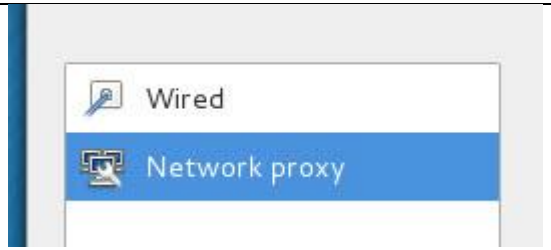
Success Criteria!			
• Create Linux VM			
• Install Fedora			
• Set up NIC			
• Demonstrate Firefox			
• Install all updates			
• Answered Questions			

Do this	It'll look like this
1. Create a New Virtual Machine. 2. Name it FEDORA 3. Set memory at 1024MB 4. Select **legacy network adapter** and connect it to External Net 5. Make the VHD 10GB and save it with your other VMs. 6. Be sure to capture the DVD drive, or you can capture the ISO. 7. Get a Fedora 23 DVD from me, or find the ISO on the network. 8. Pop the DVD into the drive. If you do not have a DVD drive, capture the ISO.	
9. Start your new. It will boot into Fedora Live. You might see some error messages. Just give it time and it should start up. Linux tells you everything that's going on during startup. The DVD gave me an error starting up right away. 10. It will boot into Fedora and automatically log in using some sort of Linux voodoo. 11. Wow look! It's already installed! No, not really. This is a LIVE disk. That means you can test the OS before you actually install it, or use it for recovery of data on other computers. Very handy. Not all LIVE disks can also install the OS, but this version of Fedora can. Sweet!	

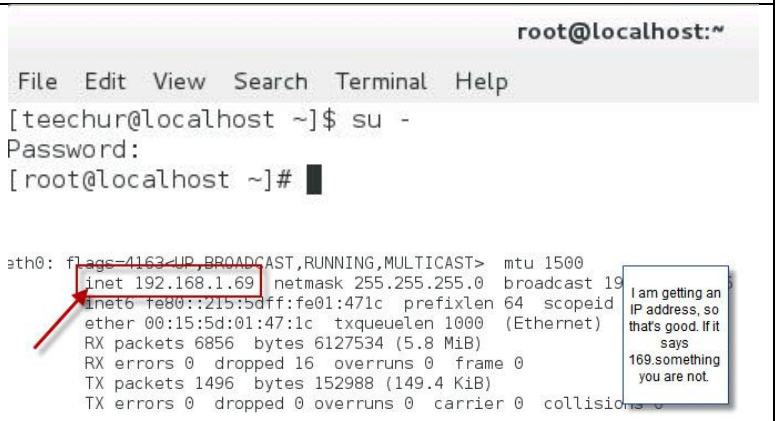
12. You can poke around in Fedora and “try before you buy’ but let’s just install it into our virtual machine. 13. Click on Live System User to log in.	
14. Double click “Install to Hard Drive” (this makes it somewhat idiot proof). 15. Click next 16. Select English for your language, or if you do speak another language, knock yourself out! 17. You can install to SCSI drives or even SANs (Storage Area Networks) but we’re going to just install to a Basic disk. 18. It will examine your storage devices…(whistle a bit). 19. Grab the drive you just created.	
20. Make the keyboard English and the time zone Pacific, then click installation destination. 21. Select your disk…wow, I thought I set mind to 10 GB…not a terabyte. I think it’s virtually expanding. 22. Click begin installation.	

23. Set your root password to P@ssw0rd. (1) It will say it's weak, so you click done two times. Installation continues. If you click on it again while it's installing you can change it. 24. Create a regular user so you don't have to use Root all the time, because that is bad form. (2) I created the user CSN Student username student with the password P@ssw0rd and again had to hit done two times. Do not make this person an administrator.	
25. It'll take awhile…sit back, relax, or go answer the questions in your other labs. 26. When it's done, close and go under the system menu and shut down. 27. Select restart. 28. While it is restarting, uncapture the D: drive or ISO so you don't restart in the live version. I had to turn off the virtual machine to eject. To me it seemed to take an awfully long time to install and it said 100% and "Performing post-install tasks" for an awfully long time. 29. Finally you can restart. You still might see error messages as it starts up. Just ignore them. If it starts and says "Live System User" eject your DVD or disconnect from your ISO and restart.	
30. In Linux you NEVER log in as an administrator. You use Terminal to access Root. So when you create your user, do NOT add it do the administrator group. That's what's called a "best practice". 31. Now we are ready to play!! Restart. When the Getting Started window opens you can go through those, but pretty much it works like everything else, so for now close that window.	
32. First thing to do whenever you install an operating system is to run updates. You have to put in the proxy first. Let's do it the easy way. 33. At the top of the screen you will see ACTIVITIES click on that then down at the bottom is a 3x3 box of squares. Click that and click Settings. 34. Select Network. 35. You'll see wired and Network Proxy. Click Network proxy. 36. Type in the proxy as shown:	



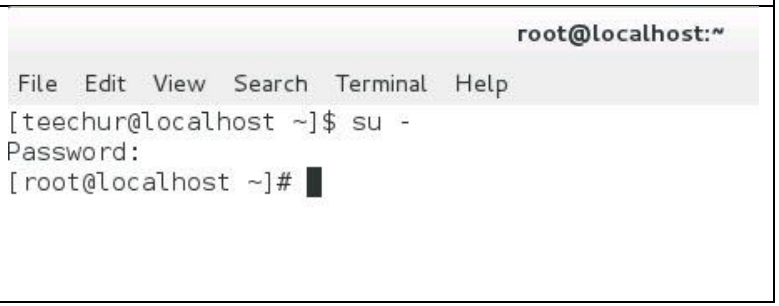


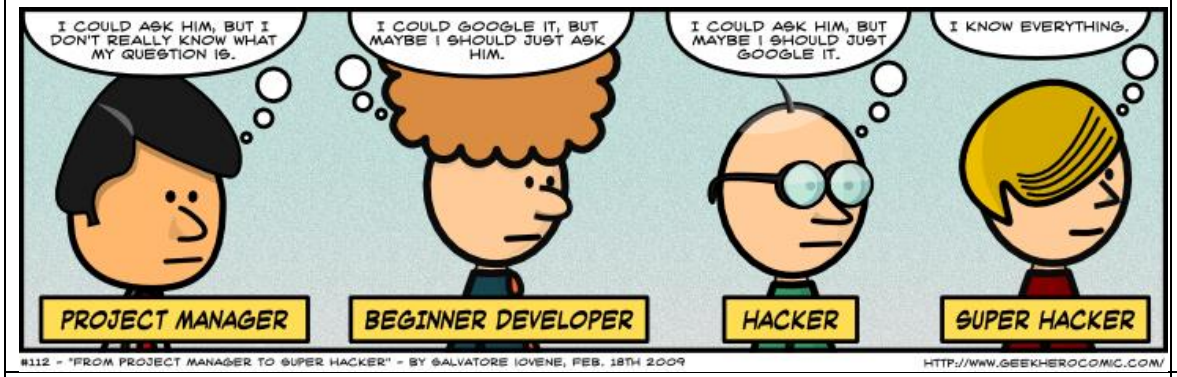
37. Now let's go into Firefox and make sure it can get online.
38. If you get the error, **Proxy refused connections** (or something like that), do the following.
    a. Double check your proxy settings. This SHOULD apply out to all programs.
    b. Go into Firefox and manually set the proxy in there. Try again.
    c. Bust out the SUPER USER account!
        i. Go into applications→Utilities→terminal
        ii. At the prompt type ***su -***
        iii. At the next prompt type the password ***p@ssw0rd***
        iv. You are NOW in super user, or administrative mode.
        v. Type ***ifconfig*** and check that you're getting an IP address. If you are, type ***chkconfig***
        vi. A big list will show up. Look for **IRQbalance** (these are all services). If it says "on" we want to turn it "off" so type ***chkconfig irqbalance off***.
        vii. Try again
    d. Mine worked the first time, so yours should too.



Update your system

39. Log in as SuperUser (tadadadaaaaa!) by going to activities→utilities →terminal
40. Type SU – (space dash)
41. When it says password, type your root password, which should be P@ssw0rd.
42. When **[root@localhost ~]** # shows up you are in the system. Don't you feel all hacikerly and cool? Okay, maybe it's just me.





43. To update we are going to use the YUM Packet Manager. Yum stands for Yellow Dog Updater: Modified. It is a terminal based packet manager (there is also one named “software” that is GUI based).
44. A packet manager has, in its configuration file, the addresses of “repositories” all over the world.
45. Type **`Yum update`** at the terminal prompt. Note it is going to tell you something about YUM being deprecated and you should download dnf. We’ll do that in a little while. Since YUM is still working, let’s go for it. It worked on 12/11/15.
46. If it doesn’t work:
47. If it doesn’t work, we need to add the proxy into the repository configuration files.
    a. Type Gedit at the terminal. This will open the Graphical Editor
    b. Open
    c. Click Other Files
    d. Scroll down and click other locations
    e. Double click etc
    f. Scroll down and find yum.repos.d
    g. Open fedora.update.repos
    h. Scroll to the very bottom and type **proxy http://169.204.171.8:81**
    i. Close that and save. Open fedora.repos and do the same thing.

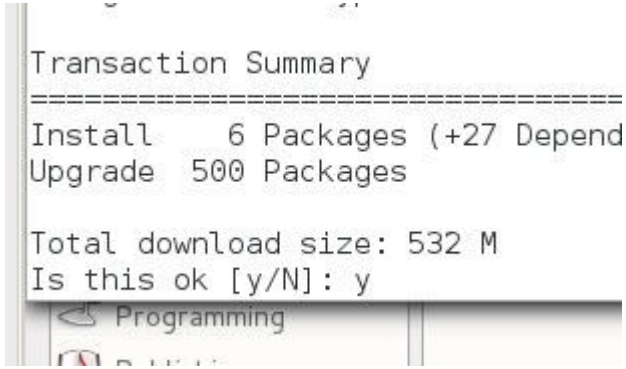
48. Now type YUM UPDATE

49. It’ll go through some stuff and a bunch of things will go scrolling off the screen and you’ll be like “Wow, I’m sorry I ever cursed Windows

For help on the VI editor:
http://amath.colorado.edu/computing/unix/vi/

When Yum Update works it looks like this:

```
Loaded plugins: langpacks, presto, refresh-packagekit
Error: Cannot retrieve metalink for repository: fedora/18/x86_64. Please verify
its path and try again
[root@localhost yum.repos.d]# vi fedora.repo
[root@localhost yum.repos.d]# yum update
Loaded plugins: langpacks, presto, refresh-packagekit
fedora                                                   | 4.2 kB     00:00
updates                                                  | 4.7 kB     00:00
(2/2): updates/primary_db  58% [=========       ] 3.6 MB/s |  15 MB   00:03 ETA
```

Update." And then you'll remember that you are SuperUser (tadadadaaaaa) and just watch it scroll, confident in your awesomeness. 50. At some point it'll say "Hey, you've got 500 things to update, do ya wanna do that?" say yes and let 'er rip  	
51. This will take awhile. 52. Play around with it for a little while. Don't make any major changes, just change the desktop maybe download a few fun things. 53. Have me check off that you've installed Fedora and it is running on your machine. We'll put it into your network later on.	

Questions to look up from your browser in Linux:

1. Who created LINUX and why?

2. What is the name of the mascot?

3. Who currently "owns" Fedora?

4. List three websites you can go to for more information about linux.

5. What is YUM?

6. What is another way to update LINUX?

Take Linux Quiz 2

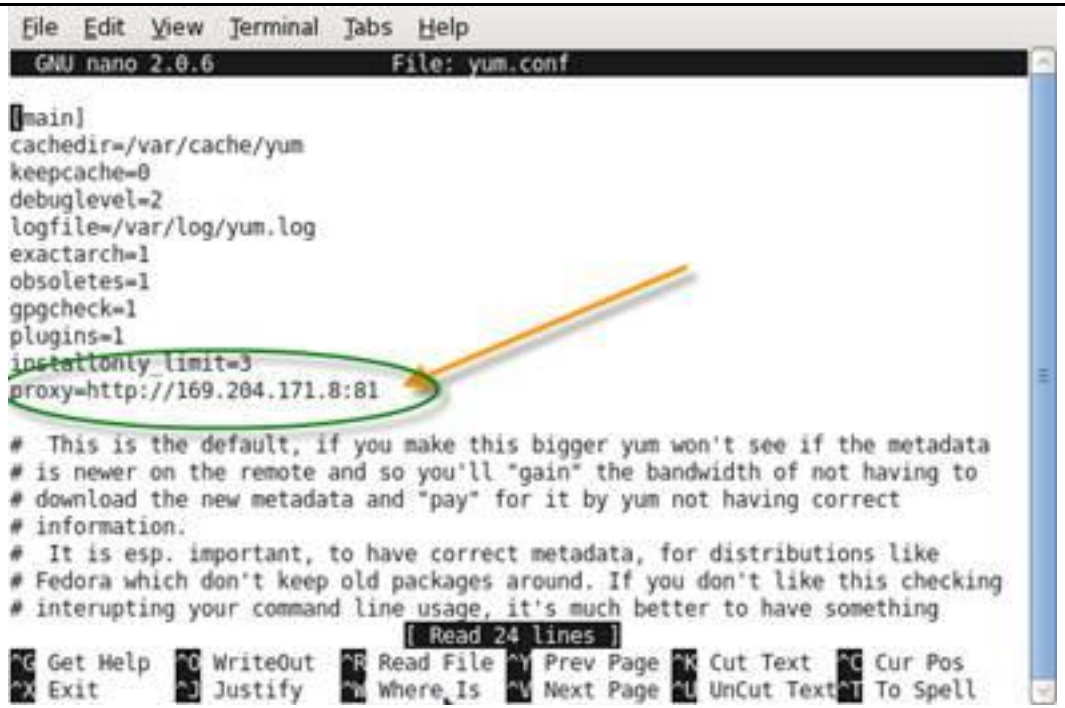
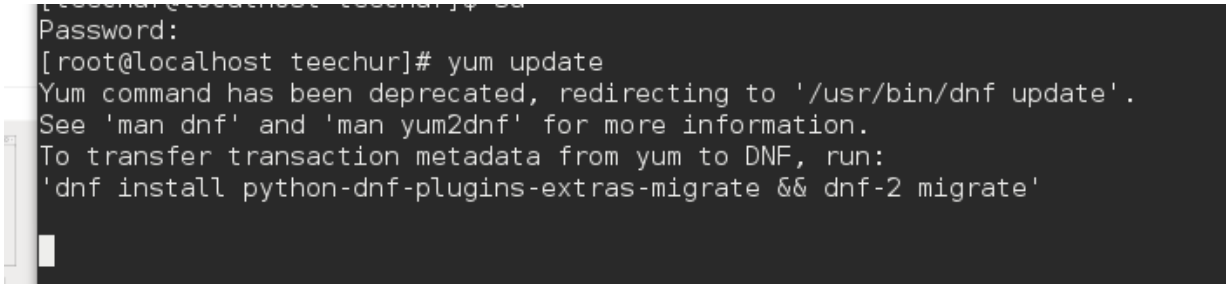
Lab L-2 Using DNF

Success Criteria			
• Demo how to log into ROOT as a Super User (no cape required)			
• Show to change the proxy			
• Install KDE			
• Install Sugar DE			
• Change desktop environment and add some widgets			
• Install Tuxpaint			
• Install VLC			
• Answered Questions			

YUM is a package management system for Linux. It's used to install packages (programs) from the command line. YUM is used to install RPM packages (*.rpm). **YUM stands for Yellow Dog Updater Modified**. However, YUM is being phased out for DNF which installs, updated, and removes packages on RPM-based Linux distributions. It actually is the next major version of YUM. In fact, it stands for Dandified YUM because it is just that much more dandy than YUM!

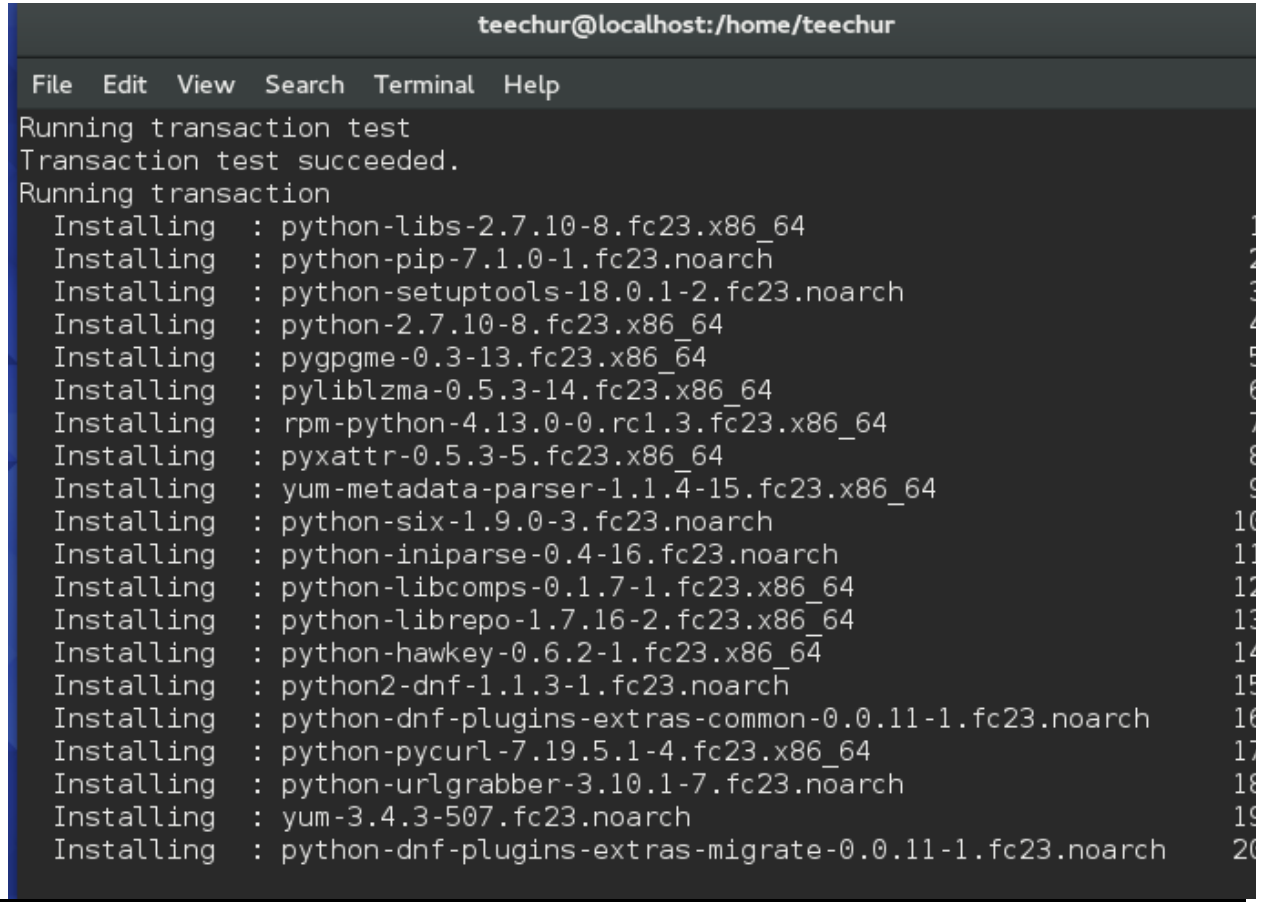
DNF works by looking in "repositories" which are basically computers that serve a buncha files. They may be mirrored (copies of the entire directory on another computer in the interwebs). The good thing about this is that the program (dnf) can look in other computers if for some reason the repository is down or too busy. ***There ARE some errors you may get, so read ALL of the directions.***

A few notes:
/etc/=a directory that holds configuration files and directories
.conf=a configuration file, so yum.conf is the yum configuration file
Su - = logging in as Super User (tada). You have to be logged in as SU in order to change these files.
Most commands are unix commands, but some dos commands work. If all else fails, ask for help!
 # = a comment in a configuration file. You can "comment" out a line by putting a # in front of it.

Do this	It'll look like this
1. Boot into Fedora 2. First make sure you're able to get on the Internet since DNF downloads packages from the Internet. 3. Check on Firefox and make sure. If not, you'll need to add the proxy. 4. You're going to Telnet into root. 5. Applications→Utilities→Terminal 6. Log into root as a super user: a. At the prompt type: **su –** b. Type your password you set for root c. Your command prompt will change to a # 7. First we need to make sure YUM uses our proxy… a. You have to specify this in the yum configuration file. So let's go there. b. Cd /etc/ (cd=change directory /etc/ is the directory where all KINDS of stuff is stored….type **ls** to see) c. We want to change the yum.conf file using the text editing program **gedit**. d. Type **`gedit yum.conf`** e. Scroll down until you find the entry **proxy=** if there is no entry, add it at the end (after the commands, before all the notes that start with #) **`8. Proxy http://169.204.171.8:81`** a. Save and close. (If you see an error in terminal related to spelling, ignore it. I think some spelling dictionary isn't installed. 9. Check Firefox again. 10. Now type **`dnf install python-dnf-plugins-extras-migrate &&`**	 

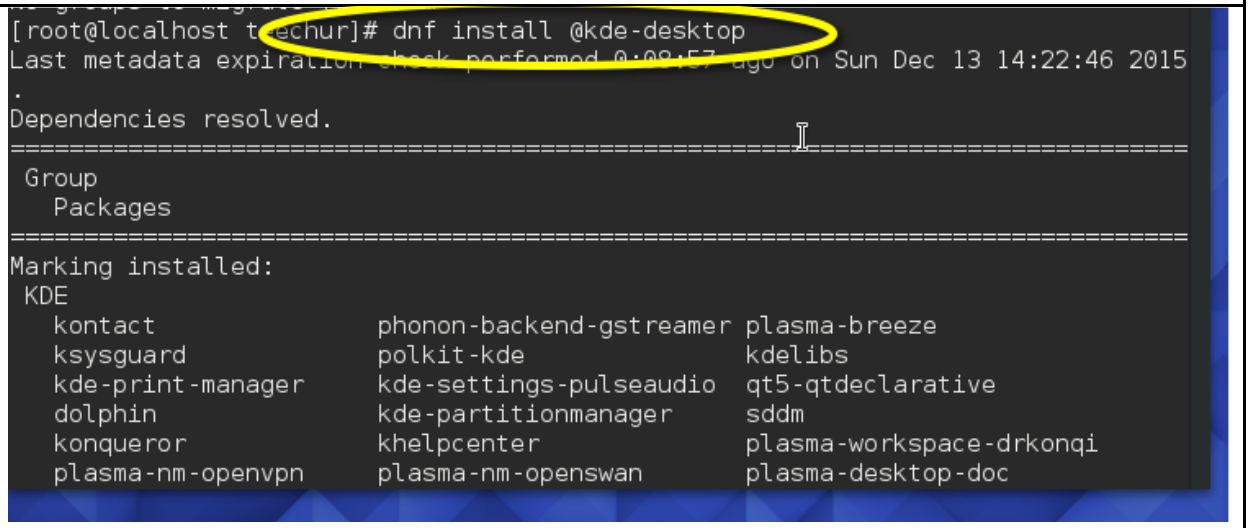
`dnf-2 migrate` to install DNF and migrate all repositories and settings from YUM to DNF.

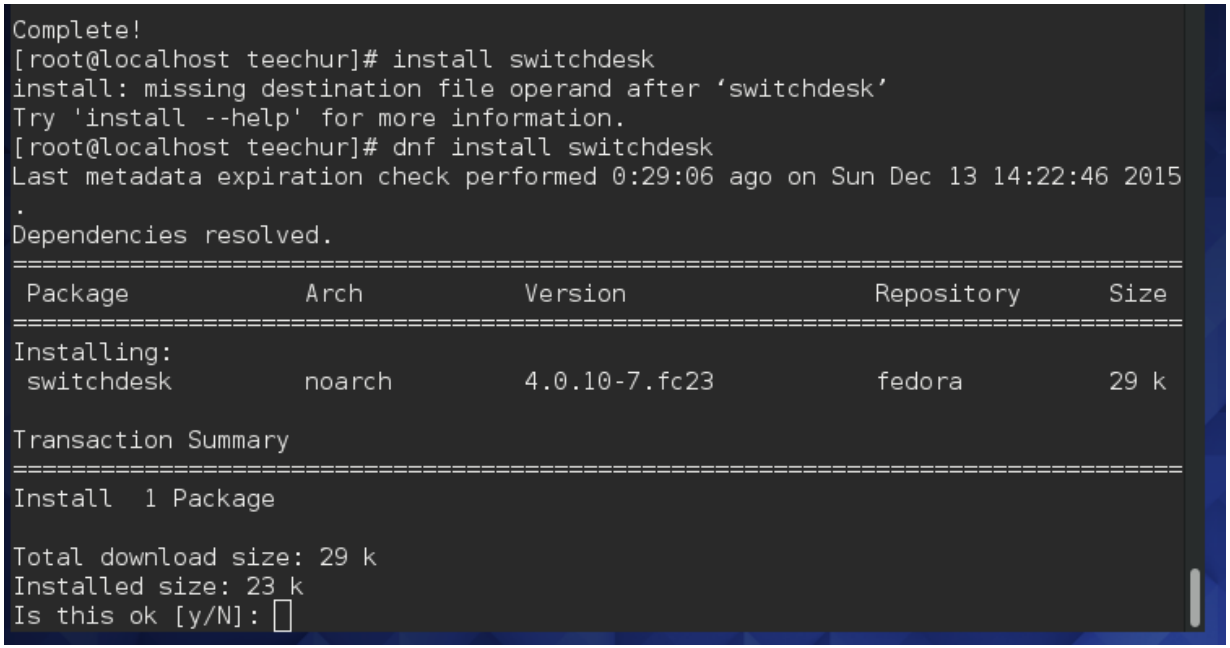
11. Most will already be downloaded from before, then it will ask if you want to install and it'll install pretty quickly.
12. Next it verifies.
13. Then it's done!



Install another desktop environment

1. Let's start by installing another graphical environment called KDE.
2. The syntax for installing anything in DNF is **`dnf install packagename`**
3. Type **`DNF install @kde-desktop`**
4. What this will do is install the KDE desktop environment from the Internet. It will ask you if it's okay to download it. Say "Y" for yes.
5. When I installed it there were 419 packages totaling 376 MB. It didn't take too long.
6. I downloaded it this morning and I had to run it two times for some reason, so if you are every installing something on Linux and it says it failed, try again in a few minutes. It might just be one of the repositories is overloaded at the time by others installing and you can catch it in one or two minutes.
7. The cool thing is, as you watch you may see some errors. YUM will change to a different mirror if one stops working. So don't stress if you see socket error or http error 403. Yum deals for you.
8. Once KDE is installed, you can install the program switchdesk to change on the fly. Install switchdesk from DNF (**`DNF install switchdesk)`**. After it's installed you can type **`switchdesk kde to`** switch.
9. Logout. At the login screen, put your cursor on the bottom and you can select which environment to log into. If it doesn't show up, restart.
10. You will also see, if you logout, that down at the bottom you can select either Gnome





or Plasma (KDE) before logging on. (Sometimes it requires a restart. So if you don't see the selections when you log out, restart the OS.)

Note: If there is an error when installing a package, you can simply restart the installation. YUM will determine what parts have already been installed and pick up the other parts from another mirror. When I installed KDE it did not fully install. I just ran the command again, it grabbed the two RPM packets that didn't download, and I was in business! **If it says it is not installed, rerun the installer. That happened to me EVERY time I installed it.**

While it's installing, go to http://www.kde.org/ and take a look at the features of KDE Plasma Desktop.

After you log back in it will look very similar, but start poking around under menus and you'll see…nope, it's added all sorts of new and exciting things to your desktop and programs!

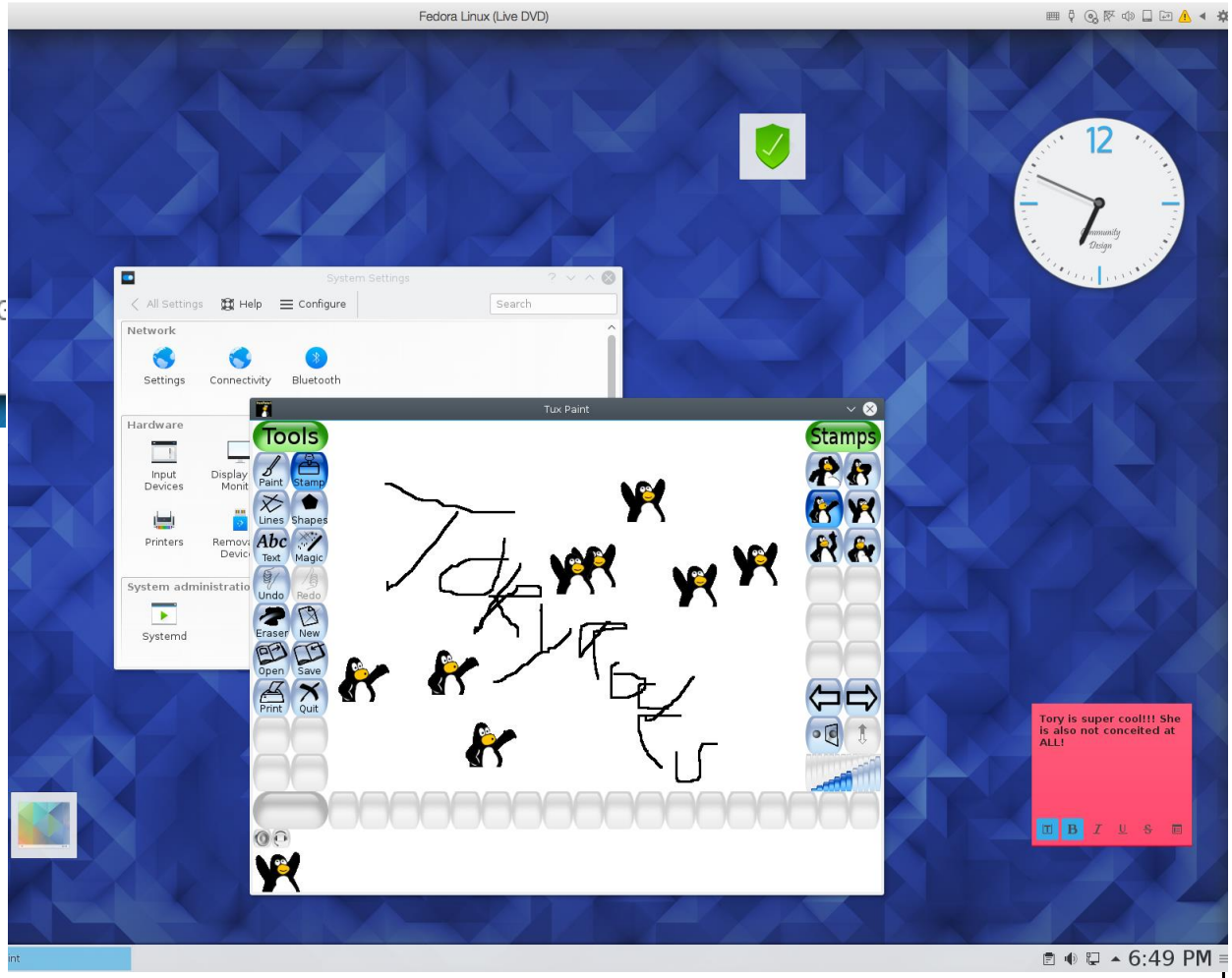
1. Also go into "Software" in the GUI and notice that you'll know have a listing for KDE Desktop. You can go in and download other programs as well. Pull a few!
2. Install ONE MORE desktop environment:
    a. Yum install sugar

This gives you three desktops to choose from!

```
Installed:
  switchdesk.noarch 0:4.0.10-3.fc18

Complete!
[root@localhost etc]# switchdesk kde
Red Hat Linux switchdesk 4.0
Copyright (C) 1999-2010 Red Hat, Inc
Redistributable under the terms of the G
Desktop now set up to run KDE.
[root@localhost etc]#
```

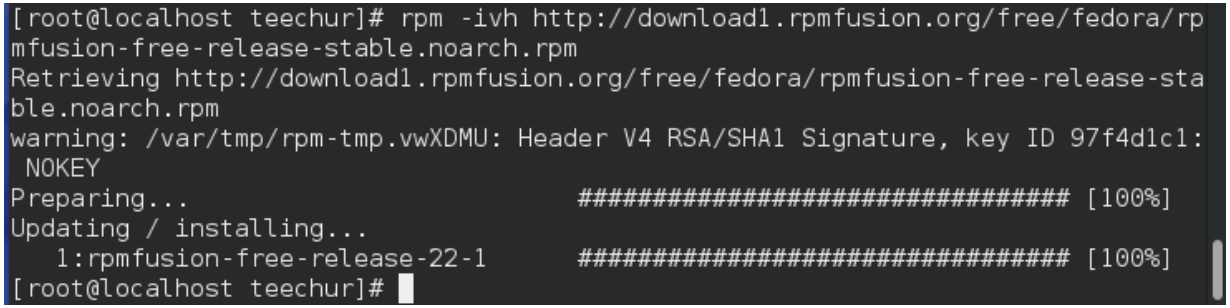
This is what you see after typing **DNF install @kde-desktop** and then type **switchdesk kde.** It's all ready to go!



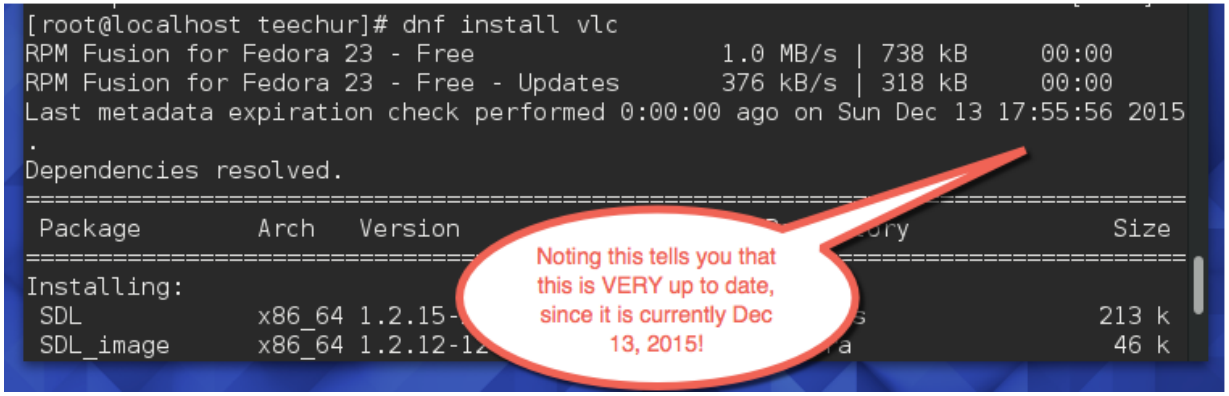
K Desktop Environment works with widgets. It's cool, too. Add some widgets to your desktop by clicking default and selecting widgets. Just grab them and drag onto the desktop.

Install More Packages

1. Let's install a stable repository now that we have a new desktop environment and a new packet manager (DNF is a packet manager). We're going to install RPMFusion repository. A repository is a server where files and packages are stored for download. The cool thing with Linux and other open source operating systems is that there are a lot of software packages that are created for free.
2. Let's go for it. Sudo into terminal and type **`rpm -ivh http://download1.rpmfusion.org/free/fedora/rpm/free-release-stable.noarch.rpm`** (Note that is the number ONE not the small letter L after download—I could NOT get it it to work until my fourth try because I am dumb and kept putting an L.)
3. So let's take a look at that, basically we are telling Linux that there is a website that has a new repository to install into the system. You could just go into repos.d, which is a file, and type it in but this is SO much easier? Isn't it??



4. Next let's install VLC Player so we can play music and videos and the like. SUDO into terminal.
5. Type **`DNF Install VLC.`**
6. Notice that since adding the new repository it'll show that you're getting files from RPMFusion. Nifty!!!
7. One thing you'll notice is the term MIRROR. A mirror is a repository that contains a complete copy of the original repository so that if one goes down or gets overwhelmed, people can download from others. All the mirrors will be annotated in the repos.d files and you can always run the rpm –ivh etc. again or you can type **`nf -y reinstall --nogpgcheck http://download1.rpmfusion.org/free/fedora/rpmfusion-free-release-$(rpm -E %fedora).noarch.rpm http://download1.rpmfusion.org/nonfree/fedora/rpmfusion-nonfree-release-$(rpm -E %fedora).noarch.rpm`** to reinstall everything from scratch and update.



Questions

1. What is DNF?

2. What does KDE stand for?

3. What are some free programs available from the KDE community?

4. What is the name of the current desktop build?

5. Who “owns” KDE?

6. What is the command if you wanted to install a program named Tory_Rocks?

7. How do you switch between KDE and GNOME?

8. What is GNOME?

9. What is KDE?

10. What are three differences you see between those two desktop environments?

11. If you're installing something via DNF and one of the download mirrors goes down, what do you do?

12. What is a repository?

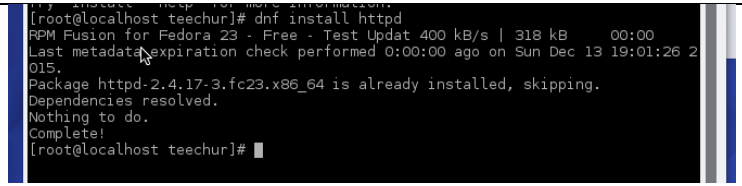
13. If I wanted to install a new repository at the website download4.tory.org/free/repo how would I do it?

Lab L-3 Install Apache

Success Criteria			
• Install Apache			
• Assign new IP addresses			
• Test apache in Firefox			
• Answered Questions			

Lab L-3 Installing and Configuring Apache Web Server

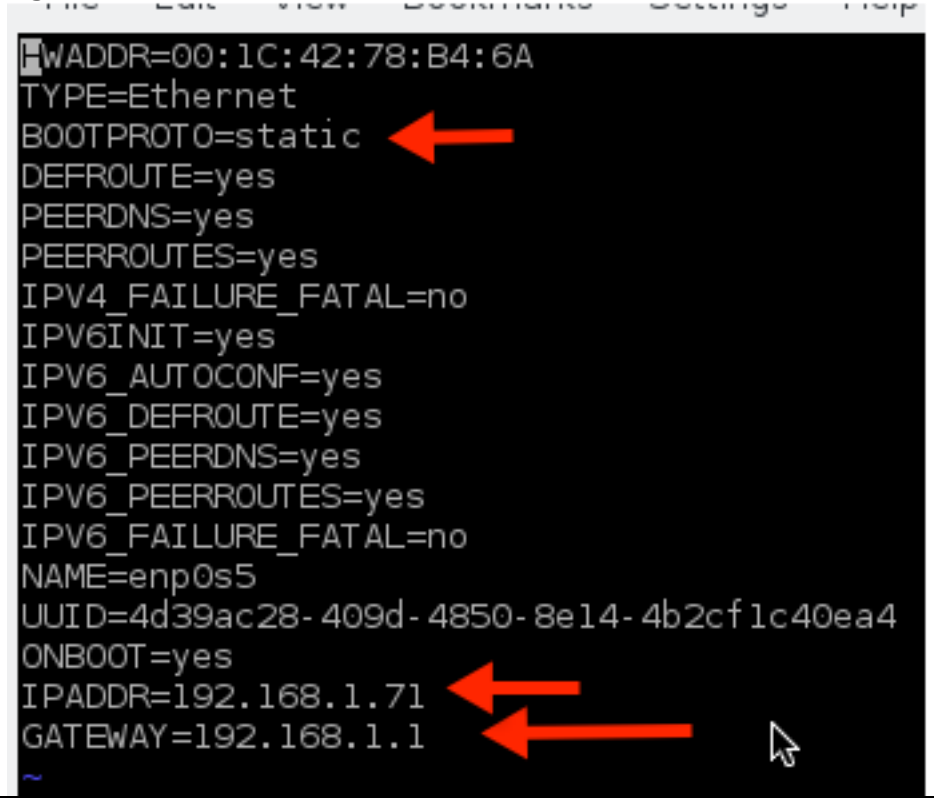
Apache is an open source webserver that has been around for years and is used both on Linux and Windows boxes throughout the world. It is simple, straightforward, and robust without all the bells and whistles of Windows Internet Information Services.
You can install a simple HTTP server, or you can get really fancy and allow it to host dynamic webpages, databases, etc. The sky is almost the limit with Apache!

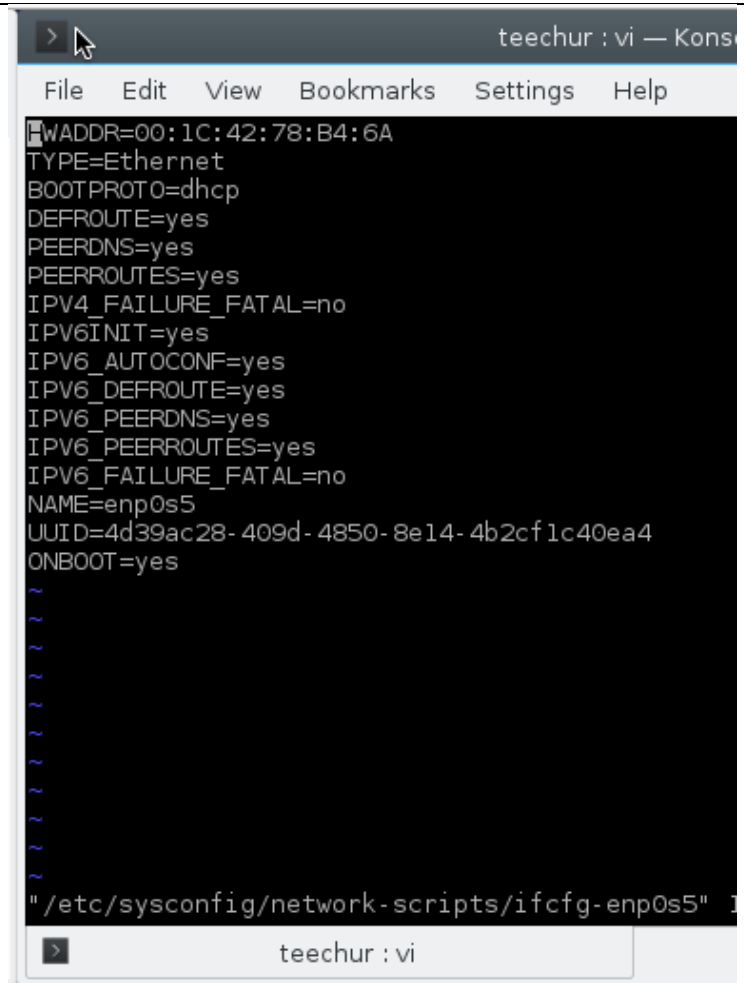
Do this	It'll look like this
1. Log into root using your terminal. If you're still in KDE, it's called Konsole. The Kutesy K stuff kind of irritates me. 2. Before we finish, let's clean up our OS using **`yum-complete-transaction`** command (no spaces). That's not a typo! DNF does not have the "complete-transaction" command, so you can actually install some old YUM utilities (which I discovered when I researched). 3. It will ask you if you want to install some YUM stuff. Say yes. 4. Now type **`yum-complete-transaction`** again. It will go through and delete some old files no longer being used due to updates. Always do this before installing Apache. 5. Now we're going to install all the Apache Packets. This gives you the option of using a number of packets to start daemons. A daemon is a process that runs all the time and provides a service. For example the http daemon provides web page serving. 6. To ensure that you have Apache installed type **`dnf install apr`**. This will install all the apache resources. 7. Now type **`dnf install httpd`** 8. It may tell you that it is already installed and latest version so there's nothing to do. If only it said "Have a nice day" it would be perfect!	 **REMEMBER: If it gives you errors, run the command again to make sure everything is installed. I had to run it three times. You gets whats you pays for. (In other words, it might be annoying but hey, it's free.)**

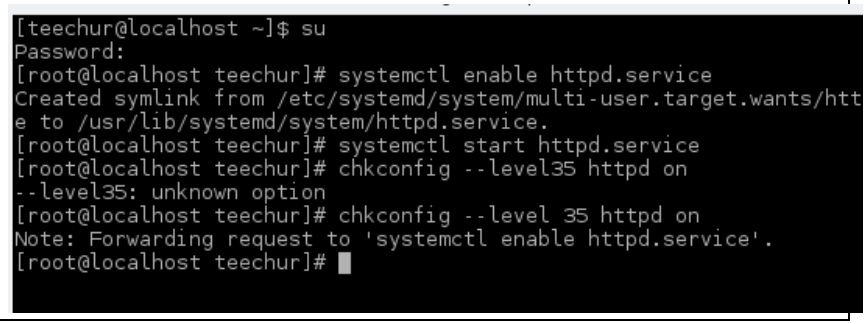
REMEMBER: If it gives you an error, try again! I was installing this and it erred on me three times, before working the fourth time.	
9. Before you do anything, we'll use LibreOffice to create websites, so let's make sure it's installed. It should be under Applications→Office. It looks like we have LibreOffice.already installed. Let's make sure it's got everything 10. We are going to want to make sure LibreOffice is updated. We'll use the **groupinstall** command. Groupinstall actually installs a "group" of applications that have been designated under one topic. 11. Type **`dnf grouplist`** to see a list of all of the groups. If you scroll through you should see LibreOffice in the list. It's a lot like Microsoft Office so it gets its own group. 12. Type **`dnf groupinstall "LibreOffice"`** to install all of the updates and add on to LibreOffice.	
13. Make sure you have static IP addresses on all computers in your network. 14. To assign a static IP in Linux: a. Go into System→Administration→Network b. Type in your root password c. You'll see something like the right picture **img 1**. d. Locate the name of your network card. Mine is enp0s5. Yours might be eth0. 15. Open Terminal/Konsole. 16. Type **`vi /etc/sysconfig/network-scripts/ifcfg-eth0`** (for eth0 put the name of YOUR Ethernet connection) 17. The text editor VI will open. VI is different. You can't use the mouse. You have to use commands. a. Start by moving your mouse to where you see the word BOOTPROTO=dhcp. We want to change that to read BOOTPROTO=static. b. Put the cursor on the s and hit the * key then hit the R key. Notice that down at the bottom the word – REPLACE – shows up. You are now in replace mode. Start typing static. c. Hit the esc key a few times and arrow down to the bottom. d. Now type * and I for insert.	

e. Add IPADDR=(the ip address you're going to use, see my example but don'e use it). And GATEWAY=192.168.1.1
f. Now to do a command type a colon : and notice it shows up at the bottom. You can do the following:
   - :x will save the file and quiz
   - :q will quit, but the file has to have already been saved or not changed
   - :wq will quit and save
   - :q! will quit without saving changes
   - For more information on VI you can type man vi at the terminal prompt or there are lots of webpages to help!

18. To double check to make sure it saved, hit up arrow and open it again and make sure your changes are there. WHEW! They are! (If you did it right, that is.

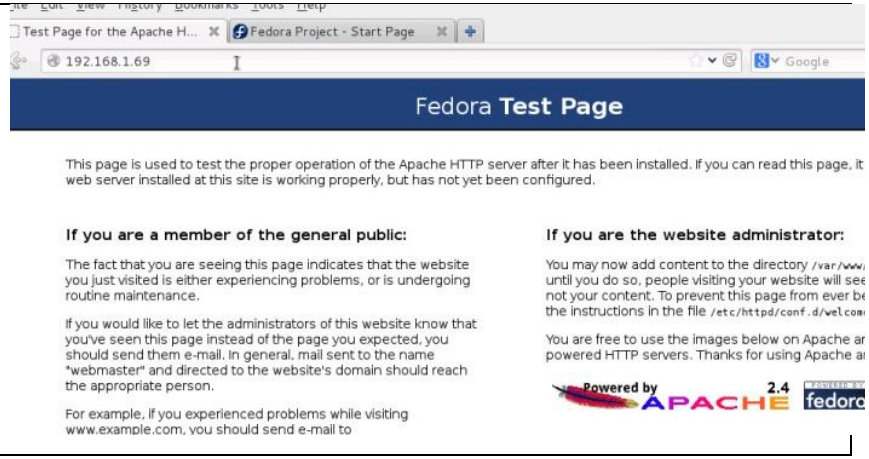






19. Test your connection by pinging the other computers on your network (virtual network, open up Windows 8 and find its ip address). 20. Log into root at terminal 21. Send the ping command just like in Windows. 22. To stop the ping type ctrl-c 23. To set the ping to run only a certain number of ping packets type **`ping ipaddress -c x`** where x=number of pings. –c stands for count. 24. At the prompt type **`man ping`** to learn more options you can use in ping.	
25. Let's start the Apache Daemon. In Linux a daemon is a program that runs in the background. Most daemons will end with the letter d, hence why we type httpd and not just http. At # type **`systemctl enable httpd.service`** (this turns on the web service) then type **`systemctl start httpd.service`** (this makes the service run) 26. It will say starting httpd: 27. We want to configure Apache to start at startup. Use the command **`chkconfig --level 35 httpd on`** (this turned httpd…aka apache http server…on and tells it to turn on at boot, and sets the system level to 3 <non-graphics mode> and 5 <graphics mode>) 28. Yay!	

29. Now let's test it.
30. Open up Firefox
31. Type the IP address you gave to your server into the URL box. I gave mine 192.168.1.71.
32. If everything is running the way it should, you will see "Fedora Test Page".
33. If it doesn't work, type LOCALHOST into the address bar and you should see the page to the right. If that works, you did it right but you need to disconnect from the regular network (just the internal network should be running) because otherwise your DNS server is going to try to figure out where to go. (you will have to reconnect for part of the next lab, though)



Questions

1. What is a daemon?
2. What is the name of the apache daemon?
3. Where can you change your IP address?
4. Why must a webserver have a static IP address?
5. What is the IP address of your Linux server?
6. What command would you use to send 5 pings with a packet size of 64k?

7. What command do you send to set the graphics level to non-graphics mode, and graphics mode and make sure httpd starts at startup?

8. What is the difference between groupinstall and install in DNF?

9. What is VI?

10. How do you insert text in a text document in VI?

11. How do you quit and save a document in VI?

Lab L-4 Creating Users and Folder Permissions

Success Criteria			
• Create groups			
• Create users			
• Create folders			
• Set permissions			
• Answered Questions			

Often when you're working in a business you might have more than one person working on the website. You're definitely going to have more than one person working in folders. Let's learn how to change permissions in folders in Linux.

In order to allow regular users to create documents that save in the /var/www/html folder you're going to need to modify the permissions. This is a good place to learn about permissions in Linux.

Do this	It'll look like this
1. I'm going back into the Gnome desktop for the rest of the unit because yeah. The Ks were getting to me. It's a personal problem. 2. Since we're using a Workstation (we wouldn't have to do this if we had a server) we have to add groups from the terminal. Unfortunately desktop environments have been dumbed down so even people who aren't smrat, like us, can use it. 3. Yes, I realized I spelled smart wrong in the last direction. Did you already tell me that, well…now don't you feel smrat? SU into terminal. 4. We're going to add a group named ***webdesign***. a. Type **`groupadd webdesign`** b. Now create the group **web** c. Finally create the group **webuser** 5. Create a user for each of your partners. a. Type **`useradd teechur`** to create me 6. Now add the users to the groups a. Type **`usermod -G webdesign Tory`** to add me to the webdesign group. b. Now create the following additional users: i. Winkin ii. Blinkin iii. Nod c. Add all of them to **webuser** in addition, add Nod to **web** We use groups to assign rights and privileges to folders (directories) and files. Permissions on files Below is an example of how a file may be listed when typing (ls -l) at the prompt as well as information on how to interpret it.	 | Group Name	Group ID	Group Members | |---|---|---| | teechur | 1000 | teechur | | Webdesigners | 1001 | | | Dot | 1002 | Dot | | Dash | 1003 | Dash |

```
-rw-rw-r-- 1   hope  web  123   Feb 03
15:36   file.txt
```

-	rw	rw-	r--	1	hope	Web	123	Feb 03 15:36	file.txt
File	owner	group	everyone else	links	owner	group	size	mod date	file name

- Owner can read and write
- Group can read and write
- Everyone else can just read

To change modes (chmod) use the following numbers. This seems hard, but it's really not:

CHMOD can also to attributed by using Numeric Permissions:

400 read by owner
040 read by group
004 read by anybody (other)
200 write by owner
020 write by group
002 write by anybody
100 execute by owner
010 execute by group
001 execute by anybody

So if you want to change the mode of a file named fred so that the owner can read, write, and execute you add together the read (4) the write (2) and the execute (1) = 7 so the command would be

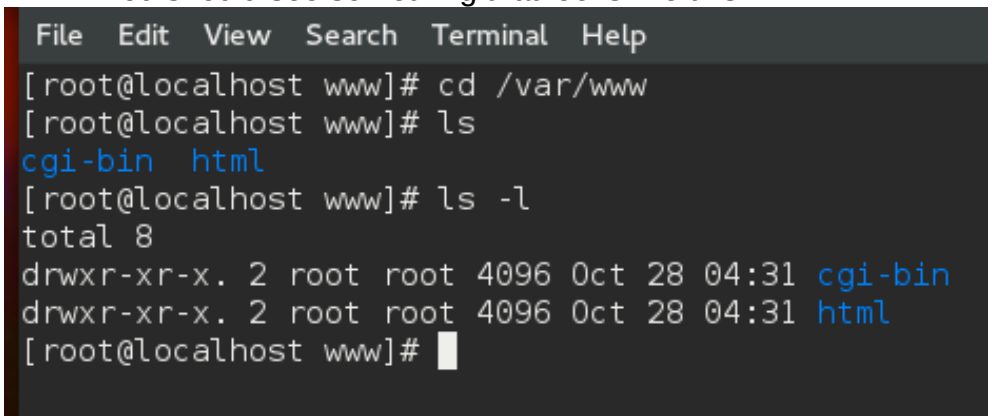
Chmod 7 fred

Or to make it easy
7=rwx
6=rw-
5=r-x

4=r--
3=-wx (which would be strange)
2=-w-
1=--x
0=deny all

- So if I want to the folder, HTML owner=RWX, Group=RWX, and everyone else=R—
- I would type the command chmod 774 html
- Alternative I can do one type at a time. So if I wanted the owner to be RWX I could type
- Chmod u=rwx html
- That sets the first set. Then I could do chmod g=rwx html and finally o=r

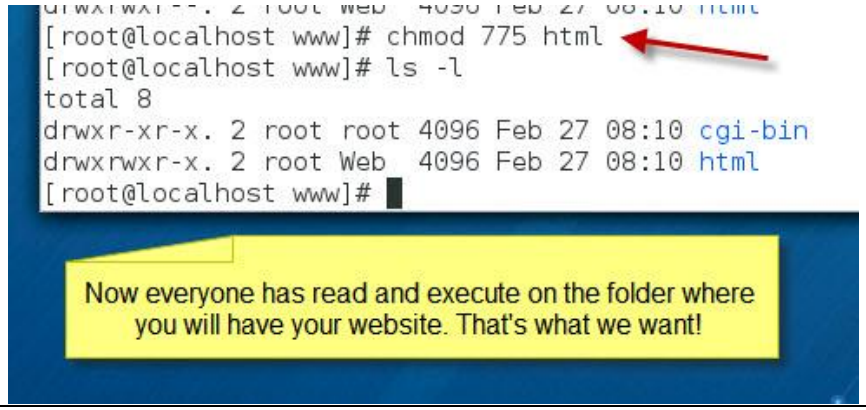
7. Now go into terminal and log in as root. (T`his is another way to say type su – and then your password. Logging in as root is the same as logging in as administrator.)
8. Type **CD /var/www/** very similar to DOS, huh?
9. Do a listing by typing **ls** which is similar to DIR in DOS
10. Now add the switch –l to show permissions: **ls -l**
11. You should see something that looks like this:



12. We want to change the group membership to web.

Chgrp

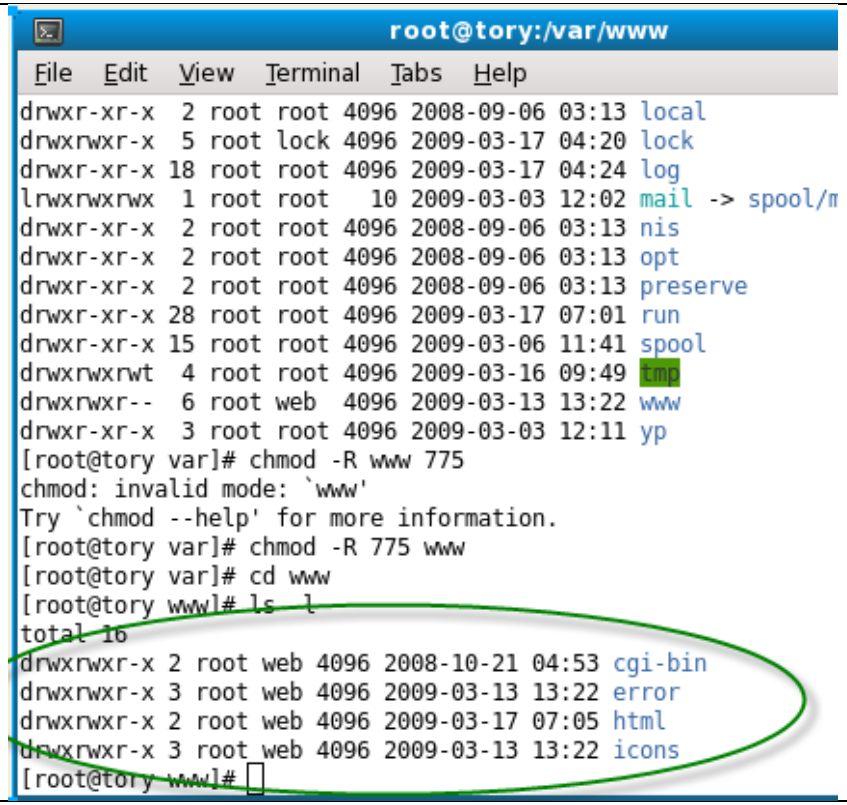
```
[root@localhost www]# chgrp Web html
[root@localhost www]# ls -l
total 8
drwxr-xr-x. 2 root root 4096 Feb 27 11:10 cgi-bin
drwxr-xr-x. 2 root Web  4096 Feb 27 11:10 html
[root@localhost www]#
```



13. Use the chgrp command to change the group membership of html to web. a. Command: **`chgrp`** b. Followed by the group name (case sensitive): **`web`** c. Followed by the directory name: **`html`** d. Type ls –l to see if permissions changed. See image. 14. Give the following permissions: a. Owner: rwx b. Group: rwx c. Others: r-x d. Use command chmod **775** html 15. Let's create another folder inside html. CD into html. 16. Create a folder named intranet (mkdir intranet) 17. Create a new group named "Employees" 18. Create three new users a. Penny b. Tracy c. Link 19. Add them and all of your partners to the employees group. 20. Go into # and change the group ownership of the intranet folder to employees. 21. Now give the intranet folder full permissions for the owner, read and execute for the group, and deny all for everyone. **22. Do an ls –l and write in the space below what you see.**	
23. To change all the folders in a folder (a folder and all its files and folders inside of it), use the –R (recursive) switch. CD so you're in the /var/ folder. 24. Change group ownership to web for all of the folders in www, including www a. Owner can have rwx b. Group can have at least rw	Before you do this…ask yourself "What numbers do I use to change the folder permissions in one command?"

c. Others need rx but not w

25. Once you change the mode, then just type chmod –r www to set that mode to all files INSIDE the folder.



Take quiz Linux Quiz 3

Questions:

1. How can you get a list of permission from terminal?

2. How do you move from one folder to another (for example from /var/www to /var/www/html)

3. Fill in the box below

Letter of Permission	What it means	What number is associated with it
R		
W		
X		

4. What command would I use to change the group ownership of the folder named web to the group named chickens?

5. Fill in the table below:

If I want someone to be able to	Then I use this number
Read only	
Write and read	
Read and execute	
Read, write, and execute	
Deny all (use very carefully)	

6. Use the example to tell me what the effective permissions are:

```
me@puter: /home/writers$ ls -l
total 17
drwxr-xr-x 3 nana writers 80 2005-09-20 21:37 dir
-rw-r----- 1 nana writers 8187 2005-09-19 13:35 file
-rwxr-xr-x 1 nana writers 10348 2005-07-17 20:31 otherfile
```

a. Who is the owner of the folder named dir?
b. Who is the group owner of the folder named dir?
c. How big is the folder named dir?
d. On the folder dir:
    a. Nana has what permissions_____
    b. The group has what permissions_____
    c. Everyone else has what permissions_____

Lab L-5 Linux Basics

Success Criteria			
• Demonstrate the LS command			
• Demonstrate the WHOAMI command			
• Copy something			
• Use a command with a switch			
• Create a directory			
• Answered Questions			
• Took Quiz 4			

Lab L-5 Linux Basics : First Steps Into Linux

By Aarjav Trivedi <aarjavtNOSPAM@yahoo.com>
Posted: (2002-02-04 14:35:18 EST by prakash)
For Linux newbies a quick lesson on every day Linux commands.

Welcome! We meet again. It has been some time now since I've heard you swear at your computer so I assume your Linux installation went well and you have been experimenting with your new system However If you are one of those wanderers who ever so often chance upon random webpages on the net, here you will find a detailed guide to installing Linux.

Now during installation you chose a **'root'** password which you used to login when you were prompted for a username and a password for the first time. **'Root'** on Linux is the centre of all power. He is the System Administrator who has access to all files and folder and can add or delete users or change their passwords.

Now absolute power can corrupt absolutely. For eg. If you put in a virus infected floppy as Root, (Not that there are many viruses for Linux, as of now I have come across just two) the virus might be able to infect all files, since you have access to all of them. Users other than root however have write access to a limited part of the file-system which often excludes crucial library and configuration files thus reducing the risk of damage due to such incidents. So you must create a new user for yourself and when not performing administrative tasks should log in using that username rather than root.

Lets create a new user.

First open the Linux Console which is found on the Panel at the bottom of your screen generally shown by an icon that looks like TV switched off with a black screen. The following commands are to be type in the console, pressing enter after you have entered the full command. ***For us we will go under Applications→System→Terminal***

The 'useradd' Command

The general syntax for the useradd command is :

useradd -d home_directory -e expire_date -g initial_group -p password login_name

home_directory : Is the main directory within which the user is expected to story all his files and subdirectories.
For a user named 'foo' the home directory generally is /home/foo
expire_date : This is the date on which the user's account expires and he/she cannot access the computer anymore unless the account is renewed. This is somewhat similar to your ISP account expiring in 6 months or one year. The expire date is in yyyy-mm-dd format (2002-0L-30)
initial_group : Every user in Linux belongs to a group which affects his file permissions. The initial group must be a group which already exists.
Password : This will be the user's password to access his account
login_name : This will be the user name with which the user will access his account.

Eg :

useradd -d /home/einstein -e 2002-0L-30 -g root -p relativitysucks einstein

creates a user named einstein on my computer.

His home directory is /home/einstein
His expirty date is 30th august 2002
He belongs to the 'root' group
His password is relativitysucks
His username is einstein.
Incase you do not enter one of the parameters group, home, expire or shell they are replaced by their default values. These default values can be viewed using the " *useradd -D"* command and can also be changed which however we will cover in a later document.

The ls command

The **ls** command is equivalent of the DOS **dir** command. It lists the files and subdirectories contained within the present directory.

Some possible flags which can be used with the ls command are :

ls -a

List all files (Some configuration files starting with a dot '.' are otherwise not listed). Often the number of files in a directory is too large to be fitted within one screenfull of data. In such a case we use dir/p for DOS. For linux a similar command is

ls | more

Lists files and directories page after page on keystroke. The above command actually is a combination of two commands. It introduces a new concept called 'Piping'. It is done using the logical OR or | character found just above the Enter key on your keyboard. In Linux it is possible to give the output of one command to another command as an input.The ls command lists files & subdirectories and the more commands divides its input into page length views. Thus piping the ls output to more results in page length views of files and subdirectories.

ls -R

It lists the files and subdirectories of a directory and further lists the contents of each subdirectory recursively. The output of this command is usually large and is best seen when piped through more.

The pwd command

The pwd or the present working directory command gives you the path to the directory in which you presently are. It is used without flags simply as 'pwd'

The su command

Many a times you might have logged in as a normal used and might need to be root to install a software or for some other small task. You could logout then login as root complete the work logout and login back as a normal user. Instead, you can just use the su command. The format is :

su username

eg : su root

when you 'su' to become root from a normal user, you are asked for the root password. But if you are root, you can use 'su' to become any user without using a password. Once your work is finished, use 'exit' to become yourself.

The whoami command

Sorry folks! This command won't solve your teenage identity crisis but it will tell you which user you are logged in as. Useful when you have used 'su' many times and now don't know who you are.

The cp command

This one copies files / directories from one place to another it's syntax is

cp source_file_with_path destination_path

eg : cp /home/aarjav/secret.txt /ftp/pub

This would make all my secrets public :). But my secrets wouldn't fit on my 8.4 Gb hard-disk ;) The cp command can be used with some useful flags also :

cp -i

Interactive copying, prompts before overwriting files or directories

cp -l source_file_with_path destination_path

Makes a link (shortcut) to the source_file at the destination path instead of actually copying it there.

cp -p

Preserve file attributes while copying if possible

cp -R

Copy Recursively . Used when copying directories. This command also copies the contents of the subdirectories.

cp -u

Update i.e. Copy only if the source file is newer than the destination file or the destination file does not exist.

The rm command

The rm command is used to remove or delete files or directories. Its general format is:

rm -flag file_or_directory_with_path

eg : rm /home/aarjav/waste.txt

Some flags which can be used with the rm command are

rm -v file.txt

Remove verbosely, explain what is being done.

rm -r my_directory

Remove the directory and its contents recursively.

The mkdir command

This command is used to create new a new directory. Its syntax is

mkdir -optional_flag directory_name

The possible flags are

mkdir -v directory_name

Tell what is going on.

mkdir -p directory_with_path

This is a cool command. Suppose you need a directory named SEIT within another directory called PVPP in /usr/local and the parent directory PVPP itself does not exist, then you can use :

mkdir -p /usr/local/PVPP/SEIT

This command creates the PVPP directory and the SEIT subdirectory in one go.

The man command

For someone new to linux, the man command is one of the most important commands. The syntax is:

man command_name

Suppose you have not understood fully one of the above commands or want to find out about a new command you have learnt , the man command provides a manual for that command

Thus

man cp

will show you a manual on the cp command and so on.

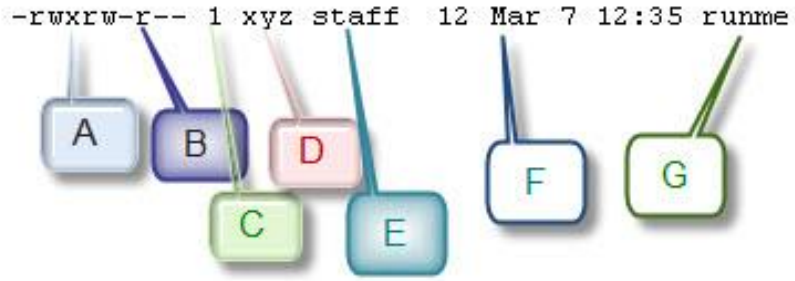
I think that is enough material to keep you busy for a few hours and get you through some of the elementary tasks in Linux. So farewell friends, until we meet again.

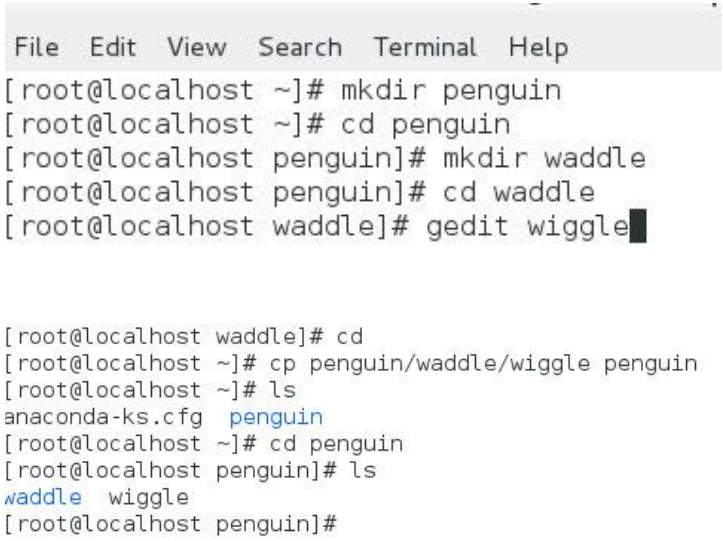
This document prepared in Linux using StarOffice 5.1

I would appreciate if someone using this article on their site or somewhere else would drop me a mail.

< a href=\"http://www.freeos.com/articles/3896/\">Linux demystified

Do this	It'll look like this
Create a New User 1. Log in as **root**. a. su – b. password (note that the password does not show…no ***s or anything) 2. When you see [root@localhost ~] # you know you're in the write (haha) place (get it…you're going to WRITE a command…WRITE…nevermind). 3. While there are parameters that you might want to set with the adduser command (as shown in the reading), let's make this one simple. **Adduser –p password tory** 4. Now test if this user was added a. First go into the files menu and select computer. Double click on the hard drive icon, go into the home folder. You should see a folder named tory with an x on it. That means the home folder was created in the default directory. b. Now go under system→Log out c. Select **Switch User** d. Log in username tory, password password 5. ***What happened?***	drwxr-xr-x. 2 root root 4096 Feb 27 11:10 cgi-bin drwxrwxr--. 2 root Web 4096 Feb 27 11:10 html [root@localhost www]# adduser -p password tory [root@localhost www]#  tory
Change the user password 1. Log into terminal as root. 2. Type the command **passwd tory** (you're saying "I want to change Tory's password) 3. You'll get a prompt. Type in the new password as p@ssw0rd (0=zero). 4. It'll give you feedback on the password 5. Type it in again.	BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word Retype new password: passwd: all authentication tokens updated successfully. [root@localhost www]# ignore
Moving around directories 1. Log into terminal as root.	What do you see??

2. At the prompt type **ls** (list). This will list the directories and files. List what you see in the box to the right 3. Type cd /etc/ and return. 4. Huh? There was no listing for the etc directory? It's a hidden folder much like the System32 folder in Windows. 5. Type **ls** to see what's in here. 6. This is a lot like the system directory and program files all rolled into one. In other words don't go mucking around in /etc/ unless you know what you're doing!	
7. Type **ls -l** (note that like in DOS you can hit the up arrow to access the last command you typed in). 8. Write down what you see in the box to the right.	What do you see??
9. You see a lot of rs and ws and some ds and xs. 10. What do those mean? 11. Go here to find out: http://floppix.ccai.com/ls.html	Rw = _____ R= _____ Drwx =_____ Xr=_____ 1 (or 2 or 3) _____ Root root _____ (note that root is a user here as well as a group…a lot like administrator is part of the administrators group)
12. In the listing below, what do each of the sections mean? A. _____ B. _____ C. _____ D. _____ E. _____ F. _____ G. _____	

13. Type whoami at the prompt. 14. Well…what does it say?	Who are you?
15. Using the information from the reading complete the following: a. Change directory to the root. b. Create a directory named Penguin c. Move into penguin d. Create a directory named waddle e. Move into waddle f. Create a FILE named wiggle. a. At the prompt type gedit waddle b. Type Hi! I have wiggle in my waddle! c. Do you want to save? Yes. Keep the name wiggle. g. List the directory contents. You should see waddle and wiggle. Why is waddle blue? 16. Now move wiggle from waddle to penguin using the cp command. 17. You'll have two wiggles, so delete (rm) the wiggle from waddle, so only the penguin contains wiggle and waddle is empty 18. Do an ls –l and write down what you see inside penguin	
19. Let's go ahead and remove the directories (rmdir). You can't remove a directory unless it's empty, so do this: a. Cd into waddle b. Make sure it's empty by using the list command (ls) c. Cd into penguin and remove directory waddle, remove file wiggle d. Cd to your root directory and remove penguin. 20. You want to learn more about commands in Linux, what can you do within the terminal?	Answer here

21. List three websites you can use to learn more about linux commands.	
22. If you learn these commands within Fedora, will the same commands work in Ubuntu?	
23. Why or why not?	
24. Learn more about the cp command by typing man cp 25. To get out of the manual type a q and hit enter. 26. Try typing cp --help, what happens?	What happened? What does cp –l mean? (to scroll down hit page down)

Questions

1. What command did you use to change group membership of html to web?

2. What command did you use to change the permissions on the html folder?

3. What was the purpose of denying permissions to everyone for the intranet folder?

4. So if some schmoe on the interwebs goes into the intranet directory and starts poking around, what can he do?

5. What is the numerical (octal) representation of owner and group rwx, everyone deny all?

Take Linux Quiz 4

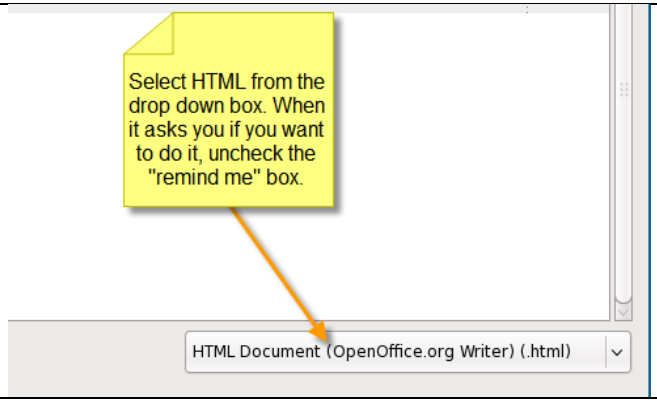
Lab L-6 Creating a Website

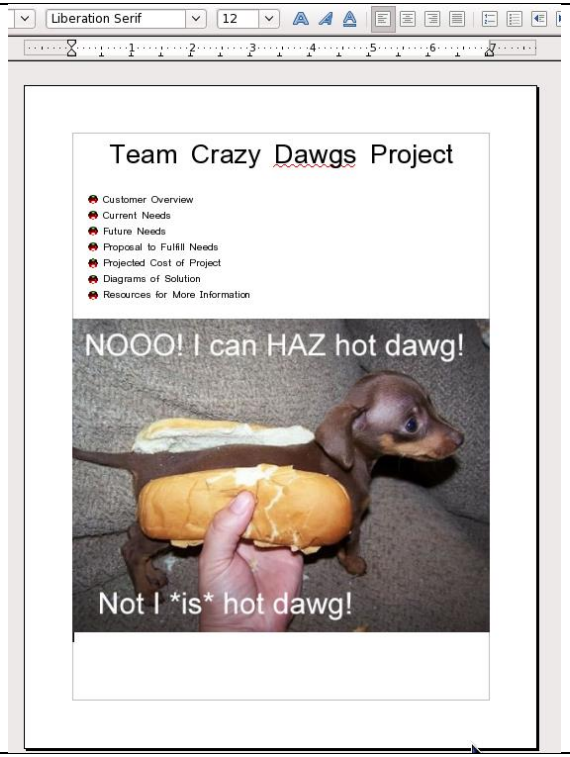
Success Criteria			
• Create a simple website			
• Serve the site			
• Get to it from another computer			
• Answered Questions			

Lab L-6 Creating a Website

Let's build a website. You're going to create a project and put it on your website.

Do this	It'll look like this
26. Let's start by creating a simple test page using Fedora's version of Notepad. 27. Remember that root is the owner all of these files, so we're going to have to open the program as su (super user). 28. Open your terminal 29. Log in as superuser. 30. Type gedit to open the text editor. It is now running as root. BE CAREFUL with this. Do NOT run other programs as root unless you know what you're doing. The root account is used ONLY for system maintenance and in special cases.	

31. Let's make a simple website. Type the code shown at the right, exactly as shown. 32. Save this file as **index.html** in the folder /var/www/html 33. Go into Firefox and load up either localhost or your ip address. 34. What do you see?	**<html> <head> <title>My happy little website</title> </head> <body> Hello World! </body> </html>**
35. If it didn't work, go back over the instructions very carefully and fix it. Do not move on until you can see your site. 36. Let's add a few more pages and test linking. 37. On the page you have, add the code to the right between the body tags. 38. Note that the tag sends a line break, so put it wherever you want a hard return.	**Testing a link Testing another link**
39. Now create two more pages. One named test.html. Add some stuff to it. Save in the /var/www/html folder. (We'll do test2 in a minute.) 40. Put something on them so you know they work when you click the links. Use the coding from step 6, just change it up some. 41. I know some of you know html, and others don't, so this is just a taste. It's REALLY easy, actually. It's your basic open tag…stuff you want to say…close tag. So if you want something bold you do this is the stuff I want bold. If you want it underlined it's <u></u> etc.	**Have me check off your highly effective and wonderful site before you go onto step 18.**
42. Test out the pages. Do they work? Beautimus! 43. But who uses a text editor to write webpages? Okay, I do but I'm old skool and that's how I roll. 44. Let's open LibreOffice to create your site. You can delete those other pages if you'd like. You'll be writing over index.html.	
45. Close gedit. You should end up back at the terminal. 46. Normally when just using LibreOffice you select it from the Applications menu, but we want to open it as su because we're going to save in the html folder, and as you, you can't save to that folder. (Test it first and see if you can, I could NOT even with proper permissions applied.) 47. Go to terminal. 48. Log in as su 49. type –c libreoffice 50. Go ahead and create a new writer page 51. Save as **test2.html** in /var/www/html. At the bottom.	

52. Toss a picture or two on it, some text. Go ahead and format it however. I put a picture of a Dachshund in a hot dog bun. Whatever floats your boat! We're just practicing. You can test it by going to Firefox and typing your ipaddres/test2.html (so if your IP is 192.168.1.223 you'd type http://192.168.1.223/test2.html) **Remember you might have to disconnect from the network again.**	**Uncheck when you save "ask when not saving in ODF format"**
53. One you have a feel for this, you're going to create a website where you will post your project. Decide which webserver the project will be posted on. 54. Create a page that looks like this (use your own graphic) and save it as index.html in /var/www/html 55. It should have the following sections: a. Customer Overview b. Current Needs c. Future Needs d. Proposal to Fulfill Future Needs e. Projected Cost of Project f. Diagram of Project g. Resources for More Information 56. Test it and make sure it works!	

Questions

6. What are two programs you can use to create a website?

7. Why do you have to log in as a super user to save to the html folder?

8. What groups are you currently a member of?

9. What is gedit?

10. What is openoffice.org?

11. What is the html code for creating a link that says “Hot Dawg” and links to http://www.hotdawg.com?

12. Why use LibreOffice over Gedit?

13. Why learn a little HTML, when you have LibreOffice and other graphical programs available for creating websites?