Linux Server Administration (First level full-time studies)

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LAB 3: Text console: shells, basic commands, scripts

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Task 1. Creating the Perfect Linux GNOME Desktop (1 points)

Use these exercises to test your skill in using a GNOME desktop. You can use either a GNOME 2.*x* (Red Hat Enterprise Linux up until RHEL 6.*x*) GNOME 3.*x* (Fedora 16 or later or Ubuntu up to 11.10, or later using the Ubuntu GNOME project) desktop.

1. Launch the Firefox web browser and go to the GNOME home page (http://gnome.org).

   For GNOME 3, you can press the Windows key to get to the Overview screen. Then type **Firefox** *to highlight just the Firefox web browser icon. Press Enter to launch it. Type* **http://gnome.org** *in the location box, and press Enter.*

2. Pick a background you like (Your own picture) from the WEB, download it to your Pictures folder, and select it as your current background.

   To pick a background that you like (Your own picture) from the WEB, download it to your Pictures folder, and select it as your current background. GNOME 3 systems, do the following:
   a. Go to the web through Firefox and Search for one of your picture you like.
   b. Find a background that you like and select it. Then click the Download button and download it to your Pictures folder.
   c.O pen your Pictures folder, right-click the image, and select Set as Wallpaper. The image is used as your desktop background.

3. Start a Nautilus File Manager window and move it to the second workspace on your desktop.

   *To start a Nautilus File Manager window and move it to the second workspace on your desktop, do the following f*or GNOME 3
   a. *Press the Windows key.*
   b. *Select the Files icon from the Dash (left side). A new instance of Nautilus starts in the current workspace.*
   c.*R ight-click the title bar in the Files window and select Move to Monitor Down. The Files window moves to the second workspace.*

4. Find the image that you downloaded to use as your desktop background and open it in any image viewer.

   To find the image that you downloaded to use as your desktop background and open it in any image viewer, first go to your Home folder, then open the Pictures folder. Double-click the image to open it in an image viewer.

5. *Move back and forth between the workspace with Firefox on it and the one with the Nautilus file manager.*

   If you did the previous exercises properly, Nautilus and Firefox should be in different workspaces. Here's how you can move between those workspaces in GNOME 3: Press the Windows key, and select the workspace that you want in the right column. As an alternative, you can go directly to the application that you want by pressing Alt+Tab and pressing Tab again and also arrow keys to highlight the application that you want to open.

6. *Open a list of applications installed on your system and select an image viewer to open from that list. Use as few clicks or keystrokes as possible.*

   To open a list of applications installed on your system and select an image viewer to open from that list using as few clicks or keystrokes as possible, do the following i*n GNOME 3:* Move the mouse to the upper-left corner of the screen to get to the Overview screen. Select Applications, then select Utilities from the right column, and then select Image Viewer.

7. *Change the view of the windows on your current workspace to smaller views you can step through. Select any window you'd like to make it your current window.*

   To change the view of the windows on your current workspace to smaller views of those windows that you can step through, do the following i*n GNOME 3:*
   With multiple windows open on multiple workspaces, press the Alt+Tab keys. While continuing to hold the Alt key, press Tab until you highlight the application that you want. Release the Alt key to select it.

8. *From your desktop, using only the keyboard, launch a music player.*

   To launch a music player from your desktop using only the keyboard, do the following i*n GNOME 3:*
   a. Press the Windows key to go to the Overview screen.

b. Type **Rhyth** (until the icon appears and is highlighted) and press Enter. (In Ubuntu, if you don't have Rhythmbox installed, type **Bansh** to open the Banshee Media Player.)

9. *Take a picture of your desktop, using only keystrokes.*

   To take a picture of your desktop using only keystrokes, press the Print Screen key to take a screen shot of your entire desktop in GNOME 3. Press Alt+Print Screen to take a screen shot of just the current window. In both cases, the images are saved to the Pictures folder in your home folder.

Task 2: Using the Shell (1 points)

Use these exercises to test your knowledge of using the shell. These tasks assume that you are running a Fedora or Red Hat Enterprise Linux system (although some tasks work on other Linux systems as well).

1. *From your desktop, switch to the third virtual console and log in to your user account. Run a few commands. Then exit the shell and return to the desktop.*

   To switch virtual consoles and return to the desktop in Fedora or Ubuntu (this feature is disabled in some RHEL systems), do the following:
   a. H old Ctrl+Alt and press F3 (Ctrl+Alt+F3). A text-based console should appear.
   b. T ype your username (press Enter) and password (press Enter).
   c. T ype a few commands, such as **id**, **pwd**, and **ls**.
   d. T ype **exit** to exit the shell and return to the login prompt.
   e. Press Ctrl+Alt+F1 to return to the virtual console that holds your desktop. (On different Linux systems, the desktop may be on different virtual consoles. Ctrl+Alt+F7 and Ctrl+Alt+F2 are other common places to find it.)

2. *Open a Terminal window and change the font color to red and the background to yellow.*

   For your Terminal window, make the font red and the background yellow.
   a. F rom the GNOME desktop, select the Terminal window.
   b. F rom the Terminal window, select Edit ⇨ Profile Preferences.
   c. S elect the Colors tab and deselect "Use colors from system theme" box.
   d. S elect the box next to Text Color, click the color red that you want from the available selections, and click Select.
   e. Select the box next to Background Color, click the color yellow that you want from the available selections, and click Select.

f. Click Close on the Profile window to go back to the Terminal window with the new colors.
g. Go back and reselect "Use colors from system theme" box to go back to the default Terminal colors.

3. *Find the location of the* mount *command*

   Run type mount *to see that the* mount *command's location is either* /usr/bin/mount *or* /bin/mount.

4. *Type the following three commands, and then recall and change those commands as described:*

   $ cat /etc/passwd
   $ ls $HOME
   $ date

   a. *Use the command-line recall feature to recall the* cat *command and change* /etc/passwd *to* /etc/group.

   Press the up arrow until you see the *cat /etc/passwd* command. If your cursor is not already at the end of the line, press Ctrl+E to get there. Backspace over the word *passwd*, type the word **group**, and press Enter.

   b. *Recall the* ls *command, determine how to list files by time (using the man page), and add that option to the* ls $HOME *command line.*

   Type **man ls**, and find the option to list by time (*-t*). Press the up arrow until you see the *ls $HOME* command. Use the left arrow key or Alt+B to position your cursor to the left of *$HOME*. Type -t, so that the line appears as *ls –t $HOME*. Press Enter to run the command.

   c. *Add format indicators to the* date *command to display the date output as* **month/day/year**.

   Type **man date** to view the *date* man page. Use the up arrow to recall the *date* command and add the format indicator that you found. A single *%D* format indicator gets the results you need:

   $ **date +%D**
   04/27/20

5. *Run the following command, typing as few characters as possible (using tab completion):*
   basename /usr/share/doc/

   Use tab completion to type ***basename /usr/share/doc/.*** Type *basen<Tab> /* ***u<Tab>sh<Tab>do<Tab>*** to get basename/usr/share/doc/

6. *Use the* cat *command to list the contents of the* /etc/services *file and pipe those contents to the* less *command so that you can page through it (press* q *to quit when you are finished).*

   Pipe */etc/services* to the *less* command: *$ cat /etc/services | less*.

7. *Run the* date *command in such a way that the output from that command produces the current day, month, date, and year. Have that read into another command line, resulting in text that appears like the following (your date, of course, will be different):* Today is Thursday, March 19, 2021.

   $ echo "Today is $(date +'%A, %B %d, %Y')"

8. *Using variables, find out what your hostname, username, shell, and home directories are currently set to.*

   $ ***echo $HOSTNAME***
   $ ***echo $USERNAME***
   $ ***echo $SHELL***
   $ ***echo $HOME***

9. *Create an alias called* mypass *that displays the contents of the* /etc/passwd *file on your screen in such a way that it is available every time you log in or open a new shell from your user account.*

   a. *Type* **nano $HOME/.bashrc*.***
   b. *Move the cursor to an open line at the bottom of the page. (Press Enter to open a new line if needed.)*
   c. *On its own line, type* **alias m="cat /etc/passwd".**
   d. *Type Ctrl+O to save and Ctrl+X to exit the file.*
   e. *Type* source **$HOME/.bashrc***.*
   f. *Type* **alias m** *to make sure that the alias was set properly:* alias m='cat /etc/passwd'.
   g. *Type* **m***. (The* /etc/passwd *file displays on the screen.)*

10. *Display the man page for the* mount *system call.*

To display the man page for the mount system call, use the *man -k* command to find man pages that include the word *mount*. Then use the *mount* command with the correct section number (8) to get the proper *mount* man page:

$ **man -k mount | grep ^mount**

Task 3. Writing Simple Shell Scripts (3 points)

Use these exercises to test your knowledge of writing simple shell scripts. These tasks assume you are running a Fedora or Red Hat Enterprise Linux system (although some tasks work on other Linux systems as well).

1. Create a script in your $HOME/bin directory called myownscript. When the script runs, it should output information that appears as follows:

Today is Sat Jan 4 15:45:04 EST 2020.

You are in /home/joe and your host is abc.example.com.

Of course, you need to read in your current date/time, current working directory, and hostname. Also, include comments about what the script does and indicate that the script should run with the /bin/bash shell.

At the end, make the script executable (add necessary permissions), test it and run it.

2. Create a script that reads in three positional parameters from the command line, assigns those parameters to variables named ONE, TWO, and THREE, respectively, and outputs that information in the following format:

There are X parameters that include Y.

The first is A, the second is B, the third is C.

Replace X with the number of parameters and Y with all parameters entered. Then replace A with the contents of variable ONE, B with variable TWO, and C with variable THREE.

At the end, make the script executable (add necessary permissions), test it and run it.

3. Create a script that prompts users for the name of the street and town where they grew up. Assign town and street to variables called mytown and mystreet, and output them with a sentence that reads as shown below (of course, $mystreet and $mytown will appear with the actual town and street the user enters):

The street I grew up on was $mystreet and the town was

$mytown

A**t the end**, **make the script executable (add necessary permissions)**, **test it and run it.**

4. *Create a script called* myos *that asks the user, "What is your favorite operating system?"Output an insulting sentence if the user types "Windows" or "Mac." Respond "Great choice!" ifthe user types "Linux." For anything else, say "Is* <what is typed in> *an operating system?"*

At the end, make the script executable (add necessary permissions), test it and run it.

5. *Create a script that runs through the words* moose, cow, goose, *and* sow *through a* for *loop. Have each of those words appended to the end of the line "I have a. . . ."*

At the end, make the script executable (add necessary permissions), test it and run it.