ITB721/ITN721 Unix Network Administration

Practical 2

Starting Fedora Core 6 Image

To start the necessary Fedora Core 6 image for these exercises, click on the "721 Image" button. Log in with your QUT access username and password. Open up a terminal window to complete the practical exercises.

Exercise 1: Account Creation

You are to create a new normal user account for yourself in Question 4 below. The account name could be your first initial, followed by up to the first 7 characters of your family name. For example, William Jones' account would be wjones, Ng Chee Leng's account would be clng and Oyvind Andreassen's account would be oandreas. [Note that some Unix operating systems have an 8 character limit on usernames, although this is not the case with Fedora Core 6].

To complete these exercises, browse the man pages for the "less", "finger", "useradd", "groupadd", "passwd" and "su" commands immediately before using these commands. You will also need to browse the man pages for the "group", "passwd", and "shadow" **files** immediately before accessing them. Note that "passwd" and "shadow" have multiple man pages and, as such, you will need to use the appropriate "man" option to display the man pages for the "passwd" and "shadow" **files**.

1. Use a command such as "less" to view the contents of the /etc/passwd file to make sure that the account you intend to create does not already exist. Use the "finger" command together with the username, as another way of checking that the new normal user account you will create in Question 4 below does not already exist.
2. Use the "groupadd" command to create a new group called "721group" with a group ID of 512. View the contents of the /etc/group file to confirm this, and write down the relevant entry in the /etc/group file for your new group. What do each of the fields on that particular line mean?
3. Examine the following command line:

   ```
   # useradd -u 832 -g 624 -d /home/bmoore -s /bin/bash -c "Brett Moore" bmoore
   ```

   Explain what each of the above options to this "useradd" command line means. Describe in detail what the command line (as a whole) does.
4. Use the "useradd" command, together with any necessary options, to create a normal user account for yourself as discussed above. Ensure that this user belongs to the default group "721group".
5. Use the "passwd" command to set a password for this newly created account.
6. Again, use a command such as "less" to view the /etc/passwd file to check the contents for your new normal user account entry. Write down this line.
7. What do each of the fields on that particular line from Question 6 mean?
8. Use a command such as "less" to look in the "/etc/shadow" file for the line containing your new normal

user account entry. Write down this line.

9. What do each of the fields on that particular line from Question 8 mean?
10. Use the "finger" command to retrieve information about your new normal user account. What sort of information does the "finger" command return?
11. To further test your new account, (from your default login account nxxxxxxx) change to this account by typing "su - <username>".
12. Exit from this account and return to your normal student account (nxxxxxxx) to continue with these exercises.

Exercise 2: New Employee Accounts

To complete this exercise, browse the man pages for "groupadd", "useradd", "passwd", "mkdir", "ls", "chown", "chgrp", "chmod", "rm" and "userdel" immediately before using these commands.

Two new employees, Mr James White and Mr Peter Smith, have joined the organization.

1.
    a. As the Administrator, create accounts for these two new employees, and have them belong to the same default group "research", with group ID 521.
    b. Create a separate password for each employee's account.
    c. Change directory to /home and use a long listing format to examine the user and group ownership of their separate home directories.
2.
    a. As the root user, create a directory called "subdir" in P Smith's home directory. Use a long listing format to examine the ownership of this new directory.
    b. Change the ownership of this subdir directory to P Smith's username and change the group ownership of this directory to "research". Use a long listing format to confirm the changed ownership of P Smith's subdir directory.
3.
    a. As the root user, create a new directory /home/project4. Use a long listing to examine the ownership and permissions of /home/project4.
    b. Change the group ownership of /home/project4 to the group which both employees belong to, "research". Grant this group read, write and execute access to this new directory. Use a long listing to confirm these ownership and permission changes.
    c. Open up another two terminals and change to each employee's account separately using "su - <username>". By becoming each user separately, create a temporary file in the /home/project4 directory ie create "file-jw" as J White and "file-ps" as P Smith. Use a long listing format to confirm the creation of these files in the /home/project4 directory.
    d. Test that any files that these employees create within this new directory are now readable by both of them.
    e. In a separate terminal as the root user, change appropriate directory permissions for the directory /home/project4 to ensure that a file created by one employee in /home/project4 must not be able to be deleted by another employee. Use a long listing format and record the new permissions of the /home/project4 directory.
    f. Test this in P Smith's account by attempting to delete the temporary file created by J White.
4. P Smith is being investigated for fraud. Suspend his account without deleting it or any of his files. Test

that you have done this successfully. Write down the steps you took in order to do this.

5. P Smith has now left the organization and you have been authorized to delete his account. Use a single command line to delete his account and contents completely from the system. Confirm that his account has been deleted. Write down the steps you took in order to both perform this task and test it.

Exercise 3: Shell Scripts

To complete this exercise, browse the man pages for "ls", "head", "tail", "wc", "grep" and "cut" immediately before using these commands.

Use a text editor to create shell scripts that perform the following tasks. Make them executable and test them out to make sure that they work.

a. Use a long listing format to list all files in your home directory (including dotfiles) sorted from smallest file to largest file, and direct that to a file called "sortedlist".
b. Display on the screen the first line of the /etc/passwd file, followed by the last 3 lines of the /etc/passwd file, and then the total number of lines in the /etc/passwd file.
c. Display on the screen only the UID of the user account "721user", as stored in the relevant user entry of the /etc/passwd file.

Exercise 4: File Permissions

To complete this exercise, browse the man pages for "groupadd", "useradd", "passwd", "mkdir", "chmod", "chown", "chgrp", "ls" etc immediately before using these commands.

1. Perform all steps necessary to create two user accounts, userone and usertwo, both belonging to the group "staff".
2. As the root user, create a directory /home/team. Change directory to /home. Use a long listing format to list the contents of the directory /home. Record the ownership and permissions of the directory /home/team.
3. Change the ownership of /home/team so that the owning group is "staff".
4. Change the permissions of /home/team so that the owner and the owning group have read, write and execute permissions, and other users have read permissions only. Obtain a long listing of the contents of the directory /home, and check that the ownership and permissions of the directory /home/team are as required. Record this entry.
5. Open a new terminal. As the userone user, create a simple shell script, script1, with permissions 754, within the /home/team directory.
6. Open another terminal. As the usertwo user, create a different shell script, script2, with permissions 760, within the /home/team directory.
7. Use a long listing format to list the contents of the /home/team directory and record the ownership and permissions of the two script files in this directory.
8. Using a different terminal for each user, change to the user accounts - userone, usertwo, and also using nxxxxxxx (your student account) - in turn, attempt to:
    a. view (read) each file in /home/team;
    b. edit (write to) each file in /home/team;

    c. execute each file in /home/team.

   Record which attempts were successful, which attempts were unsuccessful, and explain why.
9. Again, change to the user accounts - userone, usertwo, and as nxxxxxxx (your student account) - in turn, attempt to:
    a. list the contents of /home/team;
    b. create a file in /home/team;
    c. "cd" to /home/team from another directory.

   Record which attempts were successful, which attempts were unsuccessful, and explain why.
10. Exit out of your userone and usertwo accounts in turn.

Exercise 5: More Searching

To complete this exercise, browse the man pages for "which", "grep", "find" and "whereis" immediately before using these commands.

1. Use the "which" command to find out which directory the executable program for the command "date" is in. List the contents of that directory and write down any 10 other commands stored in that directory that you have used in the practical exercises in this unit so far.
2. Use the "grep" command to list the entries for all the users on the system who use "bash" as their default shell. Recall that this information is stored in the "/etc/passwd" file.
3. Use the "find" command to list all files in the /sbin directory that have the "SetUID" bit on (ignoring all other permissions).
4. Use the "whereis" command to find out which directories contain the executables or man page files for the "ls", "which", "grep", and "find" commands.
