The objective of this lab is to:

1. Understanding of user management.
2. Understanding of groups management.
3. Understanding of permissions.

Instructions!

1. Please follow PUCIT dress code before coming to the lab. Keep your student identity cards with you.
2. This is an individual lab, you are strictly **NOT** allowed to discuss your solutions with your fellow colleagues, even not allowed asking how is he/she is doing, it may result in negative marking. You can **ONLY** discuss with your TAs or with me.

Task 01: [22 Marks]

a) Create a new user named Jamil using useradd command.
b) View the contents of the files /etc/passwd and /etc/shadow
c) Now assign him a password "123456"
d) View the contents of the files /etc/passwd and /etc/shadow after creation of the account
e) Now try logging as this user from another console.
f) Display the default settings that will be given to a user when you create a new user with the useradd command
g) View the contents of the file /etc/default/useradd
h) Login as root and try changing the password of Jamil from "123456" to "1" and try logging in again.
i) Login as Jamil and try changing his own password from "1" to "12345" or "Jamil". What happened?
j) Change the personal information of Jamil using the chfn command. (Do it as root and then do it as Jamil (note the diff).
k) Now view the contents of /etc/passwd file

Task 02: [22 Marks]

a) Write a command to lock the account of Jamil. (Confirm by trying to log in as Jamil, also view the contents of the file /etc/shadow).
b) Now unlock Jamil. Confirm by trying to log in as Jamil, also view the contents of the file /etc/shadow.
c) Delete the user Jamil, and then try logging in as Jamil.
d) Check the home directory of Jamil in **/home**.
e) View the contents of /etc/passwd, /etc/shadow, and /etc/group files.
f) Change the name of user Jamil to Farhan.
g) Try logging in as Jamil and then try to log on as Farhan. Use pwd command to check his home directory.
h) Log in as root and check the home directory of Farhan in **/home**.
i) View the contents of /etc/passwd, /etc/shadow and /etc/group
j) Delete the user Farhan by using the -r option you have created. After deletion check his home directory.
k) View the contents of /etc/passwd, /etc/shadow and /etc/group.

Task 03: [12 Marks]

a) Create a user Mansoor and assign him a password.
b) Now again try creating another user with the same name Mansoor. See what happens?
c) To avoid this, make it your habit that before creating a new user checkup whether a user with the same name already exists in the system.
d) A user's password related information is kept in /etc/shadow file. When you create a new user he is given the default password policies as per the configuration file /etc/login.defs. (View the file's contents).
e) Now create a new user Jamal.
f) Display just the line associated with Jamal in the /etc/shadow file.

Task 04: [34 Marks]

a) Create a group with the names of sales and view the contents of /etc/group file after creating the group
b) Change the name of the group to marketing and again view the /etc/group file
c) Delete the group and again view the /etc/group file.
d) Create a new user named user1 and view the contents of /etc/passwd and /etc/group
e) Try deleting the group user1; Oops! What happened & why it happened.
f) Create a group technology (view contents of /etc/group after creating group)
g) Create a new user Hadeed and after creation check his group information using id command
h) Make Hadeed a member of technology group. It should be his secondary group. (View contents of /etc/group again)
i) Now try deleting the group technology.
j) Create another user named Maaz.
k) Make Maaz a member of technology group. It should be his primary group (view contents of /etc/group). Also confirm using the id command.
l) Now try deleting the group technology. Observe the difference.

   Note: You cannot delete the primary group of an existing user. You must remove the user before you remove the group.

m) Create three groups with the names of cs, mkt, sales.
n) Create a user xyz with default settings. (Do confirm that a user with this name does not already exist in the system).
o) After creating this user check his group info.
p) Now make xyz a member of cs and mkt groups. (Note that these should be the secondary groups of xyz and his primary group should be xyz).
q) Now change the primary group of xyz to sales and confirm again.

Task 05: [24 Marks]

a) Login as root and create three users Tariq, Khan and Jamil and assign them passwords.
b) Login as khan and create a directory ~/dir1 and a file ~/dir1/file1 and check its permissions.
c) Login as Tariq or Jamil and try to access the home directory of khan. What happens?

d) Login as khan and create a directory /tmp/dir1 and a file /tmp/dir1/file1 and check its permissions.
e) Login as Tariq or Jamil and try to access the dir1 just created by khan. See What happens
f) Login as root and create two groups sales and mkt. Make Tariq's primary group as sales. Make khan's primary group as sales and khan's secondary group as mkt. Make Jamil primary group as mkt. Confirm using id command.
g) Login as khan and change permissions on /tmp/dir1/file1 so that owner can read and write the file, group members can only read the file and others can do nothing. (Remember only root or owner of a file can change a file's permissions).
h) Login as Tariq or Jamil and try to access the /tmp/dir1/file1. What happens? Check the owner ship of /tmp/dir1/file1, it is owned by user khan and the group khan. So it can be accessed by only user khan and users who are members of group khan.
i) Login as root or khan and change the group owner ship of /tmp/dir1/file1. Let his owner be khan and change the group to sales.
j) Login as Tariq and try changing the contents of /tmp/dir1/file1. Since group permissions apply to Tariq, so now he can read as well as write to /tmp/dir1/file1.
k) Login as Jamil and try changing the contents of /tmp/dir1/file1. Since others permissions apply to Jamil, so he cannot read or write to /tmp/dir1/file1.
l) Login as root and make sales a secondary group of Jamil. Then login as Jamil and again try accessing /tmp/dir1/file1.

Task 06: [25 Marks]

a) Create a file test1 in your present working directory and set its access privileges to read and write for yourself, read for the users in your group, and none to everyone else. What command did you use to set privileges?

b) What will the following commands do?
   a. chmod 740 courses
   b. chmod u=rwx courses
   c. chmod 700 ~
   d. chmod ugo-rw sample
   e. chmod a-rw sample
   f. chmod a+x sample
   g. chmod g=u sample
   h. chmod go= sample
   i. chmod 776 ~/lab5
   j. chmod 751 ~/lab?

c) Create three directories called courses, sample, and personal by using the mkdir command. Set access permissions for the sample directory so that you have all the privileges, users in your group have read access only, and the other users of your system have no access privileges. What command did you use? Now use the chmod o+r sample command to allow others read access to the sample directory.

d) The user 'Sarwar' sets access permissions to his home directory using the command chmod 700 $HOME. If the file cp.new in his home directory has read permissions to 777, can anyone read this file? Why or why not? Explain your answer.

Today is not just another day. It's a new opportunity, another chance, and a new beginning. Embrace it.

-anonymous