**LINUX EXERCISE (LAB 03)**

**How to submit your assignment**

Students need to finish the exercise, write a report to answer given questions. For command questions, students need to write down all commands that satisfy the requirements of questions.

Students have to submit their report through the class Team with the respective assignments. For example, “Assignment 02” is for the Lab/Exercise 02.

The deadline to submit report is one week. Any late submission will get the penalty for the process mark.

Format of the report file name: Linux\_IT4944E\_20221\_[ClassID]\_[StudentID]\_assignment\_[No].docx

Example: Linux\_IT4944\_20221\_135395\_20190001\_ assignment \_02.docx means that:

* 135395 is the class ID
* 20190001 is the student ID
* 02 is the assignment number

In addition, students can also attach extra files (like shell script files) if needed.

**Important note:** Create a saved state for your virtual machine or scripts you used after finishing the LAB 03 because it might be needed for later labs.

Exercise 1. File permission.

1. Could you change the permission of /home directory?
2. By default, what is the permission of your created files?
3. Change the owner and group owner of /etc directory to yours
4. Change the permission of the file ~/.bashrc so only you and members of your primary group can access that file
5. Run “locate root”. What will happen?
6. Create a symbolic link to /root. Could you use this link? Please explain the outcome.

Exercise 2. User permission

1. Describe 3 different ways to change the permission of a file or directory to r—r—r--. Create a new file and demonstrate 3 ways to change file permission
2. Login to another user account (different terminal). Copy the file bin/sh to your home directory. Type chmod +s sh”. Check the permission of the file sh by using the command ls. Use the second account to access to your first account’s home directory and try to run “./sh”. What will happen? Type id command. What will happen?
3. What will happen if the root user creates the sh file this way? Why do administrators sometime have to use this feature for other programs (for example: passwd)?
4. Delete the sh file in your home directory
5. Change the permission of your home directory to make it completely private. Check its privacy by your second account. Change the permission of your home directory to the original one.
6. Type “umaks 000”, then create a file “world.txt” containing the word “hello world”. What is the permission of this file?
7. Type “umaks 022”, then create a file “world2.txt” containing the word “hello world”. What is the permission of this file? What is the benefit of the command umask?
8. Create a file “hello.txt” in your home directory with the command “cat -u > hello.txt”. Use your second account to access the home folder of the first account and run “tail -f hello.txt”. Then, add some extra lines to the file “hello.txt” by using the first account (different terminal). What will happen on the terminal of the second account?

Exercise 3. Operations with users and groups

1. Create 4 groups with the following ID:

|  |  |  |
| --- | --- | --- |
| No | Name | GID |
| 1 | Hobbits | 600 |
| 2 | Elves | 700 |
| 3 | Dwarves | 800 |
| 4 | Wizards | 900 |

1. Create 5 user accounts with the following information:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Name | UID | GID | Full name |
| 1 | Frodo | 601 | 600 | Frodo Baggins |
| 2 | Gollum | 602 | 600 | Smeagol |
| 3 | Samwise | 603 | 600 | Samwise Gamgee |
| 4 | Legolas | 701 | 700 | Legolas of Mirkwood |
| 5 | Gimli | 801 | 800 | Gimli son of Gloin |

Password of all above user accounts is fedora11. There are no private groups but there are following criteria:

* The home directory of Gollum is named Smeagol.
* All home directories must be the child directories of /home
* Legolas want ot use tcsh instead of bash (you can install tcsh by using **sudo yum install tcsh** on CentOS or **sudo apt-get install csh** on Ubuntu)
* \*Gimli doesn’t want to use his account without password (is it possible to do it?)

After creating all accounts and groups, login as Frodo and send email to all other user accounts to welcome them to Linux environment. Login as other users and see the message of Frodo.

1. Frodo forgets his password. Set his password as Baggins and force him to change his password on his next login session.
2. Change the primary group of Frodo to your primary group (but Frodo is still a member of the group Hobbits)
3. Legolas wants to change his username to Glorfindel
4. Gimli want to change his UID to 800. Make sure that Gimli can login, access and create file after changing UID)
5. Glorfinder has suspected behaviour. Lock that account
6. Delete the Samwise account (including his home directory)
7. Change the content of /etc/motd to notify that “All activities on this computer are being monitored”
8. Gimli doesn’t like the notification on his screen. Please configure so there will be no notifications when Gimli logs in (only Gimli has this privilege)
9. Configure that Gimli cannot execute his executable files in his bin directory.