**LINUX EXERCISE (LAB 08)**

**Note:**

* Students should have the users configured in Lab 03

Exercise 1. Login to your computer using your normal account. Find the following information (You need to write down the commands the find the required information and/or capture the result screenshots)

1. Which partition does your home directory belong to?
2. How many partitions are there in your system? Which ones?
3. What is the total size of your Linux OS?

Exercise 2. Creating a File system

1. Log on as root and use the fdisk command to add a new 200 MB logical partition (/dev/sda7) to your hard drive.
2. Use the fdisk –l command to verify that the new /dev/sda7 partition has been created. If you made a partition that is larger than 200MB, delete it and make it again.
3. Format this partition with an ext3 file system that contains 800 inodes:
4. Before we mount the file system, lets look at the superblock structure using the dumpe2fs command, note the following fields:
   1. Filesystem volume name
   2. Filesystem state
   3. Inode count
   4. Block count
   5. Block size
   6. Maximum mount count
5. Configure the name and the maximum mount count of the new partition using **e2label** and **tune2fs**.
6. Check your modifications using the **dumpe2fs** command

Exercise 3. Mounting and Populating a File System

1. Mount your new partition to the directory /mnt
2. List the current contents of your filesystem by listing the contents of the /mnt directory. What is there? Anything?
3. Note that the mkfs command made a fairly large, but empty, directory called lost+found in your file system. This directory is used by fsck to store recovered files when fixing file system corruption. What is the inode of the lost+found directory? What is the inode of the mntpoint, (/mnt)? Directory? (hint: you can try to use ls command)
4. Now populate your new partition with all the home directories of your users
5. List the contents of your new partition with inode numbers
6. Change directory to / and unmount your partition at /mnt
7. Check the integrity of your new file system using the following command even though the filesystem was unmounted cleanly

Exercise 4. Setting up disk quotas

1. As root, mount your new file system to the /home mount point with the following command:

**mount -o usrquota /dev/sda7 /home**

What would you do if you wanted this file system mounted like this every time you booted the system?

1. Change directory to /home and verify that all your user directories are there.
2. Analyze the quotation of the new partition (sda7). Notice the datafile that gets created for holding this quota information. What is its name?
3. Now turn on user quotas on with the parameters “-uv”. What the meaning of those parameters?
4. On another screen, log in as gimli and issue the quota command. What does it say?
5. Go back to your root login and setup a quota for gimli. Notice that you can set quotas on disk space (blocks) or on number of files (inodes). Set Gimli’s soft quota to be 2MB and his hard quota to be 2.5 MB
6. Once you've setup the quota for gimli, test it out by logging in as gimli on another terminal or Putty session and start using up his diskspace. Either copying files into gimli’s home directory or use a script like the following. You should reach the limits
7. To make this quota persistent across reboots, you will have to add the usrquota keyword to the options column of the appropriate entry in /etc/fstab. Do it now.