Homework #4

1. Do "mkdir homework4", then do "cd homework4", then do "su" (password required), then do "fdisk /dev/sda", then press "p", then press "q", then do "exit"
   - Take a screenshot 
   - What is the specification of the disk "sda"? (heads, sectors, cylinders, sector bytes)
   - How many partitions are there?

2. Do "clear", then do "mkdir lntest", then do "echo "test ln" | cat > testln", then do "ln –s lntest lntest_s", then do "ln –s testln testln_s", then do "ls –l"
   - Take a screenshot 
   - What are the files named "lntest_s" and "testln_s"?

3. Do "clear", then do "cat testln", then do "cat testln_s", then do "echo "addition" >> testln", then do "echo "addition2" >> testln_s", then do "cat testln"
   - Take a screenshot 
   - What is the last result? Why?

4. Do "clear", then do "cd lntest_s", then do "touch b", then do "pwd", then do "cd ..", then do "cd lntest", then do "ls", then do "pwd"
   - Take a screenshot 
   - Compare the results between first "pwd" and second "pwd".
   - What is the result of "ls"? Why?

5. Do "cd ..", then do "clear", then do "ln testln testln_h", then do "echo "addition3" >> testln_h", then do "cat testln_s", then do "ls –l"
   - Take a screenshot 
   - What is the file "testln_h"?
   - What is the difference between "testln_s" and "testln_h"

6. Do “clear”, then do “mv testln testln_moved”, then do “cat testln_h”, then do “cat testln_s”, then do “ls –l”, then do “ls –i"

- Take a screenshot 
- Compare the results between the first “cat” and the second “cat”
- What is the difference between “testln_s” and “testln_h” from the results of “ls –l” and “ls –i"?

7. Do “clear”, then do “dd if=/dev/zero of=disk.img bs=1024 count=1400”, then do “mke2fs –F disk.img”, then do “mkdir disk”, then do “ls –l disk”, then do “su” (password required), then do “mount –o loop disk.img disk”, then do “exit”, then do “ls –l disk”

- Take a screenshot 
- What is the functionality of “dd” command?
- What is the functionality of “mke2fs” command?
- Compare the difference between the results of the first “ls” and the second “ls”. Why?

8. Do “clear”, then do “df”, then do “df –h”, then “df –i”, then do “df .”

- Take a screenshot 
- What are the options ”-h” and ”–i" for?

9. Do “su”(password required), then do “umount disk”, then do “apt-get install quota” (press Y for all questions), then do “mount –o loop,rw,usrquota,grpquota disk.img disk”, then do “mkdir disk/shared”, then do “chmod 777 disk/shared”, then do “chgrp neverland disk/shared”, then do “chmod g+s,o+t disk/shared”, do “quotacheck –cug disk”, then do “ls –l disk”.
Assumption : There are users named as peterpan and hook. Both users are members of a group named as neverland.

- Take a screenshot 
- What are the properties of the new directory shared?
- What is the functionality of “quotacheck”?

10. Do “clear”, then do “setquota –u peterpan 2 4 2 4 disk”, then do “setquota –u hook 2 4 2 4 disk”, then do “setquota –g neverland 4 6 4 6 disk”, then do “repquota –v disk”, then do “repquota –vg disk”

- Take a screenshots for repquota commands 
- What is the functionality of “setquota”? Explain the options ”-u” and ”-g” and arguments.

11. Do “clear”, then do “quotaon disk”, then do “su peterpan”, then do “touch disk/shared/a”, then do “touch disk/shared/b”, then do “touch disk/shared/c”, then do “quota peterpan”, then do “touch disk/shared/d”, then do “touch disk/shared/e”, then do “quota –g neverland”, then do “exit”

- Take a screenshot 
- What is the difference between the soft limit and hard limit?

12. Do “clear”, then do “su hook”, then do “touch disk/shared/h1”, then do “touch disk/shared/h2”, then do “quota hook”, then do “quota –g neverland”, then do “exit”, then do “quotaoff disk”, then do “du –h disk”

- Take a screenshot 
- What happens during creating h1 and h2? Why?
- What is the command “du” for?

13. Do “clear”, then do “man passwd”, then do “man –a passwd”, then do “man –f passwd”, then do “man –k passwd”.

- What is difference between options?

== Problems ==

1. Make a local file named as "backup_disk.img" and initialize an "ext4" filesystem in the file whose capacity is about 50MB with 512 Byte block size. The filesystem in the "backup_disk.img" file is mounted on the local directory "backup_disk".

- List the required commands
- Evaluate your operation by using "ls –hl backup_disk.img", "df –T backup_disk", and "ls –hl backup_disk"

2. Make a local file named as "backup_disk_2.img" under the directory "backup_disk" where the filesystem of "backup_disk.img" is mounted. And Initialize an "ext2" filesystem in the "backup_disk_2.img" file whose capacity is about 1MB with 1024 Byte block size. This filesystem is mounted on the local directory "backup_disk_2.

- List the required commands
- Evaluate your operation by using "ls –hl backup_disk/backup_disk_2.img", "df –T backup_disk_2", and "ls –hl backup_disk_2"

3. Let's assume that a file "a" locates under "backup_disk", a file "b" locates under "backup_disk_2" and a file "c" locates in the local directory. Evaluate whether the following operations correctly works or not. (Assumption: the current directory is the parent directory of "backup_disk" and "backup_disk_2". The following commands are executed on the current directory.)

1) ln c c_h
2) ln –s c c_s
3) ln backup_disk/a a_h
4) ln –s backup_disk/a a_s
5) ln backup_disk/a backup_disk/a_h
6) ln –s backup_disk/a backup_disk/a_s
7) ln backup_disk_2/b backup_disk/b_h
8) ln backup_disk_2/b backup_disk_2/b_h
9) ln –s backup_disk_2/b backup_disk/b_s