Advanced Linux System Administration: Lab Exam (Final)	

Exercise 1 (2p). Power on the machine from snapshot Ej1Begin. Do the following scripts:
1. CountFile.sh: Count the total number of files under a directory whose path is passed as argument (it must include subdirectories).
2. CleanBlanks.sh: Remove the empty lines from a text file passed as parameter. The output is redirected to a new file conserving the old name and adding the extension noblank (example: from file1.txt to file1.txt.noblank).
3. Sorter.sh: sort the content of the file /etc/passwd using one of the following values: user, UID, GID. That value is passed through command line.
4. Sdel.sh: Script for safe removal. The files passed through command line are not removed, but compressed (gzip) and moved to directory /tmp/trash. At the same time, the script looks for the files that are more than 48 hours' old in the directory /tmp/trash and removes them permanently.

Exercise 2 (2p). Power on the machine from snapshot Ej2Begin. As you can see, these is some kind of problem with the booting process. Making use of the procedure you consider most appropriate, do the necessary modifications to make everything work correctly and by default.
Once repaired, configure the system to boot by default in runlevel 4. In this level, the key combination ctrl+alt+del must not perform a system reboot, but write a warning message in the terminal: "ctrl+alt+del" unavailable in runlevel 4. Finally, the list of services to be started in that level must include the following ones: atd, cron, ssh, sudo. Configure it manually.

Exercise 3 (2.5p) Power on the machine from the snapshot Ej3Begin. Perform the following administration tasks in your system:
1. With a single command, look for all the files larger than 1MB and not modified over the last 30 days. Redirect the output of this command to the text file /root/LostFiles.txt.
2. Modify the mirror employed as Debian repository. You can use any one placed in the U.S., limiting the download to source-code packages and being fully OpenSource.
3. Do the necessary changes to modify the default values of the users created with the command adduser: shell=tcsh, UID>5000, skel file=/etc/skel2.
4. For the user test, establish the following limits for resource utilization:
    a. Maximum file size: 1MB.
    b. Minimal priority to all their processes.
    c. 20 active processes maximum.
5. Obtain the PID of the rsyslogd application. Making use of that number, find out the following information about rsyslogd: arguments employed for its execution and files in use. Write this information in the file /root/rsyslogd.txt
6. Do the required modifications to adjust the following kernel values:
    a. core files generated must have the format core.PID.
    b. The system reboots after 45 seconds if a kernel panic is detected.
    c. The maximum number of threads that can be generated by each process is 1000.
    d. The mentioned changes must be permanent (reboots).
7. Redirect the output of the history command to the file /root/ Exercise3.txt.

Exercise 4 (2.5p) Add to your virtual machine 4 SATA disks of 500MB each, VDI type and dynamically reserved size. They must be named Disk1, Disk2, Disk3, Disk4. Power on the machine from snapshot Ej4Begin. Create a single group volume with the 4 disks, containing 2 logical volumes. One of the logical volumes (VL0) must have a size of 1GB, the size of the other one (VL1) corresponds to the remaining capacity of the Volume Group. Perform the required changes to make the content of the /home directory available in the first logical volume (permanently). The second volume must be configured to perform a level 0 backup of the content in /home. Finally, configure the automatic execution of an incremental backup (level 1) weekly, on Sundays at 14:05.

Exercise 5 (1p). Do the required modifications to your Virtual machine (snapshot Ej5Begin) to allow internet Access. Your configuration must be static and permanent.

Once you have finished the exam, copy the following files to the device provided by the teacher:
> **-ExamenJunio.vbox**
> **-Disk1.vdi**
> **-Disk2.vdi**
> **-Disk3.vdi**
> **-Disk4.vdi**
> **-Snapshots (whole folder)**