Advanced Linux System Administration: Lab Exam (Topics 1-5)

Prior Instructions:
In the following link you will find a file named ExamenParcial.zip. Download it to a local folder, uncompress the file and add the machine to Virtualbox.

http://www.ce.unican.es/OCW/SI/Eval/2015-16/ExamenParcial1.zip

Each Exercise has its own snapshot as a starting point, named Ej<X>Begin. After booting the machine, log in as root user: login=root / password=root. **After finishing each exercise, power off the virtual machine and create a snapshot labeled Ej<X>Result (replace <X> with the exercise number).**

Exercise 1 (2p). Power on the machine from snapshot Ej1Begin. As you can see, there are some problems with the booting process. The bootloader is not able to find a kernel and a ramdisk to keep on with the process. We know that these files have been moved to one of the directories under /opt. Find out a way to boot the system and perform the necessary repairs to the bootloader to make it work correctly. If you consider it necessary, describe the methodology used in a README.txt file.

Exercise 2 (2p) Power on the machine from snapshot Ej2Begin. Perform the following maintenance tasks for the system:

1. Try to show the man page corresponding to the command ls. Repair the errors found.
2. Search and remove from the system all the files corresponding to the user "intruso".
3. Create an alias named la for the command 'ls –la'. Change the environment variable $HOME from the user root to point to /home/root. These changes must be permanent.
4. Look for the names of all system users that have not been assigned a shell (/bin/false) and redirect the output (list) to the file users.txt in /root.
5. With a single command line, check out the number of processes whose owner is root.
6. Redirect the output of the command 'man –P /bin/cat ls' to a file and replace the word "directorio" by the word "carpeta" in that file. Employ a single-line command.
7. Redirect the output of the command history to a file named Exercise2 in directory /root.

Exercise 3 (2p) Power on the machine from snapshot Ej3Begin. Your work consists of creating a script in /root named Ej3.sh, able to perform the following tasks:

1. Create a directory named Exam, where N files will be generated with the following naming convention: file<num>.txt (being num a value between 0 and N-1).
2. The value N must be larger than 50 but smaller than 100. Otherwise, the script returns an error message.
3. The content of each file corresponds to the line 'n' of the man page of command cp (file57.txt contains the 57^{th} line of the manual).

Exercise 4 (2p). Power on the machine from snapshot Ej4Begin. You must create a new service for runlevel 2. This service makes use of the command logkeys to track the keyboard events of a user. During boot process, the service starts the keylogging daemon, and during power off the daemon is stopped and generated data are copied to the file /root/<username>.keylog. The Logkeys manual will be helpful in the service creation process. Take a look at another service (reboot) to prepare your service management script.

Exercise 5 (2p). Look for the most appropriate way for updating the software logkeys to its last available version (https://github.com/kernc/logkeys/archive/0.1.1c.tar.gz). The currently installed version is 0.1.1a. Additionally, install the desktop environment xfce in your system.

Once you have finished the exam, copy the following files to the device provided by the teacher:
-ExamenParcial.vbox
-Snapshots (whole folder)