Actividades de Sistemas Operativos

Módulo I

Sesión 1

Actividad 1

```
#!/bin/bash

archivos=./Archivos # Carpeta que contiene los archivos que necesitamos

find /tmp/kernel32-3.0.4 &&
find /tmp/Fedora14-x86-root_fs ||
cp $archivos/*.gz /tmp &&
gunzip -f /tmp/*.gz &&
chmod +x /tmp/kernel32-3.0.4

cd /tmp

./kernel32-3.0.4 ubda=./Fedora14-x86-root_fs mem=1024m
```

Actividad 2

Visualizando `/etc/default/useradd`:

```
[root@localhost ~]# cat /etc/default/useradd
# useradd defaults file
GROUP=100
HOME=/home
INACTIVE=-1
EXPIRE=
SHELL=/bin/bash
SKEL=/etc/skel
CREATE_MAIL_SPOOL=yes
```

Visualizando `/etc/login.defs`:

```
# *REQUIRED*
#   Directory where mailboxes reside, _or_ name of file, relative to the
#   home directory.  If you _do_ define both, MAIL_DIR takes precedence.
```

```
#   QMAIL_DIR is for Qmail
#
#QMAIL_DIR  Maildir
MAIL_DIR    /var/spool/mail
#MAIL_FILE  .mail

# Password aging controls:
#
#   PASS_MAX_DAYS   Maximum number of days a password may be used.
#   PASS_MIN_DAYS   Minimum number of days allowed between password changes.
#   PASS_MIN_LEN    Minimum acceptable password length.
#   PASS_WARN_AGE   Number of days warning given before a password expires.
#
PASS_MAX_DAYS   99999
PASS_MIN_DAYS   0
PASS_MIN_LEN    5
PASS_WARN_AGE   7

#
# Min/max values for automatic uid selection in useradd
#
UID_MIN           500
UID_MAX         60000

#
# Min/max values for automatic gid selection in groupadd
#
GID_MIN           500
GID_MAX         60000

#
# If defined, this command is run when removing a user.
# It should remove any at/cron/print jobs etc. owned by
# the user to be removed (passed as the first argument).
#
#USERDEL_CMD    /usr/sbin/userdel_local

#
# If useradd should create home directories for users by default
# On RH systems, we do. This option is overridden with the -m flag on
# useradd command line.
#
CREATE_HOME yes

# The permission mask is initialized to this value. If not specified,
# the permission mask will be initialized to 022.
UMASK           077

# This enables userdel to remove user groups if no members exist.
#
USERGROUPS_ENAB yes

# Use SHA512 to encrypt password.
ENCRYPT_METHOD SHA512
```

Actividad 3

Creamos un nuevo usuario con `adduser actividad1`.

Visualizamos los contenidos de `/etc/passwd`:

```
[root@localhost ~]# cat /etc/passwd | grep actividad1
actividad1:x:500:500::/home/actividad1:/bin/bash
```

Efectivamente, el número UID está entre UIDmax y UIDmin, y el shell por defecto es bash. Se ha creado un home en la carpeta `/home`.

Visualizamos los contenidos de `/etc/group`:

```
[root@localhost ~]# cat /etc/group | grep actividad1
actividad1:x:500:
```

Solo pertenece al grupo principal.

Visualizamos el directorio `/home`:

```
[root@localhost ~]# ls /home/
actividad1
```

Efectivamente, aquí está la carpeta.

Actividad 4

Veamos:

```
[root@localhost ~]# cat /etc/passwd
root::0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
uucp:x:10:14:uucp:/var/spool/uucp:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
gopher:x:13:30:gopher:/var/gopher:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:99:99:Nobody:/:/sbin/nologin
saslauth:x:499:499:"Saslauthd user":/var/empty/saslauth:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/sshd:/sbin/nologin
mailnull:x:47:47::/var/spool/mqueue:/sbin/nologin
smmsp:x:51:51::/var/spool/mqueue:/sbin/nologin
```

Mirando en el manual:

```
DESCRIPTION
       /etc/passwd contains one line for each user account, with seven fields
       delimited by colons (":"). These fields are:
```

```
        ·   login name
        ·   optional encrypted password
        ·   numerical user ID
        ·   numerical group ID
        ·   user name or comment field
        ·   user home directory
        ·   optional user command interpreter
```

Finalmente:

```
[root@localhost ~]# ls -l /etc/ | grep passwd
-rw-r--r--  1 root root     842 Feb  9  2011 passwd
```

Es decir, el propietario es root del grupo root y tiene permisos de lectura y escritura. El resto de usuarios del grupo tiene permiso solo de lectura, al igual que otros usuarios.

Actividad 5

Creemos un usuario nuevo:

```
[root@localhost ~]# adduser marian
[root@localhost ~]# passwd marian
Changing password for user marian.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[root@localhost ~]# shutdown -r now
```

Entremos con el nuevo usuario:

```
localhost login: marian
Password:
[marian@localhost ~]$ cat /etc/shadow
cat: /etc/shadow: Permission denied
```

No tenemos permisos para acceder a las contraseñas. Esto es por motivos de seguridad, porque aunque estén encriptadas, es más seguro si solo el administrador puede acceder a ellas.

Actividad 6

Vamos a crear usuarios y grupos y jugar con ellos:

```
[root@localhost ~]# adduser cris
[root@localhost ~]# adduser jaime
[root@localhost ~]# adduser jacinto
[root@localhost ~]# adduser elena
[root@localhost ~]# groupadd fisicos
[root@localhost ~]# groupadd estadisticos
```

```
[root@localhost ~]# groupadd ugr
[root@localhost ~]# gpasswd -a cris fisicos
Adding user cris to group fisicos
[root@localhost ~]# gpasswd -a jaime fisicos
Adding user jaime to group fisicos
[root@localhost ~]# gpasswd -a jacinto estadisticos
Adding user jacinto to group estadisticos
[root@localhost ~]# gpasswd -a elena estadisticos
Adding user elena to group estadisticos
[root@localhost ~]# gpasswd -a jaime ugr
Adding user jaime to group ugr
[root@localhost ~]# gpasswd -a elena ugr
Adding user elena to group ugr
[root@localhost ~]# groups cris
cris : cris fisicos
[root@localhost ~]# groups jaime
jaime : jaime fisicos ugr
[root@localhost ~]# groups jacinto
jacinto : jacinto estadisticos
[root@localhost ~]# groups elena
elena : elena estadisticos ugr
```

Y si hacemos `id` como root:

```
[root@localhost home]# id root
uid=0(root) gid=0(root)
groups=0(root),1(bin),2(daemon),3(sys),4(adm),6(disk),10(wheel)
```

Actividad 7

Si hacemos una búsqueda de ambos términos:

```
[root@localhost ~]# find / -name "linuz*"

[root@localhost ~]# find / -name "linux*"
/lib/terminfo/l/linux
/lib/kbd/keymaps/i386/include/linux-keys-bare.inc
/lib/kbd/keymaps/i386/include/linux-with-alt-and-altgr.inc
/lib/kbd/keymaps/i386/include/linux-with-modeshift-altgr.inc
/lib/kbd/keymaps/i386/include/linux-keys-extd.inc
/lib/kbd/keymaps/i386/include/linux-with-two-alt-keys.inc
/usr/lib/python2.7/lib-dynload/linuxaudiodev.so
/usr/bin/linux64
/usr/bin/linux32
/usr/share/man/man8/linux32.8.gz
/usr/share/man/man8/linux64.8.gz
/usr/share/terminfo/l/linux
```

En `/lib` y `/usr/lib/` lo que encontramos son bibliotecas del sistema, mientras que en `/usr/share/man` y `usr/share/terminfo` tenemos las ayudas y manuales. Luego el archivo debe ser `/usr/bin/linux64` o `/usr/bin/linux32`. Probablemente esté corriendo el kernel de 64 bits, pues es el más habitual en la actualidad.

Actividad 8

Una posibilidad sería que lo guardara en el directorio `/root`, así se mantendría entre arranques del sistema, pero sería inaccesible para el resto de usuarios.

Actividad 9

Veamos el contenido:

```
[root@localhost ~]# cat /etc/fstab
#
# /etc/fstab
#
LABEL=ROOT                  /       auto    noatime     1 1
tmpfs                       /dev/shm    tmpfs   defaults    0 0
tmp                     /tmp        tmpfs
rw,mode=1777,fscontext=system_u:object_r:tmp_t:s0   0 0
devpts                      /dev/pts    devpts  gid=5,mode=620  0 0
sysfs                       /sys        sysfs   defaults    0 0
proc                        /proc       proc    defaults    0 0

[root@localhost ~]# cat /etc/mtab
LABEL=ROOT / auto rw,noatime 0 0
proc /proc proc rw 0 0
sysfs /sys sysfs rw 0 0
devpts /dev/pts devpts rw,gid=5,mode=620 0 0
tmpfs /dev/shm tmpfs rw 0 0
/tmp /tmp tmpfs rw,mode=1777 0 0
none /proc/sys/fs/binfmt_misc binfmt_misc rw 0 0
```

Actividad 10

```
[root@localhost ~]# cat /etc/fstab
#
# /etc/fstab
#
LABEL=ROOT                  /       auto    noatime     1 1
tmpfs                       /dev/shm    tmpfs   defaults    0 0
tmp                     /tmp        tmpfs
rw,mode=1777,fscontext=system_u:object_r:tmp_t:s0   0 0
devpts                      /dev/pts    devpts  gid=5,mode=620  0 0
sysfs                       /sys        sysfs   defaults    0 0
proc                        /proc       proc    defaults    0 0
```

```
DESCRIPTION
       The  file  fstab  contains descriptive information about the filesystems
       the system can mount.  fstab is only read by programs, and not  written;
       it  is the duty of the system administrator to properly create and main-
       tain this file.  The order of records  in  fstab  is  important  because
       fsck(8),  mount(8), and umount(8) sequentially iterate through fstab do-
       ing their thing.
```

```
       Each filesystem is described on a separate line.  Fields  on  each  line
       are  separated by tabs or spaces.  Lines starting with '#' are comments.
       Blank lines are ignored.

       The following is a typical example of an fstab entry:

              LABEL=t-home2   /home      ext4    defaults,auto_da_alloc       0
              2

       The first field (fs_spec).
              This  field describes the block special device or remote filesys-
              tem to be mounted.
...

       The second field (fs_file).
              This field describes the mount point (target) for the filesystem.
...

       The third field (fs_vfstype).
              This field describes the type of the filesystem.
...
       The fourth field (fs_mntops).
              This  field  describes  the  mount  options  associated  with the
              filesystem.
...
       The fifth field (fs_freq).
              This field is used by dump(8) to determine which filesystems need
              to be dumped.  Defaults to zero (don't dump) if not present.

       The sixth field (fs_passno).
              This  field  is  used  by fsck(8) to determine the order in which
              filesystem checks are done at boot  time.
```

Actividad 11

```
[root@localhost ~]# cat /proc/filesystems
nodev   sysfs
nodev   rootfs
nodev   bdev
nodev   proc
nodev   cgroup
nodev   cpuset
nodev   tmpfs
nodev   devtmpfs
nodev   binfmt_misc
nodev   securityfs
nodev   sockfs
nodev   pipefs
nodev   anon_inodefs
nodev   rpc_pipefs
nodev   configfs
nodev   devpts
    reiserfs
    ext3
```

```
    ext2
    ext4
    squashfs
nodev   ramfs
    vfat
    msdos
    iso9660
nodev   ecryptfs
nodev   nfs
nodev   nfs4
nodev   nfsd
nodev   cifs
    ntfs
nodev   autofs
nodev   fuse
    fuseblk
nodev   fusectl
    udf
    nilfs2
nodev   hostfs
    btrfs
    gfs2
    gfs2meta
nodev   mqueue
nodev   selinuxfs

[root@localhost ~]# cat /proc/mounts
rootfs / rootfs rw 0 0
/dev/root / ext4 rw,noatime,user_xattr,acl,barrier=1,data=ordered 0 0
none /proc proc rw,nosuid,nodev,noexec,relatime 0 0
none /sys sysfs rw,nosuid,nodev,noexec,relatime 0 0
devpts /dev/pts devpts rw,relatime,gid=5,mode=620 0 0
/tmp /tmp tmpfs rw,relatime 0 0
none /proc/sys/fs/binfmt_misc binfmt_misc rw,relatime 0 0
```

Sesión 2

Actividad 1

Seguimos las instrucciones del guión:

```
[root@localhost ~]# mknod /dev/loop0 b 7 0
[root@localhost ~]# mknod /dev/loop1 b 7 1
[root@localhost ~]# dd if=/dev/zero of=/root/archivo_SA20 bs=2k count=10000
10000+0 records in
10000+0 records out
20480000 bytes (20 MB) copied, 0.181503 s, 113 MB/s
[root@localhost ~]# dd if=/dev/zero of=/root/archivo_SA30 bs=3k count=10000
10000+0 records in
10000+0 records out
30720000 bytes (31 MB) copied, 0.180571 s, 170 MB/s
[root@localhost ~]# losetup /dev/loop0 /root/archivo_SA20
[root@localhost ~]# losetup /dev/loop1 /root/archivo_SA30
[root@localhost ~]# fdisk -l /dev/loop0 /dev/loop1

Disk /dev/loop0: 20 MB, 20480000 bytes
255 heads, 63 sectors/track, 2 cylinders, total 40000 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

Disk /dev/loop0 doesn't contain a valid partition table

Disk /dev/loop1: 30 MB, 30720000 bytes
255 heads, 63 sectors/track, 3 cylinders, total 60000 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

Disk /dev/loop1 doesn't contain a valid partition table
```

Actividad 2

```
[root@localhost ~]# mke2fs -L LABEL_ext3 -t ext3 /dev/loop0
mke2fs 1.41.12 (17-May-2010)
Filesystem label=LABEL_ext3
OS type: Linux
Block size=1024 (log=0)
Fragment size=1024 (log=0)
Stride=0 blocks, Stripe width=0 blocks
5016 inodes, 20000 blocks
1000 blocks (5.00%) reserved for the super user
```

```
First data block=1
Maximum filesystem blocks=20709376
3 block groups
8192 blocks per group, 8192 fragments per group
1672 inodes per group
Superblock backups stored on blocks:
    8193

Writing inode tables: done
Creating journal (1024 blocks): done
Writing superblocks and filesystem accounting information: done

This filesystem will be automatically checked every 24 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.

[root@localhost ~]# mke2fs -L LABEL_ext4 -t ext4 /dev/loop1
mke2fs 1.41.12 (17-May-2010)
Filesystem label=LABEL_ext4
OS type: Linux
Block size=1024 (log=0)
Fragment size=1024 (log=0)
Stride=0 blocks, Stripe width=0 blocks
7520 inodes, 30000 blocks
1500 blocks (5.00%) reserved for the super user
First data block=1
Maximum filesystem blocks=30932992
4 block groups
8192 blocks per group, 8192 fragments per group
1880 inodes per group
Superblock backups stored on blocks:
    8193, 24577

Writing inode tables: done
Creating journal (1024 blocks): done
Writing superblocks and filesystem accounting information: done

This filesystem will be automatically checked every 33 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.
```

Actividad 3

Para la primera parte:

```
       -c max-mount-counts
              Adjust  the  number of mounts after which the
              filesystem will be checked by e2fsck(8).   If
              max-mount-counts  is  0  or -1, the number of
              times the filesystem is mounted will be  dis-
              regarded by e2fsck(8) and the kernel.
```

Y para la segunda:

```
       -r reserved-blocks-count
              Set the number of reserved filesystem blocks.
...
       -u user
              Set  the  user  who  can  use  the  reserved
              filesystem  blocks.   user can be a numerical
              uid or a user name.  If a user name is given,
              it  is converted to a numerical uid before it
              is stored in the superblock.
```

Actividad 4

```
[root@localhost ~]# mount -r -t ext3 /dev/loop0 /mnt/SA_ext3
[ 3737.360000] EXT3-fs: barriers not enabled
[ 3737.360000] kjournald starting.  Commit interval 5 seconds
[ 3737.360000] EXT3-fs (loop0): mounted filesystem with writeback data mode

[root@localhost ~]# mount -o dirsync -t ext4 /dev/loop1 /mnt/SA_ext4
[ 4492.160000] EXT4-fs (loop1): mounted filesystem with ordered data mode. Opts:
(null)
```

Actividad 5

Añadimos a `/etc/fstab` las siguientes lineas:

```
UUID="c4fc2d6d-3c54-4a99-b1c3-dc02fdb56b2d" /mnt/SA_ext3    ext3    defaults    0 0
UUID="45a9f202-0f4c-48dd-bc8e-b53468d3ea94" /mnt/SA_ext4    ext4    defaults    0 0
```

Actividad 7

```
[root@localhost ~]# yum --help
Usage: yum [options] COMMAND

List of Commands:

check          Check for problems in the rpmdb
check-update   Check for available package updates
clean          Remove cached data
deplist        List a package's dependencies
distribution-synchronization Synchronize installed packages to the latest available
versions
downgrade      downgrade a package
erase          Remove a package or packages from your system
groupinfo      Display details about a package group
groupinstall   Install the packages in a group on your system
grouplist      List available package groups
groupremove    Remove the packages in a group from your system
help           Display a helpful usage message
history        Display, or use, the transaction history
info           Display details about a package or group of packages
install        Install a package or packages on your system
```

```
list           List a package or groups of packages
localinstall   Install a local RPM
makecache      Generate the metadata cache
provides       Find what package provides the given value
reinstall      reinstall a package
repolist       Display the configured software repositories
resolvedep     Determine which package provides the given dependency
search         Search package details for the given string
shell          Run an interactive yum shell
update         Update a package or packages on your system
upgrade        Update packages taking obsoletes into account
version        Display a version for the machine and/or available repos.


Options:
  -h, --help            show this help message and exit
  -t, --tolerant        be tolerant of errors
  -C, --cacheonly       run entirely from system cache, don't update cache
  -c [config file], --config=[config file]
                        config file location
  -R [minutes], --randomwait=[minutes]
                        maximum command wait time
  -d [debug level], --debuglevel=[debug level]
                        debugging output level
  --showduplicates      show duplicates, in repos, in list/search commands
  -e [error level], --errorlevel=[error level]
                        error output level
  --rpmverbosity=[debug level name]
                        debugging output level for rpm
  -q, --quiet           quiet operation
  -v, --verbose         verbose operation
  -y, --assumeyes       answer yes for all questions
  --version             show Yum version and exit
  --installroot=[path]  set install root
  --enablerepo=[repo]   enable one or more repositories (wildcards allowed)
  --disablerepo=[repo]  disable one or more repositories (wildcards allowed)
  -x [package], --exclude=[package]
                        exclude package(s) by name or glob
  --disableexcludes=[repo]
                        disable exclude from main, for a repo or for
                        everything
  --obsoletes           enable obsoletes processing during updates
  --noplugins           disable Yum plugins
  --nogpgcheck          disable gpg signature checking
  --disableplugin=[plugin]
                        disable plugins by name
  --enableplugin=[plugin]
                        enable plugins by name
  --skip-broken         skip packages with depsolving problems
  --color=COLOR         control whether color is used
  --releasever=RELEASEVER
                        set value of $releasever in yum config and repo files
  --setopt=SETOPTS      set arbitrary config and repo options

  Plugin Options:
```

Actividad 8

```
[root@localhost ~]# rpm -qi --filesbypkg quota-3.17-13.fc14.i686
Name        : quota                         Relocations: (not relocatable)
Version     : 3.17                               Vendor: Fedora Project
Release     : 13.fc14                       Build Date: Tue May 11 08:05:02 2010
Install Date: Mon Oct 19 08:02:52 2020         Build Host: x86-
02.phx2.fedoraproject.org
Group       : System Environment/Base       Source RPM: quota-3.17-13.fc14.src.rpm
Size        : 935881                           License: BSD and GPLv2+
Signature   : RSA/SHA256, Tue Jul 27 08:52:52 2010, Key ID 421caddb97a1071f
Packager    : Fedora Project
URL         : http://sourceforge.net/projects/linuxquota/
Summary     : System administration tools for monitoring users' disk usage
Description :
The quota package contains system administration tools for monitoring
and limiting user and or group disk usage per file system.
quota                     /etc/quotagrpadmins
quota                     /etc/quotatab
quota                     /etc/warnquota.conf
quota                     /sbin/quotacheck
quota                     /sbin/quotaoff
quota                     /sbin/quotaon
quota                     /usr/bin/quota
quota                     /usr/sbin/convertquota
quota                     /usr/sbin/edquota
quota                     /usr/sbin/quota_nld
quota                     /usr/sbin/quotastats
quota                     /usr/sbin/repquota
quota                     /usr/sbin/rpc.rquotad
quota                     /usr/sbin/setquota
quota                     /usr/sbin/warnquota
quota                     /usr/share/locale/fr/LC_MESSAGES/quota.mo
quota                     /usr/share/locale/pl/LC_MESSAGES/quota.mo
quota                     /usr/share/man/man1/quota.1.gz
quota                     /usr/share/man/man2/quotactl.2.gz
quota                     /usr/share/man/man8/convertquota.8.gz
quota                     /usr/share/man/man8/edquota.8.gz
quota                     /usr/share/man/man8/quota_nld.8.gz
quota                     /usr/share/man/man8/quotacheck.8.gz
quota                     /usr/share/man/man8/quotaoff.8.gz
quota                     /usr/share/man/man8/quotaon.8.gz
quota                     /usr/share/man/man8/quotastats.8.gz
quota                     /usr/share/man/man8/repquota.8.gz
quota                     /usr/share/man/man8/rpc.rquotad.8.gz
quota                     /usr/share/man/man8/rquotad.8.gz
quota                     /usr/share/man/man8/setquota.8.gz
quota                     /usr/share/man/man8/warnquota.8.gz
```

```
[root@localhost ~]# rpm -qc quota-3.17-13.fc14.i686
/etc/quotagrpadmins
/etc/quotatab
/etc/warnquota.conf
```

```
[root@localhost ~]# rpm -q --requires quota-3.17-13.fc14.i686
config(quota) = 1:3.17-13.fc14
initscripts >= 6.38
libc.so.6
libc.so.6(GLIBC_2.0)
libc.so.6(GLIBC_2.1)
libc.so.6(GLIBC_2.1.2)
libc.so.6(GLIBC_2.1.3)
libc.so.6(GLIBC_2.2)
libc.so.6(GLIBC_2.3)
libc.so.6(GLIBC_2.3.4)
libc.so.6(GLIBC_2.4)
libc.so.6(GLIBC_2.7)
libcom_err.so.2
libdbus-1.so.3
libext2fs.so.2
liblber-2.4.so.2
libldap-2.4.so.2
libnl.so.1
libpthread.so.0
libpthread.so.0(GLIBC_2.0)
libpthread.so.0(GLIBC_2.2)
librt.so.1
libwrap.so.0
rpmlib(CompressedFileNames) <= 3.0.4-1
rpmlib(FileDigests) <= 4.6.0-1
rpmlib(PayloadFilesHavePrefix) <= 4.0-1
rtld(GNU_HASH)
tcp_wrappers
rpmlib(PayloadIsXz) <= 5.2-1
```

```
[root@localhost ~]# rpm -i --test /mnt/Resources/paquetes/quota-3.17-
13.fc14.i686.rpm
error: Failed dependencies:
    libnl.so.1 is needed by quota-1:3.17-13.fc14.i686
[root@localhost ~]# rpm -i /mnt/Resources/paquetes/libnl-1.1-12.fc14.i686.rpm
[root@localhost ~]# rpm -i --test /mnt/Resources/paquetes/quota-3.17-
13.fc14.i686.rpm
[root@localhost ~]# rpm -i /mnt/Resources/paquetes/quota-3.17-13.fc14.i686.rpm
```

```
[root@localhost ~]# rpm -i /mnt/Resources/paquetes/libnl-1.1-12.fc14.i686.rpm
[root@localhost ~]# rpm -i /mnt/Resources/paquetes/tcp_wrappers-7.6-
59.fc14.i686.rpm
[root@localhost ~]# rpm -i /mnt/Resources/paquetes/quota-3.17-13.fc14.i686.rpm
```

```
[root@localhost ~]# rpm -vi /mnt/Resources/paquetes/sysstat-9.0.6-3.fc13.i686.rpm
warning: /mnt/Resources/paquetes/sysstat-9.0.6-3.fc13.i686.rpm: Header V3
RSA/SHA256 Signature, key ID e8e40fde: NOKEY
Preparing packages for installation...
sysstat-9.0.6-3.fc13
[root@localhost ~]# rpm -ve /mnt/Resources/paquetes/sysstat-9.0.6-3.fc13.i686.rpm
```

Actividad 9

Modificamos la línea `/etc/fstab`:

```
UUID="c4fc2d6d-3c54-4a99-b1c3-dc02fdb56b2d"     /mnt/SA_ext3    ext3
defaults,quota  0 0
```

```
[root@localhost ~]# mount -o remount /mnt/SA_ext3
[root@localhost ~]# quotacheck -nm /mnt/SA_ext3
quotacheck: Error checking device name: LABEL=ROOT
quotacheck: Cannot get device name for LABEL=ROOT
[root@localhost ~]# quotaon -a
quotaon: Error checking device name: LABEL=ROOT
quotaon: Cannot get device name for LABEL=ROOT
```

Tras hacer `[root@localhost ~]# edquota jaime`:

```
Disk quotas for user jaime (uid 500):
  Filesystem                   blocks       soft       hard     inodes     soft
hard
  /dev/loop0                        0          0          0          0        0
   0
```

Tras hacer `edquota -t`:

```
Grace period before enforcing soft limits for users:
Time units may be: days, hours, minutes, or seconds
  Filesystem             Block grace period     Inode grace period
  /dev/loop0                     7days                  7days
```

Sesión 3

Actividad 1

Podemos usar la orden `uptime`:

```
[ubuntu@primary:~$ ]:  uptime
 :09:41:37 up  1:12,  1 user,  load average: 3,31, 2,98, 2,84
```

Donde vemos que el sistema lleva 1 h y 12 minutos funcionando, hay un único usuario y la carga media estos últimos 15 minutos es 2,84.

Actividad 2

```
#!/bin/bash

cont=1
while [ $cont -lt $1 ];
do
    sleep 1
    ((cont++))
done
echo El valor es $cont
```

```

real    0m59.223s
user    0m0.118s
sys     0m0.089s
60

real    0m59.227s
user    0m0.109s
sys     0m0.102s

[1]-  Done                    time ./script.sh 60
[2]+  Done                    time ./script.sh 60
```

Actividad 3

```
[ubuntu@primary:~$ ]: time ./script.sh 60 &
[1] 1878
[ubuntu@primary:~$ ]: pstree
systemd─┬─accounts-daemon───2*[{accounts-daemon}]
        ├─2*[agetty]
        ├─atd
        ├─cron
        ├─dbus-daemon
        ├─multipathd───6*[{multipathd}]
```

```
        ├─networkd-dispat
        ├─polkitd───2*[{polkitd}]
        ├─rsyslogd───3*[{rsyslogd}]
        ├─snapd───8*[{snapd}]
        ├─sshd───sshd───sshd───bash─┬─bash───script.sh───sleep
        │                           └─pstree
        ├─systemd───(sd-pam)
        ├─systemd-journal
        ├─systemd-logind
        ├─systemd-network
        ├─systemd-resolve
        ├─systemd-timesyn───{systemd-timesyn}
        ├─systemd-udevd
        └─unattended-upgr───{unattended-upgr}
[ubuntu@primary:~$ ]: ps --pid 1878
    PID TTY          TIME CMD
   1878 pts/0    :00:00:00 bash
[ubuntu@primary:~$ ]: ps --ppid 1878
    PID TTY          TIME CMD
   1879 pts/0    :00:00:00 script.sh
```

```
[ubuntu@primary:~$ ]: ps -A
    PID TTY          TIME CMD
      1 ?        :00:00:00 systemd
      2 ?        :00:00:00 kthreadd
      3 ?        :00:00:00 rcu_gp
      4 ?        :00:00:00 rcu_par_gp
      6 ?        :00:00:00 kworker/0:0H-kblockd
      7 ?        :00:00:00 kworker/0:1-events
      9 ?        :00:00:00 mm_percpu_wq
     10 ?        :00:00:00 ksoftirqd/0
     11 ?        :00:00:00 rcu_sched
     12 ?        :00:00:00 migration/0
     13 ?        :00:00:00 idle_inject/0
     14 ?        :00:00:00 cpuhp/0
     15 ?        :00:00:00 kdevtmpfs
     16 ?        :00:00:00 netns
     17 ?        :00:00:00 rcu_tasks_kthre
     18 ?        :00:00:00 kauditd
     19 ?        :00:00:00 khungtaskd
     20 ?        :00:00:00 oom_reaper
     21 ?        :00:00:00 writeback
     22 ?        :00:00:00 kcompactd0
     23 ?        :00:00:00 ksmd
     24 ?        :00:00:00 khugepaged
     70 ?        :00:00:00 kintegrityd
     71 ?        :00:00:00 kblockd
     72 ?        :00:00:00 blkcg_punt_bio
     73 ?        :00:00:00 tpm_dev_wq
     74 ?        :00:00:00 ata_sff
     75 ?        :00:00:00 md
     76 ?        :00:00:00 edac-poller
     77 ?        :00:00:00 devfreq_wq
     78 ?        :00:00:00 watchdogd
```

```
   79 ?        :00:00:00 kworker/u2:1-events_power_efficient
   81 ?        :00:00:00 kswapd0
   82 ?        :00:00:00 ecryptfs-kthrea
   84 ?        :00:00:00 kthrotld
   85 ?        :00:00:00 acpi_thermal_pm
   86 ?        :00:00:00 scsi_eh_0
   87 ?        :00:00:00 scsi_tmf_0
   88 ?        :00:00:00 scsi_eh_1
   89 ?        :00:00:00 scsi_tmf_1
   91 ?        :00:00:00 vfio-irqfd-clea
   92 ?        :00:00:00 ipv6_addrconf
  102 ?        :00:00:00 kstrp
  105 ?        :00:00:00 kworker/u3:0
  118 ?        :00:00:00 charger_manager
  152 ?        :00:00:00 kworker/0:1H-kblockd
  153 ?        :00:00:00 scsi_eh_2
  154 ?        :00:00:00 scsi_tmf_2
  157 ?        :00:00:00 cryptd
  224 ?        :00:00:00 raid5wq
  264 ?        :00:00:00 jbd2/sda1-8
  265 ?        :00:00:00 ext4-rsv-conver
  335 ?        :00:00:00 systemd-journal
  365 ?        :00:00:00 systemd-udevd
  455 ?        :00:00:00 kaluad
  456 ?        :00:00:00 kmpath_rdacd
  457 ?        :00:00:00 kmpathd
  458 ?        :00:00:00 kmpath_handlerd
  459 ?        :00:00:00 multipathd
  471 ?        :00:00:00 loop0
  472 ?        :00:00:00 loop1
  473 ?        :00:00:00 loop2
  495 ?        :00:00:00 systemd-timesyn
  498 ?        :00:00:00 kworker/0:6-events
  546 ?        :00:00:00 systemd-network
  548 ?        :00:00:00 systemd-resolve
  592 ?        :00:00:00 accounts-daemon
  599 ?        :00:00:00 cron
  600 ?        :00:00:00 dbus-daemon
  610 ?        :00:00:00 networkd-dispat
  611 ?        :00:00:00 rsyslogd
  613 ?        :00:00:00 snapd
  619 ?        :00:00:00 systemd-logind
  625 ?        :00:00:00 atd
  631 ?        :00:00:00 sshd
  651 ttyS0    :00:00:00 agetty
  656 ?        :00:00:00 unattended-upgr
  660 tty1     :00:00:00 agetty
  661 ?        :00:00:00 polkitd
  776 ?        :00:00:00 sshd
  789 ?        :00:00:00 systemd
  790 ?        :00:00:00 (sd-pam)
  884 ?        :00:00:00 sshd
  885 pts/0    :00:00:00 bash
 1524 ?        :00:00:00 kworker/u2:2-events_power_efficient
 1750 ?        :00:00:00 kworker/u2:0-events_unbound
```

```
   1943 pts/0    :00:00:00 ps
```

La interrogación significa que son procesos del sistema que no necesitan terminal.

Actividad 4

```
[ubuntu@primary:~$ ]: mpstat
Linux 5.4.0-48-generic (segunda)    10/13/20    _x86_64_    (1 CPU)

:11:10:14     CPU    %usr   %nice    %sys %iowait    %irq   %soft  %steal  %guest
%gnice   %idle
:11:10:14     all    0.85    0.19    0.66    0.36    0.00    0.03    0.00    0.00
0.00   97.91
```

El porcentaje de interrupciones hardware (`%irq`) es 0%, software (`%soft`) es 0.03%.

```
top - :11:12:45 up 28 min,  1 user,  load average: 0.00, 0.00, 0.00
Tasks:  88 total,   1 running,  87 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.3 sy,  0.0 ni, 99.7 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :    981.2 total,    357.7 free,    119.9 used,    503.6 buff/cache
MiB Swap:      0.0 total,      0.0 free,      0.0 used.    707.3 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND

   2867 ubuntu    20   0   10992   3852   3196 R   0.7   0.4   :0:00.04 top

    884 ubuntu    20   0   13908   5900   4432 S   0.3   0.6   :0:00.58 sshd

      1 root      20   0  103140  12852   8568 S   0.0   1.3   :0:01.39 systemd
```

El porcentaje de Swap es del 0% (`MiB Swap:      0.0 total`).

Actividad 5

```
NAME
       free - Display amount of free and used memory in the system

SYNOPSIS
       free [options]

DESCRIPTION
       free displays the total amount of free and used physical and swap memory
       in the system, as well as the buffers and caches used by the kernel. The
       information  is gathered by parsing /proc/meminfo. The displayed columns
       are:

       total  Total installed memory (MemTotal and SwapTotal in /proc/meminfo)

       used   Used memory (calculated as total - free - buffers - cache)

       free   Unused memory (MemFree and SwapFree in /proc/meminfo)

       shared Memory used (mostly) by tmpfs (Shmem in /proc/meminfo)
```

```
       buffers
              Memory used by kernel buffers (Buffers in /proc/meminfo)

       cache  Memory used by the page cache and slabs (Cached and  SReclaimable
              in /proc/meminfo)

       buff/cache
              Sum of buffers and cache

       available
              Estimation  of  how much memory is available for starting new ap-
              plications, without swapping. Unlike the  data  provided  by  the
              cache  or  free  fields, this field takes into account page cache
              and also that not all reclaimable memory slabs will be  reclaimed
              due  to items being in use (MemAvailable in /proc/meminfo, avail-
              able on kernels 3.14, emulated on kernels 2.6.27+, otherwise  the
              same as free)
```

El formato más importante es -h, human readable, porque redondea al más cercano.

Actividad 6

```
[ubuntu@primary:~$ ]: vmstat 2 20 > archivo.txt
[ubuntu@primary:~$ ]: cat archivo.txt
procs -----------memory---------- ---swap-- -----io---- -system-- ------cpu-----
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st
 0  0      0 367524  32844 483148    0    0   116   138   33   76  1  1 98  0  0
 0  0      0 367524  32852 483148    0    0     0     8   24   37  0  1 99  1  0
 0  0      0 367524  32852 483148    0    0     0     0   22   38  0  0 100  0  0
 0  0      0 367524  32852 483148    0    0     0     0   15   23  0  0 100  0  0
 0  0      0 367524  32852 483148    0    0     0     0   15   25  0  0 100  0  0
 0  0      0 367524  32852 483148    0    0     0     0   13   20  0  0 100  0  0
 0  0      0 367524  32852 483148    0    0     0     0   14   21  0  0 100  0  0
 0  0      0 367524  32852 483148    0    0     0     0   14   22  0  0 100  0  0
 0  0      0 367556  32852 483148    0    0     0     0   14   22  0  0 100  0  0
 0  0      0 367556  32852 483148    0    0     0     0   16   26  0  0 100  0  0
 0  0      0 367556  32852 483148    0    0     0     0   16   26  0  0 100  0  0
 0  0      0 367556  32852 483148    0    0     0     0   14   20  0  0 100  0  0
 0  0      0 367556  32852 483148    0    0     0     0   15   23  0  0 100  0  0
 0  0      0 367556  32852 483148    0    0     0     0   14   23  0  0 100  0  0
 0  0      0 367556  32852 483148    0    0     0     0   14   21  0  0 100  0  0
 0  0      0 367556  32852 483148    0    0     0     4   15   18  0  0 100  0  0
 0  0      0 367524  32852 483148    0    0     0     0   14   20  0  0 100  0  0
 0  0      0 367524  32852 483148    0    0     0     0   13   19  0  0 100  0  0
 0  0      0 367524  32852 483148    0    0     0     0   14   21  0  0 100  0  0
 0  0      0 367524  32852 483148    0    0     0     0   13   18  0  0 100  0  0
```

Actividad 7

En UML:

```
[root@localhost ~]# ls -la /dev/
total 20
...
brw-r--r--  1 root root 7, 0 Oct 15 :05:01 loop0
brw-r--r--  1 root root 7, 1 Oct 15 :05:01 loop1
...
crw-------  1 root root 5, 1 Oct 15 :04:53 console
crw-rw-rw-  1 root root 1, 7 Nov  3  2010 full
...
[root@localhost ~]# ls -a
.  ..  .bash_history  .bash_logout  .bash_profile  .bashrc  .cshrc  .tcshrc
```

En ubuntu:

```
[ubuntu@primary:~$ ]: ls -la /dev/
total 4
brw-rw----  1 root disk      2,   0 Oct 15 10:50 fd0
...
brw-rw----  1 root disk      8,   0 Oct 15 10:50 sda
...
crw-rw----  1 root cdrom    21,   0 Oct 15 10:50 sg0
crw-rw----  1 root disk     21,   1 Oct 15 10:50 sg1
...
[ubuntu@primary:~$ ]: ls -a
.   .bash_history  .bashrc  .profile  .sudo_as_admin_successful  Home
..  .bash_logout   .cache   .ssh      .uml                       snap
```

Actividad 8

```
[ubuntu@primary:~$ ]: ls -l --time=ctime --sort=time /dir/
[ubuntu@primary:~$ ]: ls -l --time=atime --sort=time /dir/
```

Actividad 9

```
[root@localhost ~]# df
Filesystem           1K-blocks      Used Available Use% Mounted on
LABEL=ROOT             1032088    411192    568468  42% /
...
[root@localhost ~]# df -h
Filesystem            Size  Used Avail Use% Mounted on
LABEL=ROOT           1008M  402M  556M  42% /
...
[root@localhost ~]# df -i
Filesystem            Inodes   IUsed   IFree IUse% Mounted on
LABEL=ROOT             65536   14667   50869   23% /
...
[root@localhost ~]# du -hs /etc/
21M /etc/
[root@localhost ~]# du -hs /var/
```

```
14M /var/
[root@localhost ~]# du -hs /bin/
5.3M    /bin/
[root@localhost ~]# du -hs /usr/
297M    /usr/
[root@localhost ~]# du -hs /lib/
24M /lib/
[root@localhost ~]# du -sB4k /etc/
5264    /etc/
```

El bloque es de 1 KB.

Actividad 10

```
[root@localhost ~]# touch archivo.txt
[root@localhost ~]# touch target_hardLink2.txt
[root@localhost ~]# ln -s archivo.txt softLink
[root@localhost ~]# ln archivo.txt hardLink
[root@localhost ~]# ln target_hardLink2.txt hardLink2
[root@localhost ~]# ls -il
total 0
14239 -rw-r--r-- 2 root root  0 Oct 15 06:17 archivo.txt
14239 -rw-r--r-- 2 root root  0 Oct 15 06:17 hardLink
14241 -rw-r--r-- 2 root root  0 Oct 15 06:20 hardLink2
14248 lrwxrwxrwx 1 root root 11 Oct 15 06:21 softLink -> archivo.txt
14241 -rw-r--r-- 2 root root  0 Oct 15 06:20 target_hardLink2.txt
```

Los enlaces simbólicos no cuentan.

Actividad 11

```
[root@localhost ~]# ls -l
total 0
-rw-r--r-- 2 root root  0 Oct 15 06:17 archivo.txt
-rw-r--r-- 2 root root  0 Oct 15 06:17 hardLink
-rw-r--r-- 2 root root  0 Oct 15 06:20 hardLink2
lrwxrwxrwx 1 root root 11 Oct 15 06:21 softLink -> archivo.txt
-rw-r--r-- 2 root root  0 Oct 15 06:20 target_hardLink2.txt
[root@localhost ~]# ls -lL
total 0
-rw-r--r-- 2 root root 0 Oct 15 06:17 archivo.txt
-rw-r--r-- 2 root root 0 Oct 15 06:17 hardLink
-rw-r--r-- 2 root root 0 Oct 15 06:20 hardLink2
-rw-r--r-- 2 root root 0 Oct 15 06:17 softLink
-rw-r--r-- 2 root root 0 Oct 15 06:20 target_hardLink2.txt
[root@localhost ~]# ls -ld *
-rw-r--r-- 2 root root    0 Oct 15 06:17 archivo.txt
drwxr-xr-x 2 root root 4096 Oct 15 06:30 dir
-rw-r--r-- 2 root root    0 Oct 15 06:17 hardLink
-rw-r--r-- 2 root root    0 Oct 15 06:20 hardLink2
lrwxrwxrwx 1 root root   11 Oct 15 06:21 softLink -> archivo.txt
-rw-r--r-- 2 root root    0 Oct 15 06:20 target_hardLink2.txt
```

Actividad 12

```
[root@localhost ~]# mknod dispositivo_bloques b 0 20
[root@localhost ~]# mknod dispositivo_caracteres c 0 20
[root@localhost ~]# ls -li
total 4
14239 -rw-r--r-- 2 root root     0 Oct 15 06:17 archivo.txt
14249 drwxr-xr-x 2 root root  4096 Oct 15 06:30 dir
14251 brw-r--r-- 1 root root 0, 20 Oct 15 06:58 dispositivo_bloques
14253 crw-r--r-- 1 root root 0, 20 Oct 15 06:58 dispositivo_caracteres
14239 -rw-r--r-- 2 root root     0 Oct 15 06:17 hardLink
14241 -rw-r--r-- 2 root root     0 Oct 15 06:20 hardLink2
14248 lrwxrwxrwx 1 root root    11 Oct 15 06:21 softLink -> archivo.txt
14241 -rw-r--r-- 2 root root     0 Oct 15 06:20 target_hardLink2.txt
```

Sesión 4

Actividad 1

```
[ubuntu@entranced-numbat:~$ ]: ps -el
F S   UID     PID    PPID  C PRI  NI ADDR SZ WCHAN  TTY          TIME CMD
...
[ubuntu@entranced-numbat:~$  ]: ps -el | grep atd && ps -el | grep cron
4 S     1     629       1  0  80   0 -   948 -      ?        :00:00:00 atd
4 S     0     603       1  0  80   0 -  2134 -      ?        :00:00:00 cron
```

Actividad 2

```
#!/usr/bin/bash

fecha=`date +%Y-%j-%T-$$`



ls > listahome-$fecha
```

```
[ubuntu@entranced-numbat:~$  ]: at -f genera-apunte now + 1min
warning: commands will be executed using /bin/sh
job 2 at Tue Oct 20 09:17:00 2020
[ubuntu@entranced-numbat:~$  ]: ls
genera-apunte  snap  tmp
[ubuntu@entranced-numbat:~$  ]: ls
genera-apunte  listahome-2020-294-09:17:00-1059  snap  tmp
```

Actividad 3

```
[ubuntu@entranced-numbat:~$  ]: at midnight
[ubuntu@entranced-numbat:~$  ]: at midnight + 1min
[ubuntu@entranced-numbat:~$  ]: at 17:30 tomorrow
[ubuntu@entranced-numbat:~$  ]: at 25.12.2020
[ubuntu@entranced-numbat:~$  ]: at midnight January 1
```

Actividad 4

`at` hereda el directorio de su padre.

```
[ubuntu@entranced-numbat:~/dir$  ]: at now
warning: commands will be executed using /bin/sh
at> touch c.txt
at> <EOT>
job 7 at Tue Oct 20 09:36:00 2020
[ubuntu@entranced-numbat:~/dir$  ]: ls
c.txt
```

La máscara es la que hereda del padre.

Hereda las variables del proceso padre.

```
[ubuntu@entranced-numbat:~/dir$  ]: export var=32
[ubuntu@entranced-numbat:~/dir$  ]: echo $var
32
[ubuntu@entranced-numbat:~/dir$  ]: at now
warning: commands will be executed using /bin/sh
at> echo $var > a.txt
at> <EOT>
job 9 at Tue Oct 20 09:42:00 2020
[ubuntu@entranced-numbat:~/dir$  ]: ls
a.txt  c.txt
[ubuntu@entranced-numbat:~/dir$  ]: cat a.txt
32
```

Actividad 5

Es hijo del proceso daemon `atd`.

```
[ubuntu@entranced-numbat:~/dir$  ]: at -f script.sh now
warning: commands will be executed using /bin/sh
job 10 at Tue Oct 20 :09:45:00 2020
[ubuntu@entranced-numbat:~/dir$  ]: cat 2020-294-09\:45\:32
UID          PID    PPID  C STIME TTY          TIME CMD
...
daemon      1366     629  0 :09:45 ?        00:00:00 /usr/sbin/atd -f
ubuntu      1367    1366  0 :09:45 ?        00:00:00 sh
ubuntu      1369    1367  0 :09:45 ?        00:00:00 ps -ef
Mi pid = 1367
```

Actividad 6

```
  GNU nano 4.8                        script46.sh                         Modified
#!/usr/bin/bash

fecha=`date +%Y_%j_%H`

find ~/* -ctime 0 > modificados_$fecha
```

```
[ubuntu@entranced-numbat:~$  ]: at -f script46.sh tomorrow
warning: commands will be executed using /bin/sh
job 12 at Wed Oct 21 11:57:00 2020
```

Actividad 9

```
* * * * * ./script.sh
```

```
#!/usr/bin/bash

nombrearchivo=`date +%Y-%j-%T`
ps -ef | grep $$ > $nombrearchivo
```

`cron` funciona del mismo modo que `at`:

```
[ubuntu@entranced-numbat:~$  ]: cat 2020-294-17\:00\:01
ubuntu      1818    1817  0 17:00 ?        00:00:00 /usr/bin/bash ./script.sh
ubuntu      1820    1818  0 17:00 ?        00:00:00 ps -ef
ubuntu      1821    1818  0 17:00 ?        00:00:00 grep 1818
```

Actividad 10

```
#!/usr/bin/bash

rm -v /tmp/varios/core* >> /tmp/listacores
```

Actividad 11

```
#!/usr/bin/bash

arch=/tmp/listacores
tmparch=/tmp/tmparch
head $arch > $tmparch
mv -f $tmparch $arch
```