CST8102-15W Lab6 **Name**_____ **Section #**_____

The Linux File System （Part2）

Due date

- End of Week 8 lab class

Evaluation

- 3% of final grade.

Submission

Hand in or email (in email subject line: CST8102-15W lab6 submission) completed lab before due date.

Materials

- Student laptop computer
- Ubuntu 14.04.1 installed in VMWare Workstation

Procedure

Root privilege is needed for executing most of the commands in this lab.

Exercise #1: Creating a linux filesystem

Use the **mkfs** command to format your newly created two primary partitions in **Lab5**.

Record the command you use:

```
mkfs -t ext4 /dev/sdb1
mkfs -t ext4 /dev/sdb2
```

Note: If no filesystem type is specified with mkfs, mkfs will default to ext2.

Exercise #2: Creating a swap filesystem

When working with swap space we use two commands. One command is used to create a swap filesystem, which is used by the virtual memory system to temporarily store data. The command is **mkswap** and the syntax is:

- **`mkswap` *`device_name`***

  Record the command you use to create a swap filesystem on the swap partition you created in **Lab5**:

  `mkswap /dev/sdb6`

The second command is used to activate the swap space, so that the virtual memory system can use the swap space. The command is **swapon** and the syntax is:

- **`swapon` *`device_name`***

  Record the command you use to activate the swap partition:

  `swapon /dev/sdb6`

To verify the swap partitions that are currently active, use the following command:

- **`swapon -s`**

  Note: No argument is required.

- Record the output of the above command

Filename	Type	Size	Used	Priority
/dev/sda5	partition	1046524	0	-1
/dev/sdb6	partition	409596	0	-2

Exercise #3: Mount & unmount a Linux filesystem

Create a log file:

Redirect the output of **`fdisk -l`** to the log file named ~/**fslab6** *(if you login as root, ~/fslab6 means /root/fslab6)* using the following command:

- **`fdisk –l > ~/fslab6`**

Append an empty line into the log file using

- **`echo "" >>  ~/fslab6`**

A newly created filesystem is not recorded in the **/etc/fstab** file. Therefore, we need to mount the filesystem manually. In this exercise we mount the Linux partition that we created in lab5.

The syntax of the mount command is: **`mount –t type device mount-point`**

To mount the newly created Linux partition:

- **`mkdir /mnt/new`**
  - Create a mount point
- **`mount -t ext4 /dev/sdb1 /mnt/new`**
  - /dev/sdb1 is the newly created primary partition in lab5 part I
- **`ls /mnt/new`**
  - List the directory contents. Since this a new partition you will see only one directory that is created by mkfs: lost+found.

Add to log file:

- **`mount >> ~/fslab6`**
  - Append the output of the mount command to **~/fslab6**
- **`echo "" >>  ~/fslab6`**
  - Append an empty line.
- **`umount /mnt/new`**
  - Unmount the filesystem located on the partition

Exercise #4: Mount & unmount a CDROM disk

Put a CD-ROM or DVD disk in the CDROM drive and follow the steps below (Use the Ubuntu installation ISO image if you don't have a physical disk):

1) **`mkdir /mnt/cdrom`**

   - Create mount point for mounting cdrom

2) **`mount -t iso9660 /dev/cdrom /mnt/cdrom`**

   - Mount a CDROM filesystem and makes the files on it available in the **/mnt/cdrom** directory

3) **`ls -l /mnt/cdrom`**

   - List the contents of the **/mnt/cdrom** directory

Add to log file:

- Append the output of the **mount** command to **~/fslab6**
- Append an empty line

4) **`umount /mnt/cdrom`**

   - Unmount the CDROM filesystem

Exercise #5: Mount a partition automatically during startup

Use **vim** to insert a new line at the end of the **/etc/fstab** file to automatically mount the first primary partition (/dev/sdb1) you created in lab5 at the mount point **/mnt/blank** when the system boots up. Be very careful when editing this file.

Add to log file:

- **`cat /etc/fstab >> ~/fslab6`**
  - Append the new **/etc/fstab** file to **~/fslab6**

Print a copy of the log file, *~/fslab6*, and hand it in along with your lab6 document before the due date.

```
Disk /dev/sda: 21.5 GB, 21474836480 bytes
255 heads, 63 sectors/track, 2610 cylinders, total 41943040 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: 0x000319b5

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *        2048    39845887    19921920   83  Linux
/dev/sda2        39847934    41940991     1046529    5  Extended
/dev/sda5        39847936    41940991     1046528   82  Linux swap / Solaris

Disk /dev/sdb: 2147 MB, 2147483648 bytes
255 heads, 63 sectors/track, 261 cylinders, total 4194304 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: 0x355dc252

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1            2048     1026047      512000   83  Linux
/dev/sdb2         1026048     1435647      204800   83  Linux
/dev/sdb3         1435648     3688447     1126400    5  Extended
/dev/sdb5         1437696     2461695      512000   83  Linux
/dev/sdb6         3080192     3489791      204800   82  Linux swap / Solaris

/dev/sda1 on / type ext4 (rw,errors=remount-ro)
proc on /proc type proc (rw,noexec,nosuid,nodev)
sysfs on /sys type sysfs (rw,noexec,nosuid,nodev)
none on /sys/fs/cgroup type tmpfs (rw)
none on /sys/fs/fuse/connections type fusectl (rw)
none on /sys/kernel/debug type debugfs (rw)
none on /sys/kernel/security type securityfs (rw)
udev on /dev type devtmpfs (rw,mode=0755)
devpts on /dev/pts type devpts (rw,noexec,nosuid,gid=5,mode=0620)
tmpfs on /run type tmpfs (rw,noexec,nosuid,size=10%,mode=0755)
none on /run/lock type tmpfs (rw,noexec,nosuid,nodev,size=5242880)
none on /run/shm type tmpfs (rw,nosuid,nodev)
none on /run/user type tmpfs
(rw,noexec,nosuid,nodev,size=104857600,mode=0755)
none on /sys/fs/pstore type pstore (rw)
systemd on /sys/fs/cgroup/systemd type cgroup
(rw,noexec,nosuid,nodev,none,name=systemd)
vmware-vmblock on /run/vmblock-fuse type fuse.vmware-vmblock
(rw,nosuid,nodev,default_permissions,allow_other)
gvfsd-fuse on /run/user/1000/gvfs type fuse.gvfsd-fuse
(rw,nosuid,nodev,user=user1)
/dev/sdb1 on /mnt/new type ext4 (rw)

/dev/sda1 on / type ext4 (rw,errors=remount-ro)
proc on /proc type proc (rw,noexec,nosuid,nodev)
sysfs on /sys type sysfs (rw,noexec,nosuid,nodev)
none on /sys/fs/cgroup type tmpfs (rw)
none on /sys/fs/fuse/connections type fusectl (rw)
none on /sys/kernel/debug type debugfs (rw)
none on /sys/kernel/security type securityfs (rw)
udev on /dev type devtmpfs (rw,mode=0755)
devpts on /dev/pts type devpts (rw,noexec,nosuid,gid=5,mode=0620)
```

```
tmpfs on /run type tmpfs (rw,noexec,nosuid,size=10%,mode=0755)
none on /run/lock type tmpfs (rw,noexec,nosuid,nodev,size=5242880)
none on /run/shm type tmpfs (rw,nosuid,nodev)
none on /run/user type tmpfs
(rw,noexec,nosuid,nodev,size=104857600,mode=0755)
none on /sys/fs/pstore type pstore (rw)
systemd on /sys/fs/cgroup/systemd type cgroup
(rw,noexec,nosuid,nodev,none,name=systemd)
vmware-vmblock on /run/vmblock-fuse type fuse.vmware-vmblock
(rw,nosuid,nodev,default_permissions,allow_other)
gvfsd-fuse on /run/user/1000/gvfs type fuse.gvfsd-fuse
(rw,nosuid,nodev,user=user1)
/dev/sr0 on /media/user1/Ubuntu 14.04.1 LTS i386 type iso9660
(ro,nosuid,nodev,uid=1000,gid=1000,iocharset=utf8,mode=0400,dmode=0500,
uhelper=udisks2)
/dev/sr0 on /mnt/cdrom type iso9660 (ro)

# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name
devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point>   <type>  <options>       <dump>  <pass>
# / was on /dev/sda1 during installation
UUID=ea658fc6-01d7-4cf3-bb62-66e84560982e /               ext4
errors=remount-ro 0       1
# swap was on /dev/sda5 during installation
UUID=3198a9c1-ac2d-403d-958b-27a573fef720 none            swap    sw
0       0
/dev/fd0        /media/floppy0  auto    rw,user,noauto,exec,utf8 0
0
/dev/sdb1       /mnt/blank      ext4    auto                    0       0
```