File system structure

/ - Root

/bin	common Linux commands
/sbin	system binaries, Linux commands typically used by system administrators
/etc	configuration files
/dev	device files, terminal devices, usb or any device
/proc	contains information about a system process
/var	system log files
/tmp	temporary files created by the system and user, deleted when system is rebooted
/usr	binaries for second level programs
/home	home directory for all users to store data
/boot	boot loader files
/lib	contains library files that support the binaries under /bin and /sbin
/mnt	temporary mount directory where sysadmin can mount file system
/media	mount CD room

Directory listing attributes

ls -l (type | # of links | owner | group | size | month | day | time | name)

File types

-	regular files
d	directory
l	link
c	special file or device
s	socket
b	block device
p	named pipes

Finding files and directories

find

locate

Soft/Hard links

inode -> pointer of a file on the hard disk

soft link -> link will be removed if file is removed

hard link -> deleting the original file will not affect the hard link

ln -s

ln

File permissions

r, w, x

Each permission is controlled by 3 levels: u (yourself), g (group) and o (others)

chmod a-w filename   remove write permission from all

Permissions using numerical values

0	no permission	---
1	execute	--x
2	write	-w-
3	execute + write	-wx
4	read	r--
5	read + execute	r-x
6	read + write	rw-
7	read + write + execute	rwx

x directory means you can cd to that directory

File ownership

2 owners of a file or dir: user and group

Commands: chown and chgrp

Recursive ownership -R

chown user dirname

Access Control List (ACL)

More flexible tool for setting permissions in you file system

Commands: setfacl and getfacl

1) Add permission for user
   setfacl -m u:username:rwx /path/file
2) Add permission for group
   setfacl -m g:groupname:rwx /path/file
3) Allow all subfiles and subdirs inherit the ACL
   setfacl -Rm "entry" /path/file
4) Remove a specific entry
   setfacl -x u:user /path/file

Adding text to a file

Redirect command >> file

tee command

ls -ltr | tee -a filename

Pipes |

Connect the output of one command directly to the output of another command

File display commands

cat, more, less, head, tail

File processing commands

1) cut
   Cutting out sections from each line of files and writing the result to standard output
   cut -c 1 file
   cut -c 1,2,4 file
   cut -c 1-4 file
   cut -b 1-3, 4-5 file
   cut -b 1- file   from first byte till the end of a line
   cut -c -5 file   from first to fifth
   cut -d":" -f 6 /etc/passwd

   Get only type of file and permission for the user
   ls -l | cut -c 1-4 | tail -n+2

2) awk

Utility language for data extraction

Extract fields from a file

awk '{print $1}' file

ls -l | awk '{print $1, $2}'

ls -l | awk '{print $NF}'   last column

awk -F: '{print $1}' /etc/passwd

echo "Hello universe" | awk '{$2= "world"; print $0}'

awk 'length($0) > 15'   get lines with more than 15 bytes

ls -l | awk '{if ($NF == "your name") print $0}'

ls -l | awk '{print NF}'   nr of fields