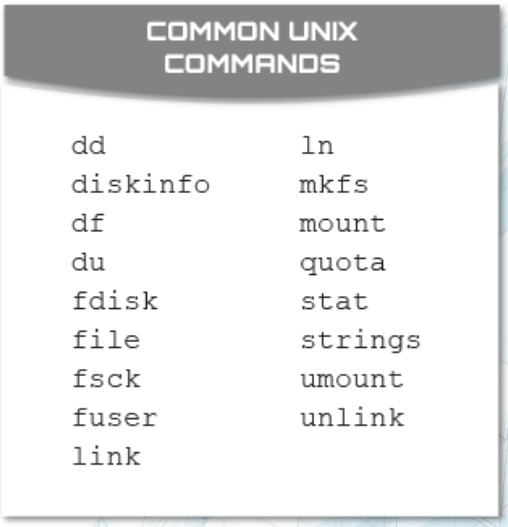
UNIX System Calls and Commands

Some common UNIX systems calls and commands to research and become proficient with are:



Common Device Names

UNIX was created to allow transparency when accessing hardware devices. This transparency allows users to access all devices using the same set of command-line tools. Devices are divided into sets called major and minor device numbers, which identify the device to the kernel. Some common devices and there descriptions follow:

Device Name	Description
`/dev/hd*`	The hd* stands for *hard disk*, but in this case only refers to Integrated Drive Electronics (IDE) devices--that is, common hard disks. The first letter after the hd dictates the physical disk drive: • `/dev/hda3` First drive, or primary master • `/dev/hdb3` Second drive, or primary slave • `/dev/hdc2` Third drive, or secondary master • `/dev/hdd2` Fourth drive, or secondary slave *Note: the number following the drive name indicates the partition, which acts as a disk giving the effect of having more than one disk on a physical drive.
`/dev/sd*`	The sd stands for SCSI disk, the high-end drives mostly used by servers. Probing goes by SCSI ID and has a system completely different from that of IDE devices. For example, sda is the first physical disk probed, and `/dev/sda1` is the first partition on the first drive.

Device Name	Description
/dev/ttyS*	The ttyS* are serial devices numbered from 0 up. The /dev/ttyS0 is the first serial port (COM1 under MS-DOS or Windows). With a multiport card, these can go to 32, 64, and up.
/dev/psaux	The psaux equates to PS/2 mouse.
/dev/mouse	A mouse is a symlink to /dev/ttyS0 or /dev/psaux. Other mouse devices are also supported.
/dev/modem	A modem is a symlink to /dev/ttyS1 or whatever port the modem is on.
/dev/fd*	The fd* stands for floppy disk; fd0 is equivalent to the A: drive and fd1 is equivalent to the B: drive. The fd0 and fd1 devices auto detect the format of the floppy disk, but can explicitly specify a higher density by using a device name like /dev/fd0H1920, which gives access to 1.88 MB, formatted, 3.5-inch floppies. *Note: there are other floppy devices (l, m, and nnnn)
/dev/par*	A par* equates to a parallel port and /dev/par0 is the first parallel port or LPT1 under DOS.
/dev/random /dev/urandom	The random and urandom are random byte generators. Reading from these device gives pseudo-random numbers; if available /dev/urandom is preferred for secure applications.
/dev/st*	The st* stands for SCSI tape and is a SCSI backup tape drive.
/dev/zero	A zero produces ASCII-zero bytes (as many as are needed) and is useful if a user needs to generate a block of zeros.
/dev/null	A null is used to discard output; it is often seen with redirection, when viewing output is not desired.
/dev/sr*	An sr* stands for the SCSI CD-ROM.
/dev/scd*	An scd* is an alternate name for the SCSI CD-ROM
/dev/sg*	The sg* Stands for SCSI generic and is a general-purpose SCSI command interface for devices like scanners.
/dev/fb*	The fb* stands for frame buffer and represents the kernel's attempt at a graphics driver.
/dev/cdrom /dev/dvdrom (etc.)	The cdrom is a symlink to whichever device is the optical drive on the system.
/dev/tty*	A tty* is a virtual console and is the terminal device for the virtual console itself. They are numbered; /dev/tty1 through /dev/tty6 are the most common.

Recommended Readings

- UNIX and Linux System administration Handbook 4th Edition (Chapter 6)

Recommended Internet Sites

- Man (manual) pages – Use any search engine using the format "[Topic] man page"
- RFCs – Use any search engine using the format "RFC [RFC NUMBER]"
- Master boot record format and layout: https://web.archive.org/web/20160805144815/https://en.wikipedia.org/wiki/Master_boot_record
- Disk partitions: https://web.archive.org/web/20160726214945/http://www.pcguide.com/ref/hdd/file/structPartitions-c.html
- ext2 filesystems: https://web.archive.org/web/20160726215035/http://www.nongnu.org/ext2-doc/ext2.html
  Mounting: https://web.archive.org/web/20160726215118/http://www.computerhope.com/unix/umount.htm
- Description of a typical UNIX filesystem hierarchy: https://web.archive.org/web/20160726215149/http://linux.die.net/man/7/hier
- The find command: https://web.archive.org/web/20160726215219/https://wpollock.com/Unix/FindCmd.htm

Please contact the Course Coordinators if you are unable to access any of the Recommended Internet Sites.