



Unix Basics

Command line tools

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Overview

- Where to use it?
- Command syntax
- What are commands?
- Where to get help?
- Standard streams(stdin, stdout, stderr)
- Pipelines (Power of combining commands)
- Redirection
- More Information

Where to use it?

- Login to a Unix system like 'kraken' or any other NICS/UT/XSEDE resource.
- Download and boot from a Linux LiveCD either from a CD/DVD or USB drive.
- <http://www.puppylinux.com/>
- <http://www.knopper.net/knoppix/index-en.html>
- <http://www.ubuntu.com/>

Where to use it?

- Install Cygwin: a collection of tools which provide a Linux look and feel environment for Windows.
 - <http://cygwin.com/index.html>
 - <https://newton.utk.edu/bin/view/Main/Workshop0InstallingCygwin>
- Online terminal emulator
 - <http://bellard.org/jslinux/>
 - <http://cb.vu/>
 - <http://simpleshell.com/>

Command syntax

```
$ command [<options>] [<file> | <argument> ...]
```

Example:

```
cp [-R [-H | -L | -P]] [-fi | -n] [-apvX] source_file target_file
```

What are commands?

- An executable program (*date*)
- A command built into the shell itself (*cd*)
- A shell program/function
- An alias

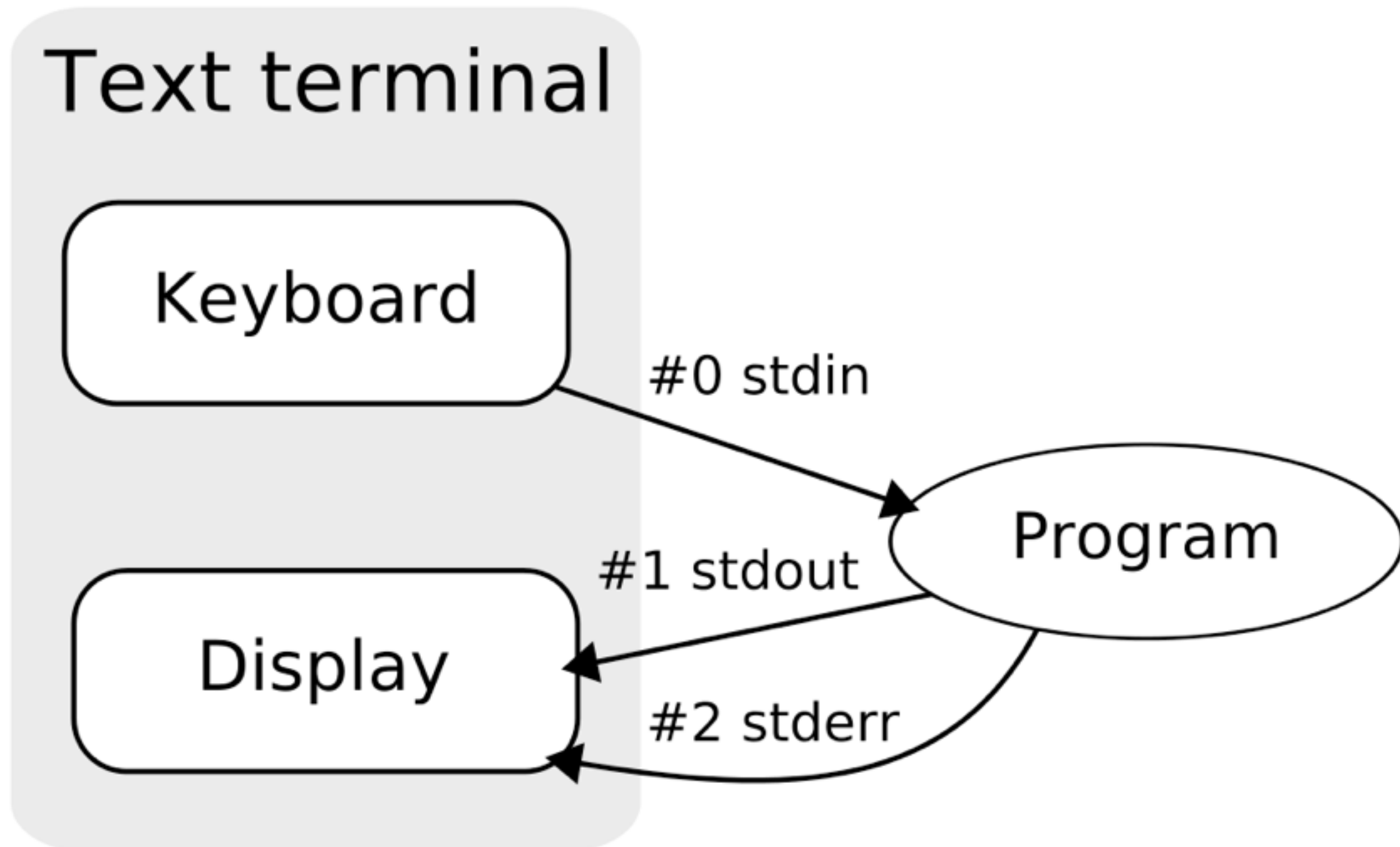
Bash commands (Linux)

alias	crontab	false	if	mknod	ram	strace	unshar
apropos	csplit	fdformat	ifconfig	more	rcp	su	until
apt-get	cut	fdisk	ifdown	mount	read	sudo	uptime
aptitude	date	fg	ifup	mtools	readarray	sum	useradd
aspell	dc	fgrep	import	mtr	readonly	suspend	userdel
awk	dd	file	install	mv	reboot	symlink	usermod
basename	ddrescue	find	jobs	mmv	rename	sync	users
bash	declare	fmt	join	netstat	renice	tail	uuencode
bc	df	fold	kill	nice	remsync	tar	uudecode
bg	diff	for	killall	nl	return	tee	v
break	diff3	format	less	nohup	rev	test	vdir
builtin	dig	free	let	notify-send	rm	time	vi
bzip2	dir	fsck	ln	nslookup	rmdir	times	vmstat
cal	dircolors	ftp	local	open	rsync	touch	wait
case	dirname	function	locate	op	screen	top	watch
cat	dirs	fuser	logname	passwd	scp	traceroute	wc
cd	dmesg	gawk	logout	paste	sdiff	trap	whereis
cfdisk	du	getopts	look	pathchk	sed	tr	which
chgrp	echo	grep	lpc	ping	select	true	while
chmod	egrep	groupadd	lpr	pkill	seq	tsort	who
chown	eject	groupdel	lprint	popd	set	tty	whoami
chroot	enable	groupmod	lprintd	pr	sftp	type	wget
chkconfig	env	groups	lprintq	printcap	shift	ulimit	write
cksum	ethtool	gzip	lprm	printenv	shopt	umask	xargs
clear	eval	hash	ls	printf	shutdown	umount	xdg-open
cmp	exec	head	lsof	ps	sleep	unalias	yes
comm	exit	help	make	pushd	slocate	uname	.
command	expect	history	man	pwd	sort	unexpand	!!
continue	expand	hostname	mkdir	quota	source	uniq	###
cp	export	iconv	mkfifo	quotacheck	split	units	
cron	exprx`	id	mkisofs	quotactl	ssh	unset	

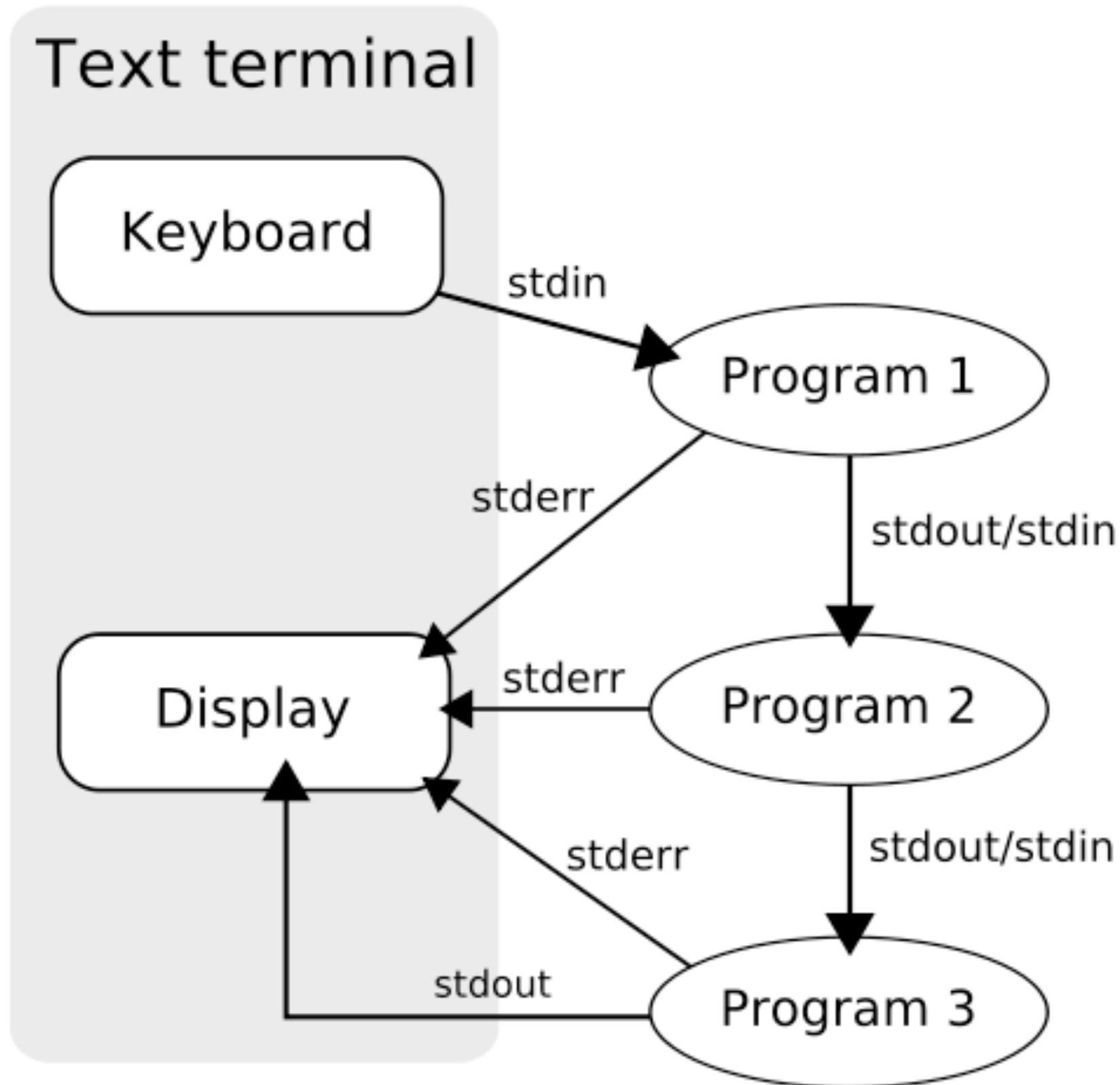
Where to get help?

- **file** - Show file type
- **type** - Indicate how a command name is interpreted
- **which** - Display which executable program will be executed
- **man** - Display a command's manual page
- **apropos** - Display a list of "related" commands
- **info** - Display a command's info entry
- **whatis** - Display a very brief description of a command
- **command [-help]** - built-in help

Standard Streams



Pipelines



Getting example

```
[lucio@acai ~]$ wget http://www.nics.tennessee.edu/~lucio/list.txt.gz
--2014-07-07 14:35:02--  http://www.nics.tennessee.edu/~lucio/list.txt.gz
Resolving www.nics.tennessee.edu... 192.249.6.38
Connecting to www.nics.tennessee.edu|192.249.6.38|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 4166 (4.1K) [application/x-gzip]
Saving to: "list.txt.gz"

100%[=====>] 4,166          --.-K/s   in 0s

2014-07-07 14:35:02 (169 MB/s) - "list.txt.gz" saved [4166/4166]

[lucio@acai ~]$ ls -l list.txt.gz
-rw-r--r-- 1 lucio nicsstaff 4.1K Jul  7 14:28 list.txt.gz

[lucio@acai ~]$ gunzip list.txt.gz
[lucio@acai ~]$
```

```
$ head list.txt
```

```
alias      Create an alias •
apropos     Search Help manual pages (man -k)
apt-get     Search for and install software packages (Debian/Ubuntu)
aptitude    Search for and install software packages (Debian/Ubuntu)
aspell      Spell Checker
awk         Find and Replace text, database sort/validate/index
b
basename    Strip directory and suffix from filenames
bash        GNU Bourne-Again SHell
bc          Arbitrary precision calculator language
```

```
$ cut -d ' ' -f3 list.txt | sed '/^.$/d' | head
```

```
alias
apropos
apt-get
aptitude
aspell
awk
basename
bash
bc
bg
```

More information

<http://www.gnu.org/>

<http://www.linux.org/>

Unix man pages

<http://www.ubuntu.com/>

<http://linuxcommand.org>

