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://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

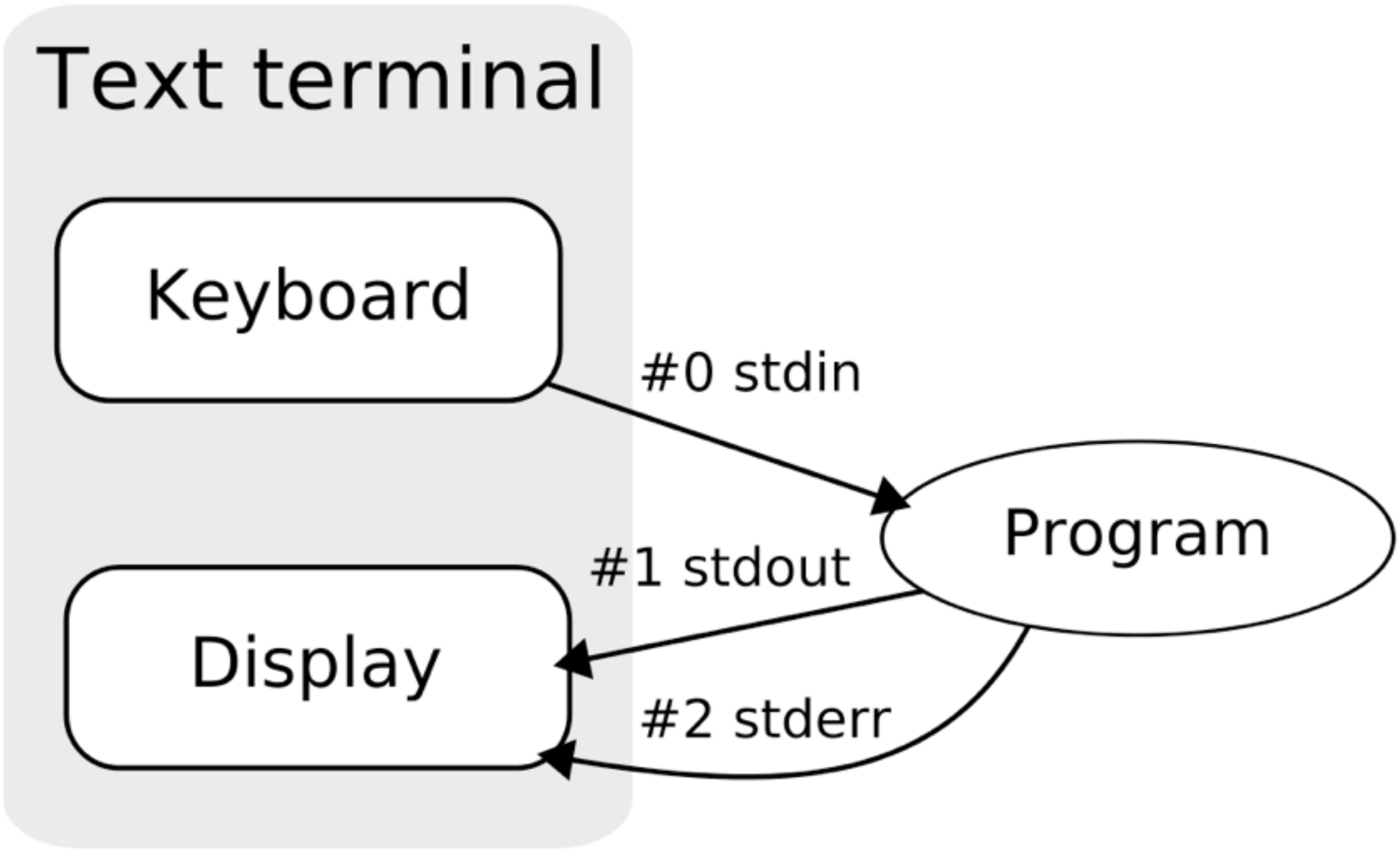
Bash commands (Linux)

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

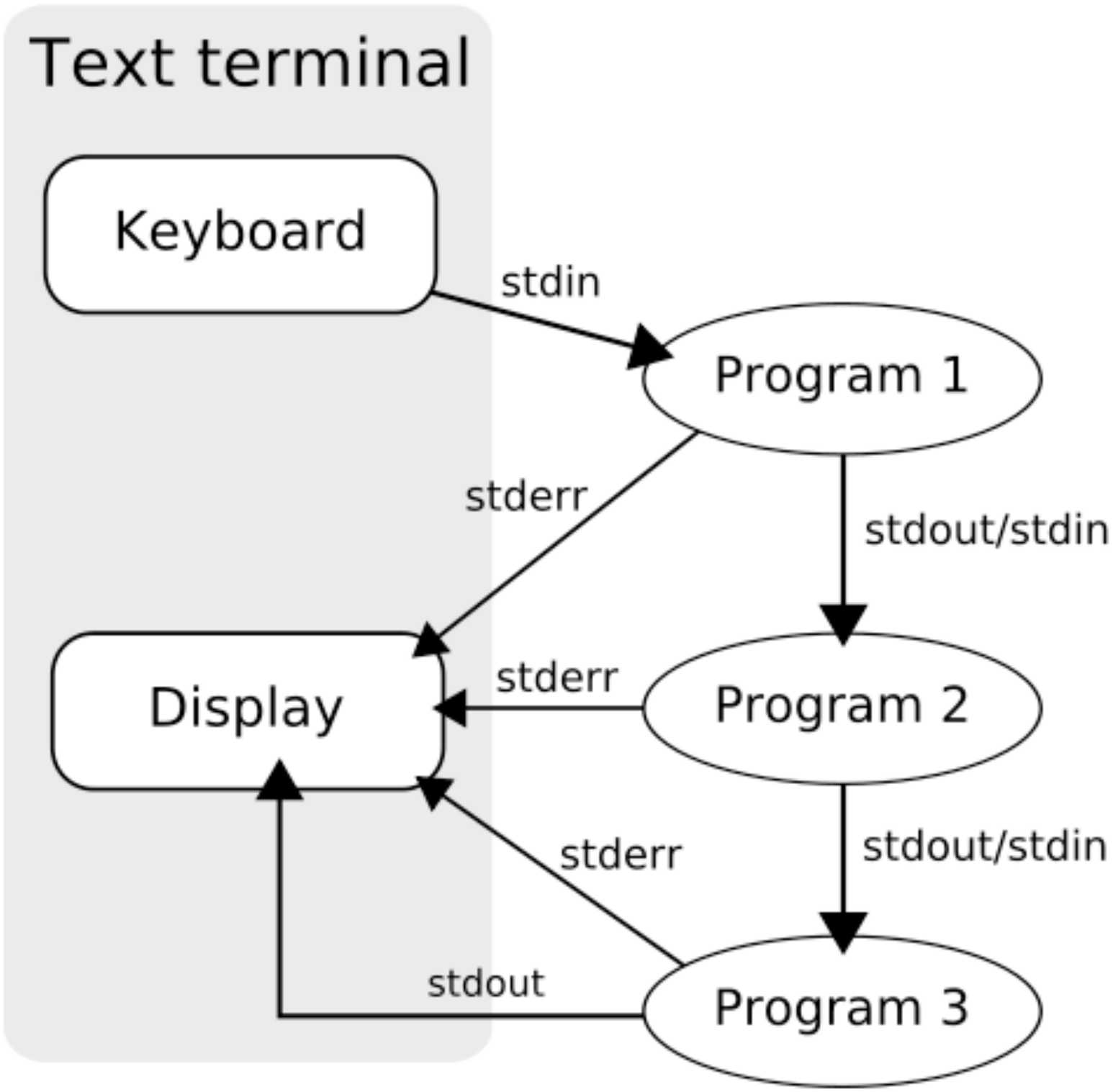
Where to get help?

- **`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


Text terminal
Keyboard
stdin
Program 1
stderr
stdout/stdin
Display
stderr
Program 2
stderr
stdout/stdin
stdout
Program 3

Getting examples

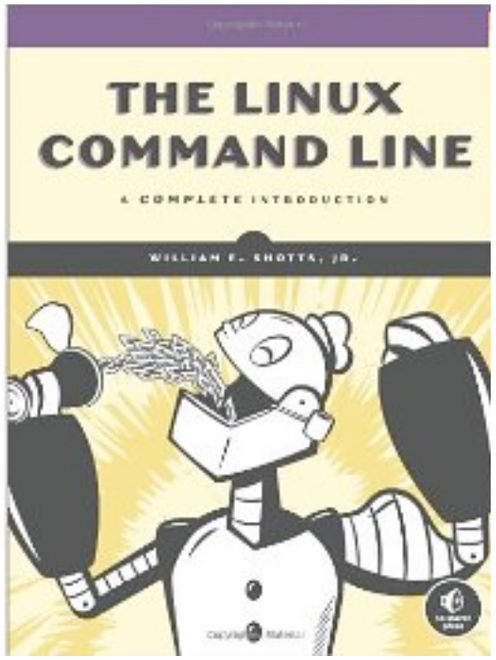
http://www.nics.tennessee.edu/~lucio/crashCourse.tgz ⟶ **http://goo.gl/6OFYEh**

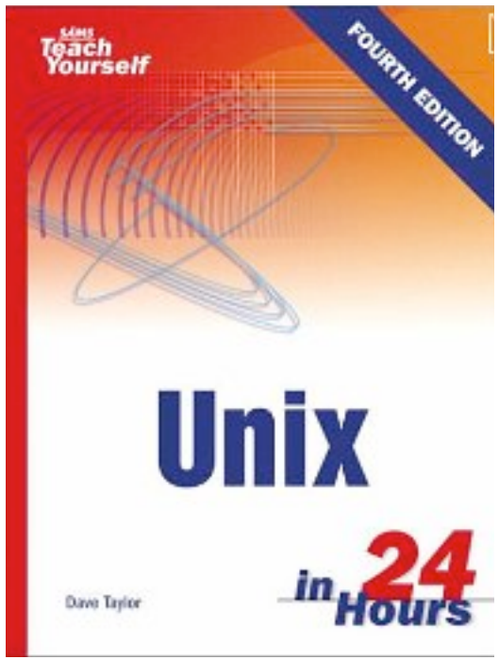
```
$ wget http://www.nics.tennessee.edu/~lucio/crashCourse.tgz
--2013-03-15 08:14:28--  http://www.nics.tennessee.edu/~lucio/crashCourse.tgz
...
$ ls -l crashCourse.tgz
-rw-r--r--  1 lucio  staff  1587590 Mar 15 08:06 crashCourse.tgz
$ gunzip crashCourse.tgz
$ ls -l crashCourse.tar
-rw-r--r--  1 lucio  staff  4956160 Mar 15 08:06 crashCourse.tar
$ tar -xvf crashCourse.tar
x crash/MPI/pi_mpi.c
x crash/MPI/pi_mpi
...
```

```
$ 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