

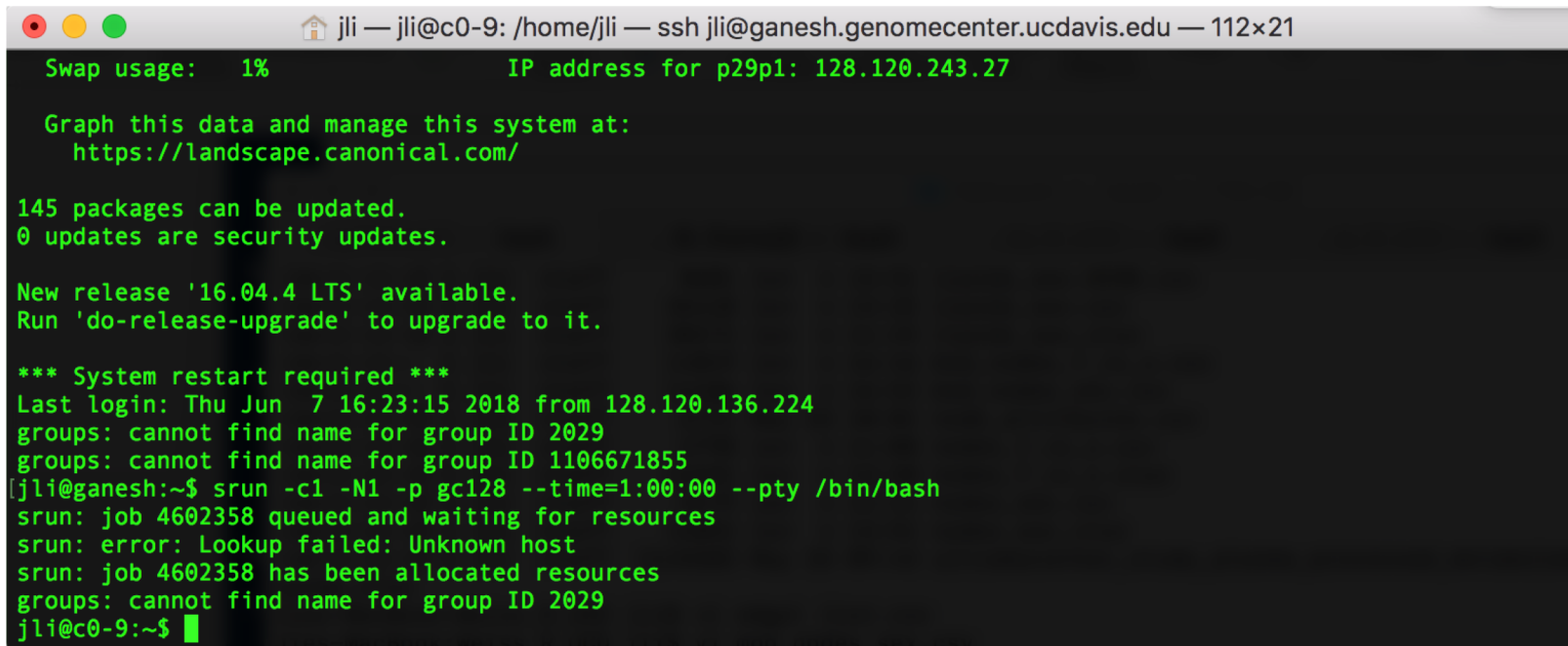
# Introduction to Command Line

Jie Li, PhD

UC Davis Bioinformatics Core

# What is command line interface

- CLI is a tool into which one can type commands to perform tasks.
- The user interface that accepts the typed responses and displays the data on the screen is called a shell. many shell types, most common is bash.
- An all-text display



```
jli — jli@c0-9: /home/jli — ssh jli@ganesh.genomecenter.ucdavis.edu — 112x21
Swap usage: 1% IP address for p29p1: 128.120.243.27

Graph this data and manage this system at:
https://landscape.canonical.com/

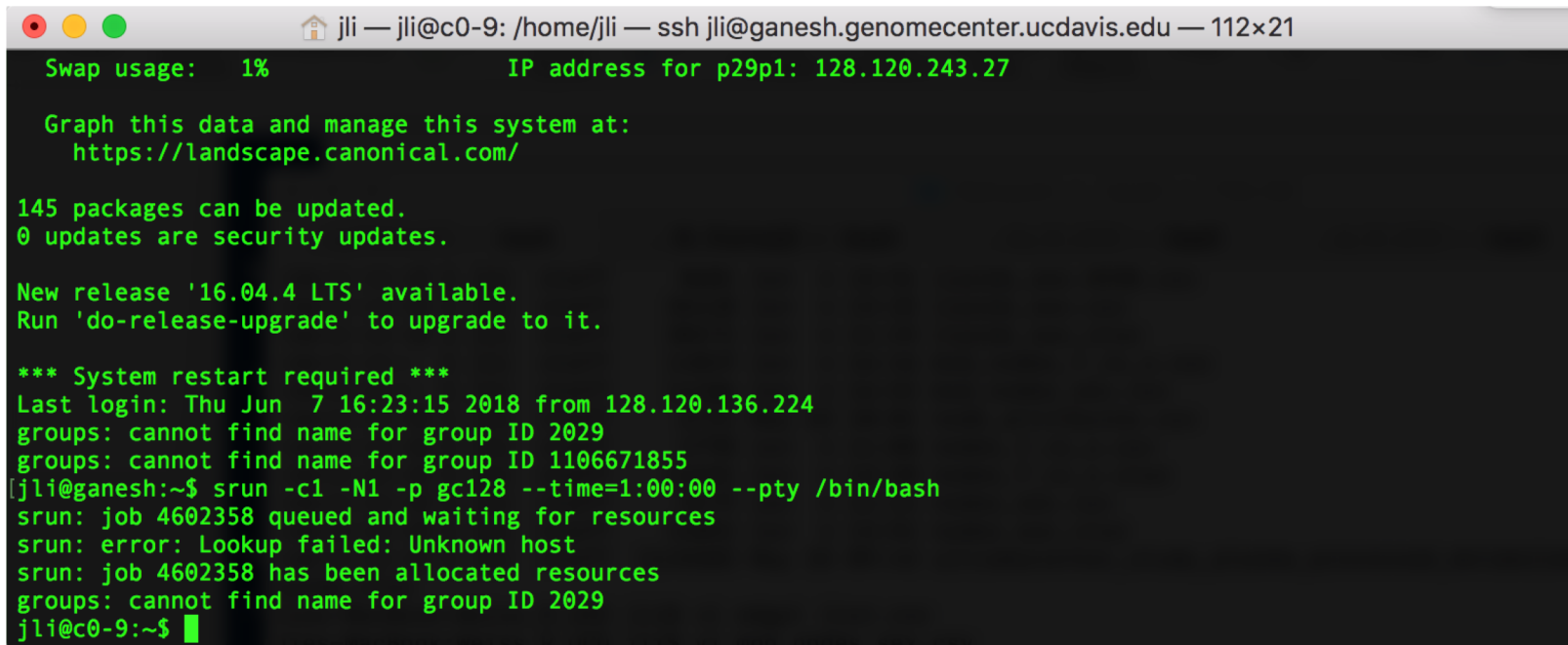
145 packages can be updated.
0 updates are security updates.

New release '16.04.4 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

*** System restart required ***
Last login: Thu Jun  7 16:23:15 2018 from 128.120.136.224
groups: cannot find name for group ID 2029
groups: cannot find name for group ID 1106671855
[jli@ganesh:~$ srun -c1 -N1 -p gc128 --time=1:00:00 --pty /bin/bash
srun: job 4602358 queued and waiting for resources
srun: error: Lookup failed: Unknown host
srun: job 4602358 has been allocated resources
groups: cannot find name for group ID 2029
jli@c0-9:~$
```

# What is command line interface

- A prompt is a short text message at the start of the command line on CLI.
  - Ends with \$ in bash shell
  - Commands are typed after the prompt



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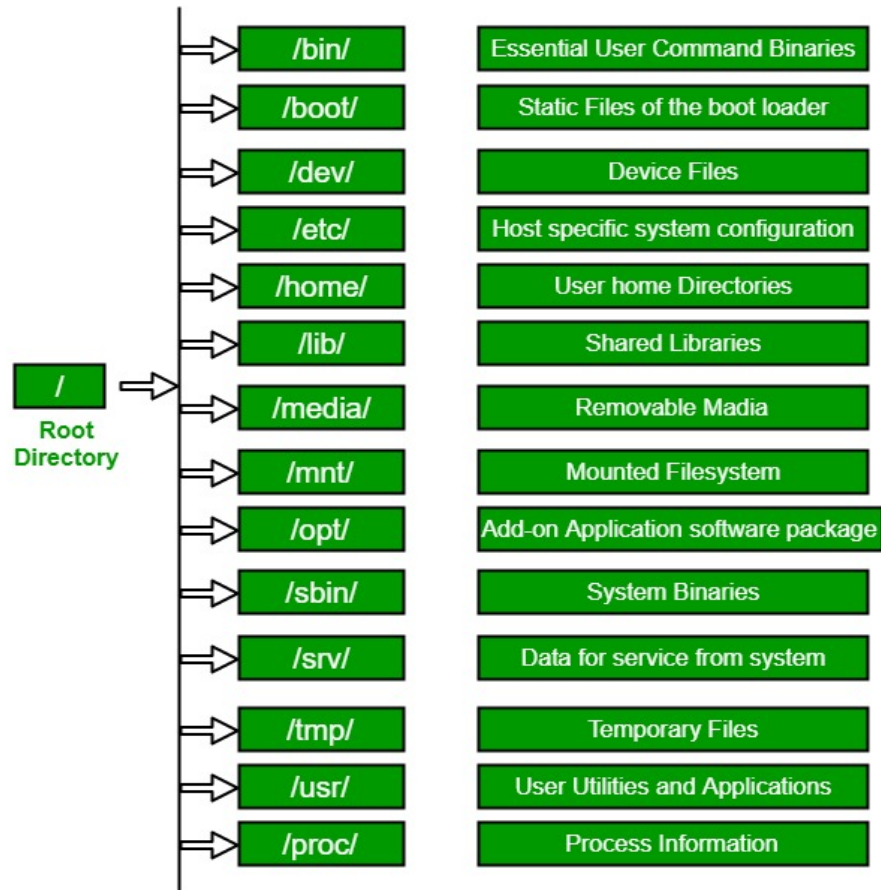
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# File structure in CLI



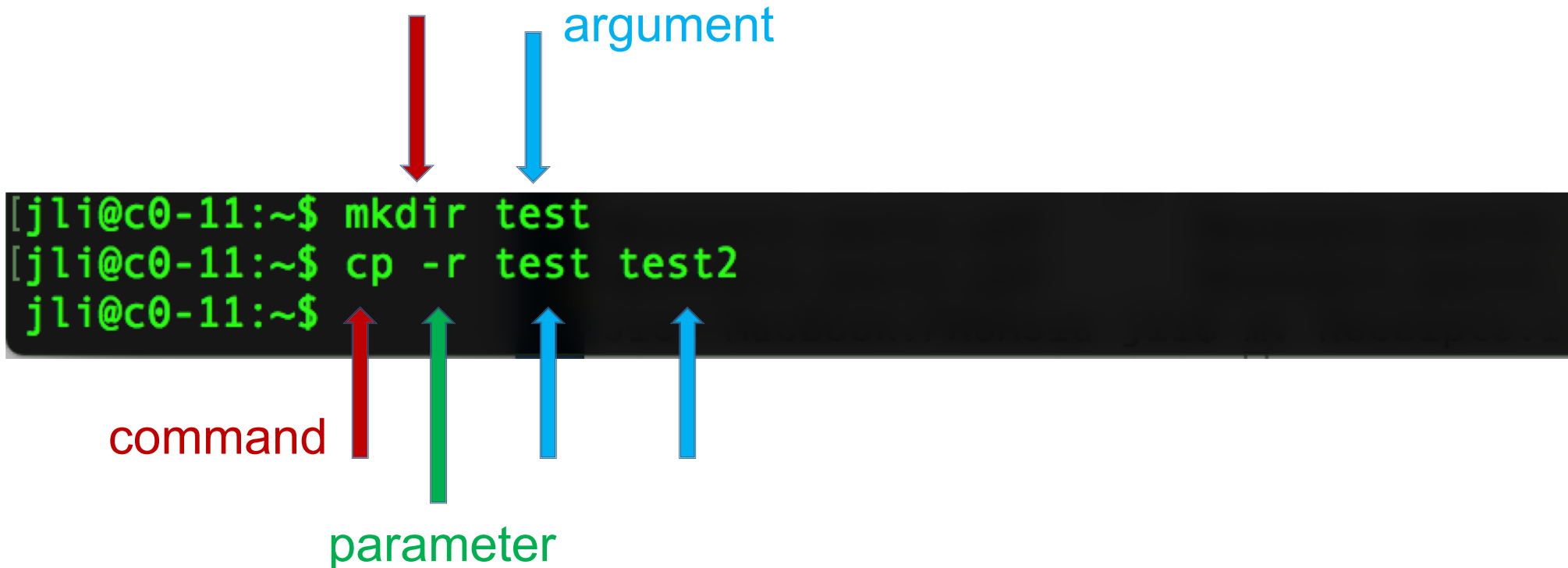
- Usually, **/home** ( **/Users** on a mac) is where the user accounts reside, ie. user's home directory.
  - For example, for a user that has a user name of "jli": /home/jli
  - It is the directory that a user is first at after logging into the system.
  - The *tilde* (~) represents a user's home directory.

# File structure in CLI (continued...)

- Absolute path: always starts with "/"
  - /home/jli/test/file1
- Relative path: always relative to where we currently are
  - a single dot (.) refers to the current directory
  - two dots (..) refers to the directory one level up

# Syntax of a command in CLI

- A command plus the required parameters/arguments
- The separator used is space



# Move around in CLI

- Command to find out where we currently are
  - **pwd** (**p**resent **w**orking **d**irectory)
- Command to change to another directory
  - **cd** (**c**hange **d**irectory)
    - use absolute path: `cd /home/jli/test/run1`
    - use relative path: `cd ../`
    - without any argument (just `cd`), by default, change to user's home directory

# Display files in CLI

- Command to display a list of files
  - **ls**
    - without any other parameters, it list all files/directories inside the current directory
    - may be combined with a path to list a specific file/directory
    - to show all files/directories and their associated information: *ls -lah*
      - 3 params: *-a* is for hidden files, *h* is for human readable file sizes, *l* is for long listing

```
drwxr-xr-x 12 jli biocore 60 Apr 9 11:53 tmp
-rw-rw-r-- 1 jli biocore 1823 May 14 15:42 tt
-rw-rw-r-- 1 jli biocore 3614 Dec 27 2016 tt2
drwxr-xr-x 2 jli biocore 3 Jun 8 10:31 .vim
-rw-r--r-- 1 jli biocore 29136 Jun 8 16:27 .viminfo
drwxrwxr-x 6 jli biocore 6 Sep 26 2016 virtualenv
drwxrwxr-x 8 jli biocore 9 Oct 6 2016 virtualenv-falcon
drwxrwxr-x 6 jli biocore 6 Nov 17 2016 virtualenv-pysam
drwxrwxr-x 4 jli biocore 4 Oct 20 2017 virtualenv-snakemake
drwxrwxr-x 6 jli biocore 6 Nov 3 2016 virtualenv-tools
drwxrwxr-x 2 jli biocore 2 Feb 10 2017 virtualenv-unzip
```



# Move things around in CLI

- Command to move something from one place to another, also the way to rename a file.
  - **mv** (move)
    - two arguments required:
      - the file/directory that you want to be moved
      - the new location
    - it is also the command to rename things in CLI

# Create things in CLI

- Command to create a directory
  - **mkdir (make directory)**
    - one argument required:
      - the directory that you want to create
    - may create multiple directories at the same time
    - by default, the directory is created in the current directory, unless another valid path is given
- Methods to create a file
  - Files can be created with a text editor, such as vi, vim, nano, Emacs (nano is the simplest)
  - An empty file can be created using 'touch' followed by the file name.

# Make copies of things in CLI

- **cp (copy)**
  - two arguments required:
    - the thing to copy
    - the place to put the copy
  - use -r parameter to copy a directory (recursively)

# Remove things in CLI

- **rm (remove)**
  - by default, it only removes a file
  - in order to remove a directory, use -r parameter (recursively)

```
drwxrwxr-x  2 jli biocore  2 Jun  8 17:28 test
```

```
[jli@c0-11:~$ rm test  
rm: cannot remove 'test': Is a directory  
[jli@c0-11:~$ rm -r test  
jli@c0-11:~$ █
```

**NEVER EVER** use the following command, unless you really mean it

**rm -rf \***

**Remove everything in this directory**

# Move things to/from a remote location in CLI

- Between two remote unix (command line) based locations
  - **scp** (secure copy)
  - wget
  - curl
  - rsync
- On Windows/Mac machines
  - WinSCP
  - Filezilla
  - Cyberduck
  - many others