Basic Unix

Biochemistry laboratories - 201

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Find this document here (short URL) today: **http://go.wisc.edu/4iu8u5**

Note: To see as slides click on **"Gift icon"** at the top right. To revert back to page view click on **"book icon"** when on the first slide.

Set-up

- check your name on the attendees list
- choose an iMac
- login with your NetID (@wisc.edu is not necessary)
- If this is the first time this Mac "sees" you it will go through a quick set-up: simply skip using "Apple ID"

Finding Terminal on the iMac

Terminal

Method 1

- Click on the "Finder"

  at the bottom left of the **"Dock"** on the bottom of the screen. This will open a new window.
- On the left click on **"Applications"**
- In the alphabetical list open folder **Utilities**
- double click to open **Terminal**

Method 2

- *Spotlight Search*: Click the magnifying glass  at the top right corner of your screen
- type `Terminal`
- press the `return` key

Web Linux Terminal

Today we'll work in Mac OS Terminal.

You can try the *Linux* option later within a web-based terminal

Choice	URL
Best	http://www.tutorialspoint.com/unix_terminal_online.php
Good	http://bellard.org/jslinux/

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Unix Exercise Files

Hand-outs are in HTML format:

- Basic Unix Part I: Unix001.html (https://biochem.wisc.edu/sites/default/files/facilities/bcrf/tutorials/unix/basic_unix/unix001.html)
- Basic Unix Part II: Unix002.html (https://biochem.wisc.edu/sites/default/files/facilities/bcrf/tutorials/unix/basic_unix/unix002.html)

Note: other formats and other tutorials are at https://biochem.wisc.edu/bcrf/tutorials

Class evaluation

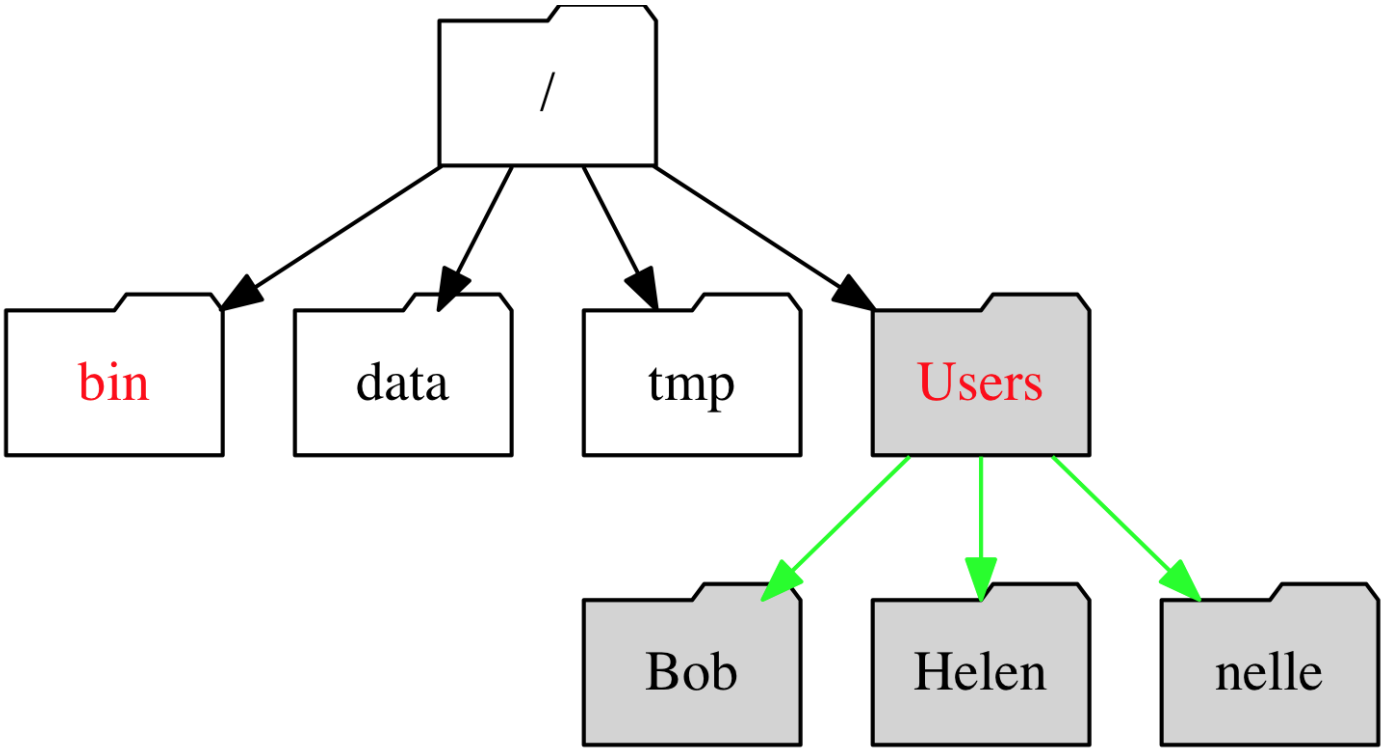
After class:

- fill-in the one page "evaluation" form for this class

The evaluation is **anonymous**. Evaluation link on Qualtrics (https://uwmadison.co1.qualtrics.com/SE/?SID=SV_abfJhXcXXzbTMwd) or type: http://go.wisc.edu/tgep55

Note: Survey will be unlocked when workshops are held.

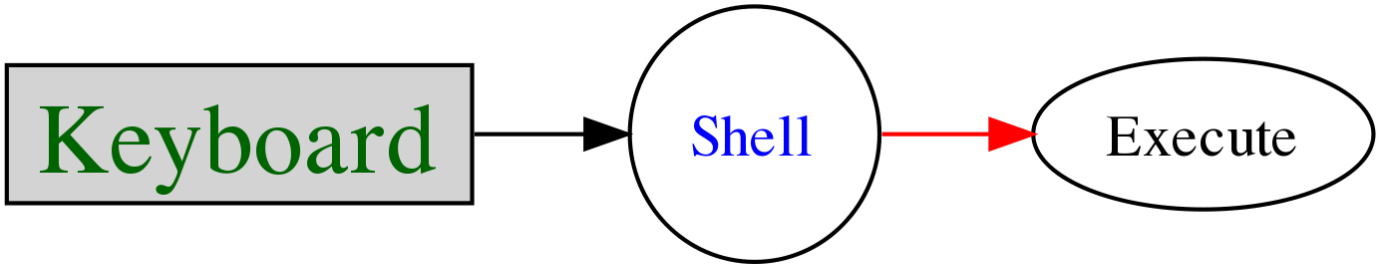
Hard drive file system



Root:

/

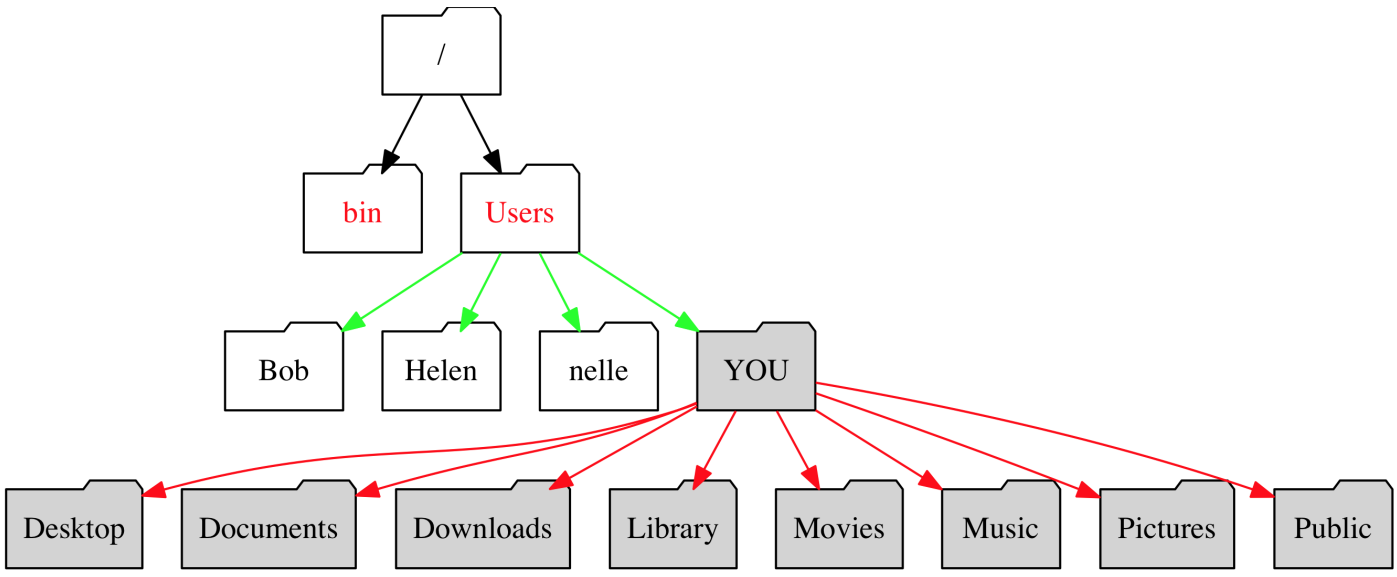
Command-line operation: The Shell



The prompt

$

Your hard drive area



Your user space

```
whomai
```

Home directory

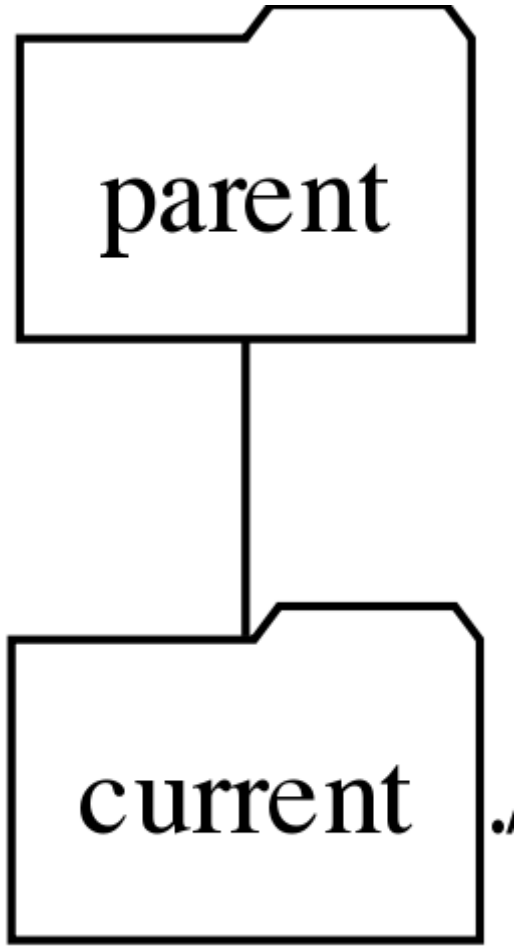
```
~
```

Print working directory (current directory)

```
pwd
```

Current and Parent directories

Diagram	Naming convention

	`../`
	dot dot
	
	Parent directory:
	directory “above” containing the “current” directory.
	
	`./`
	dot
	
	Current directory

Absolute and Relative *path*

Absolute: starts with / root level

Relative: relative to another directory

For example using

`../`

`../../../../`

`../../Documents`

etc.

List files

ls

Long list of *home directory*

ls ~

```
total 0

drwx------+  5 YOU  AD\Domain Users   170 Mar 15 18:36 Desktop

drwx------+  3 YOU  AD\Domain Users   102 Jun 19  2014 Documents

drwx------+  5 YOU  AD\Domain Users   170 Mar 15 18:36 Downloads

drwx------@ 43 YOU  AD\Domain Users  1462 Mar 15 18:36 Library

drwx------+  3 YOU  AD\Domain Users   102 Jun 19  2014 Movies

drwx------+  3 YOU  AD\Domain Users   102 Jun 19  2014 Music

drwx------+  3 YOU  AD\Domain Users   102 Jun 19  2014 Pictures

drwxr-xr-x+  5 YOU  AD\Domain Users   170 Jun 19  2014 Public
```

Groups and Privileges

In order to organize privileges and permissions the Unix system is designed around the following definitions:

User group	Definition
user	A user of the computer. Your specific user name is shown with `whoami`.
group	Multiple users can be assembled into a group *e.g.* from the same lab. The system administrator of the computer will create the group.
others	This is "anyone" else; on older system this was called "the world".
all	Contains everyone including user, group and anyone but not present in this listing.

Table: Definitions of user groups. In the listing above they belong to user `YOU` and group `AD\Domain Users`.

Privileges

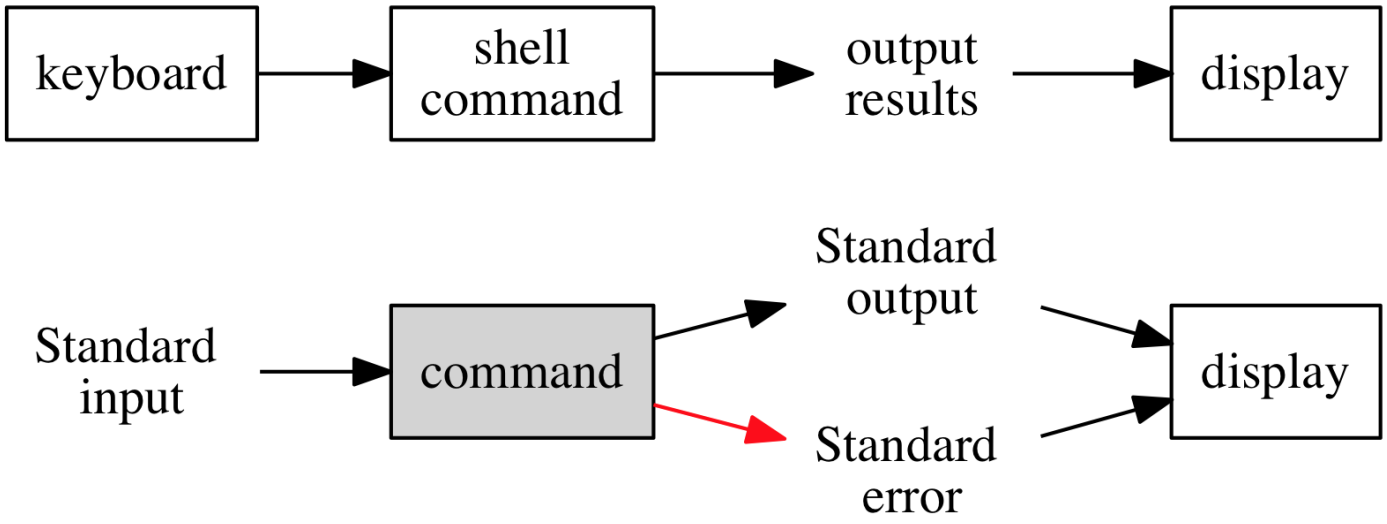
Privilege	Definition
d	This is a directory
r	The file can be read.
w	The file can be writen or even overwriten.
x	The execute privilege. For a directory it means its content can be listed.
-	The privilege within that column is not granted.

Table: Privilege tags

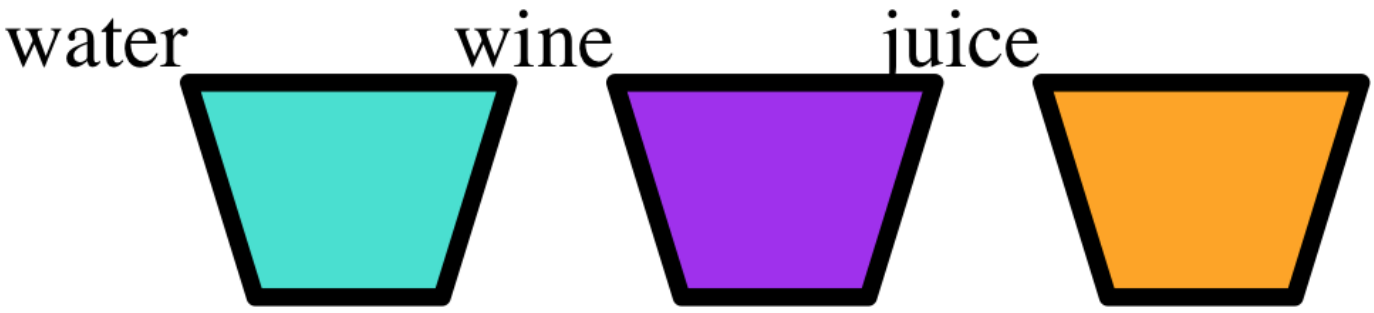
Standard Input/Output streams

Handle	Name	Description
0	stdin	Standard input
1	stdout	Standard output
2	stderr	Standard error

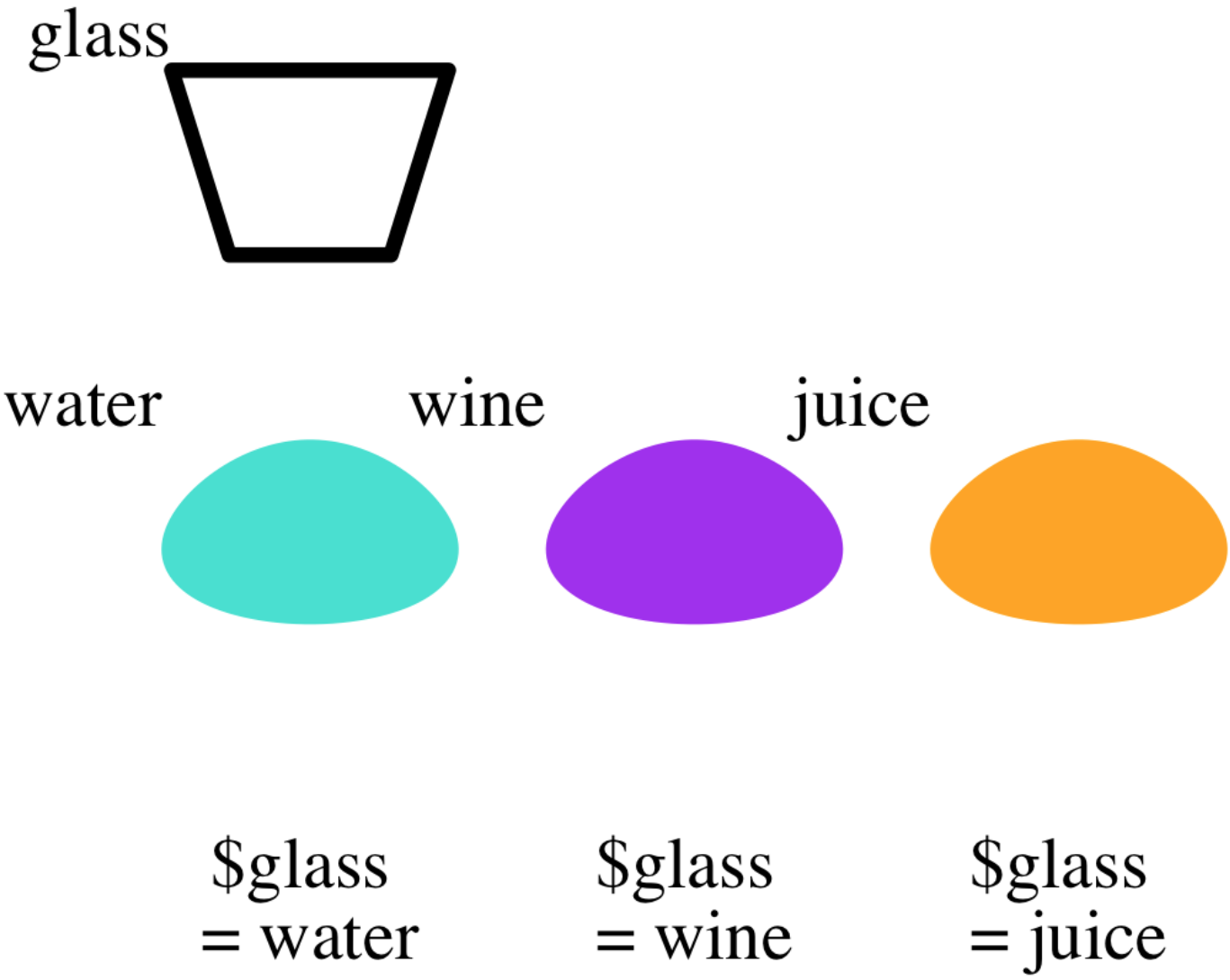
Table: Understanding I/O streams numbers



Variables



The glass content can vary. The glass is the variable, the content is the variable value.



Separating the container and the content:
‘glass’ is the container ‘$glass’ is the content and can vary.