INTRO TO LINUX SERVER & CCR

SESSION 01

By: Ningji Wei

October 8, 2018

Youtube Link: https://youtu.be/Mc88Eh5qy3M

University at Buffalo The State University of New York

Contents:

What is CCR

What is CCR

- CCR: Center for Computational Research

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- Super Computer

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- A Server with CentOS Linux

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Why CCR

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- Computing Power

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Why CCR

- Computing Power
- Consistent Environment
- Easy Access

Most Popular Server OS in 2018

Source: http://techglamour.com/server-operating-system/

Most Popular Server OS in 2018

- Microsoft Windows Server
- Red Hat Enterprise Linux Server
- Ubuntu Server
- CentOS Server
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} All Linux Based Servers

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Companies & Devices Running on GNU/Linux

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Everything in this workshop can be directly used for or easily adapted to other Linux servers and systems.

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How to Connect to a Server (such as CCR)

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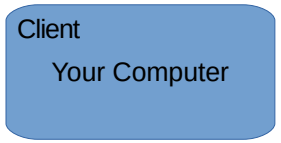

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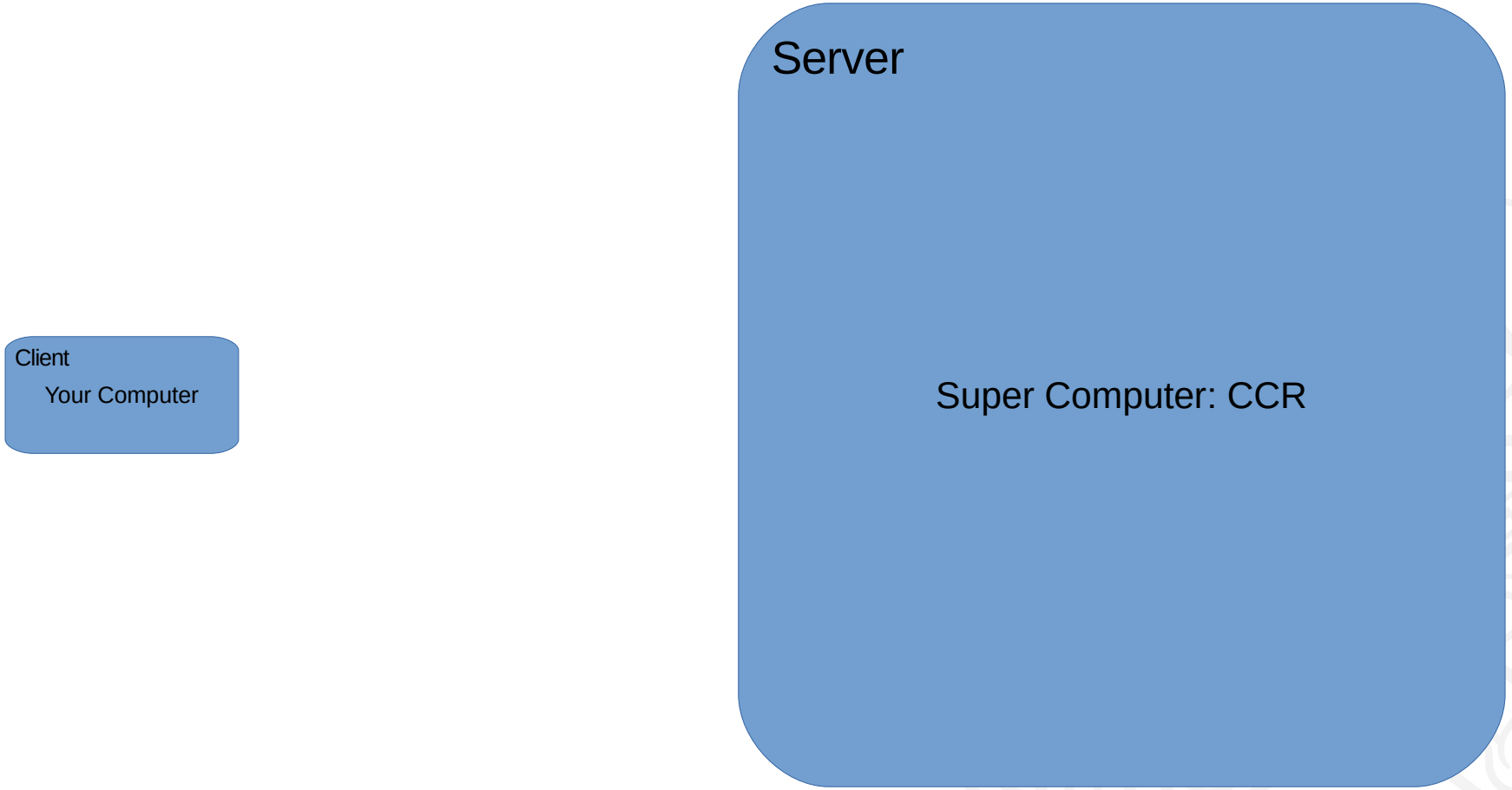

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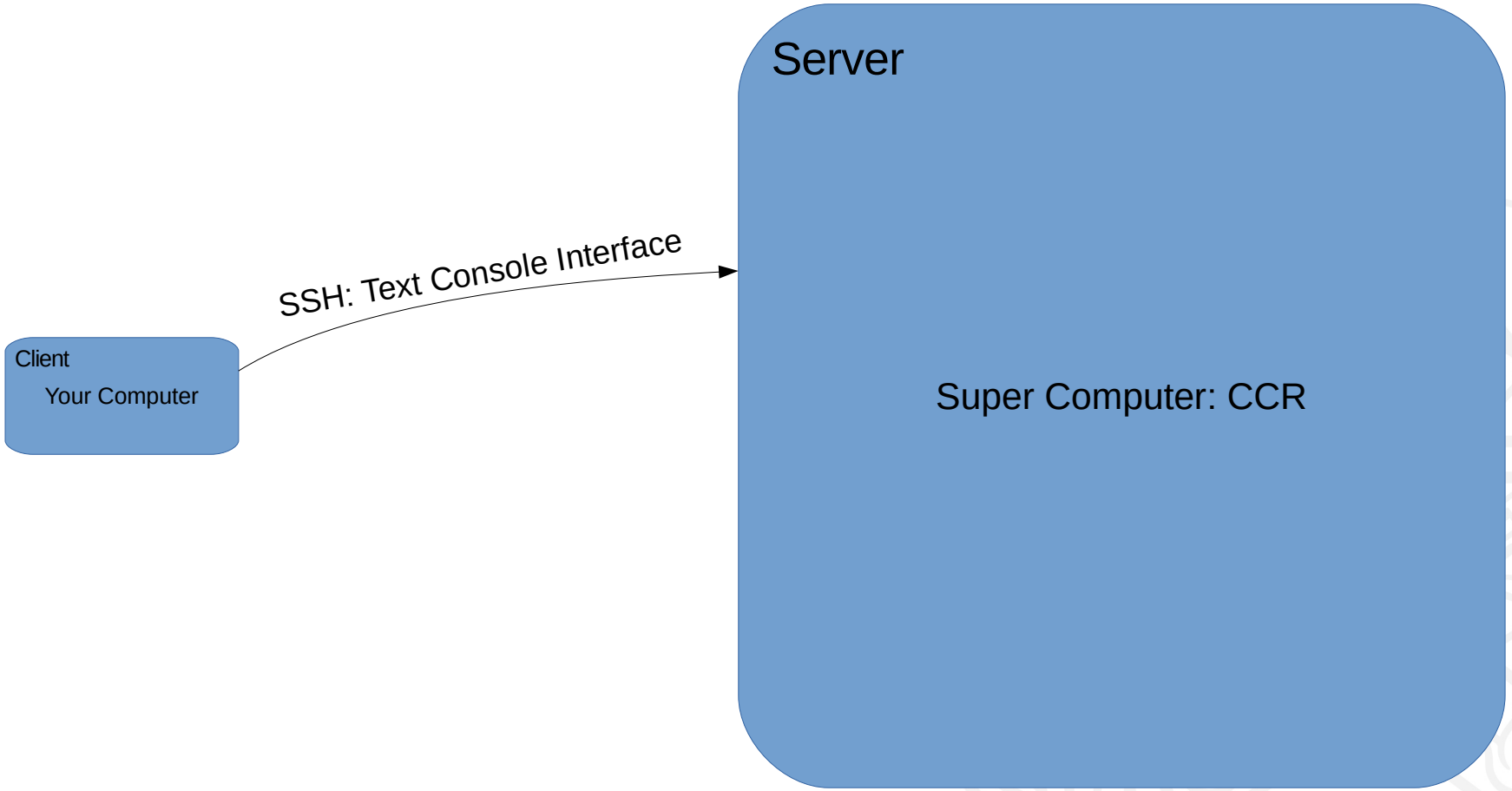

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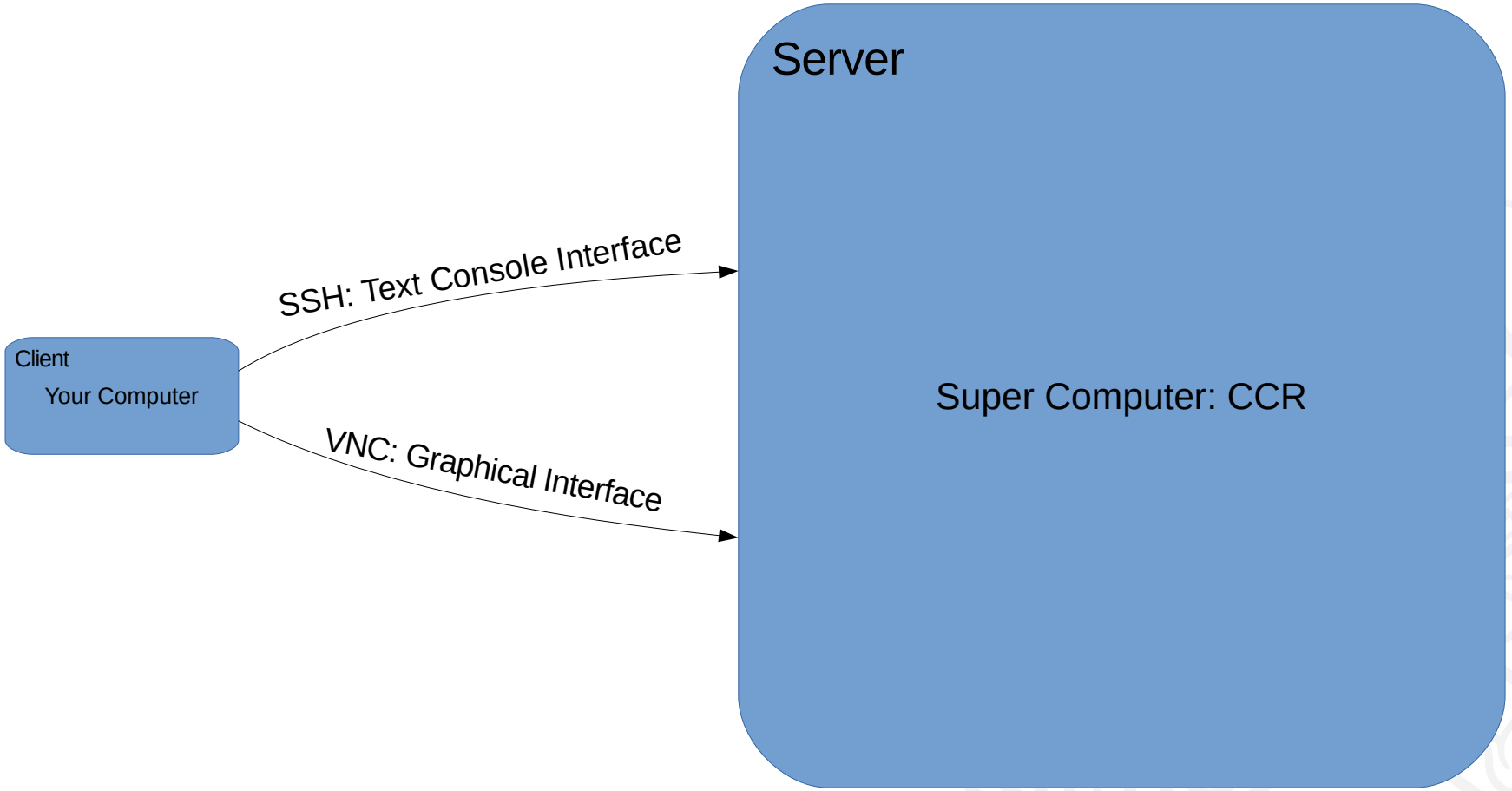

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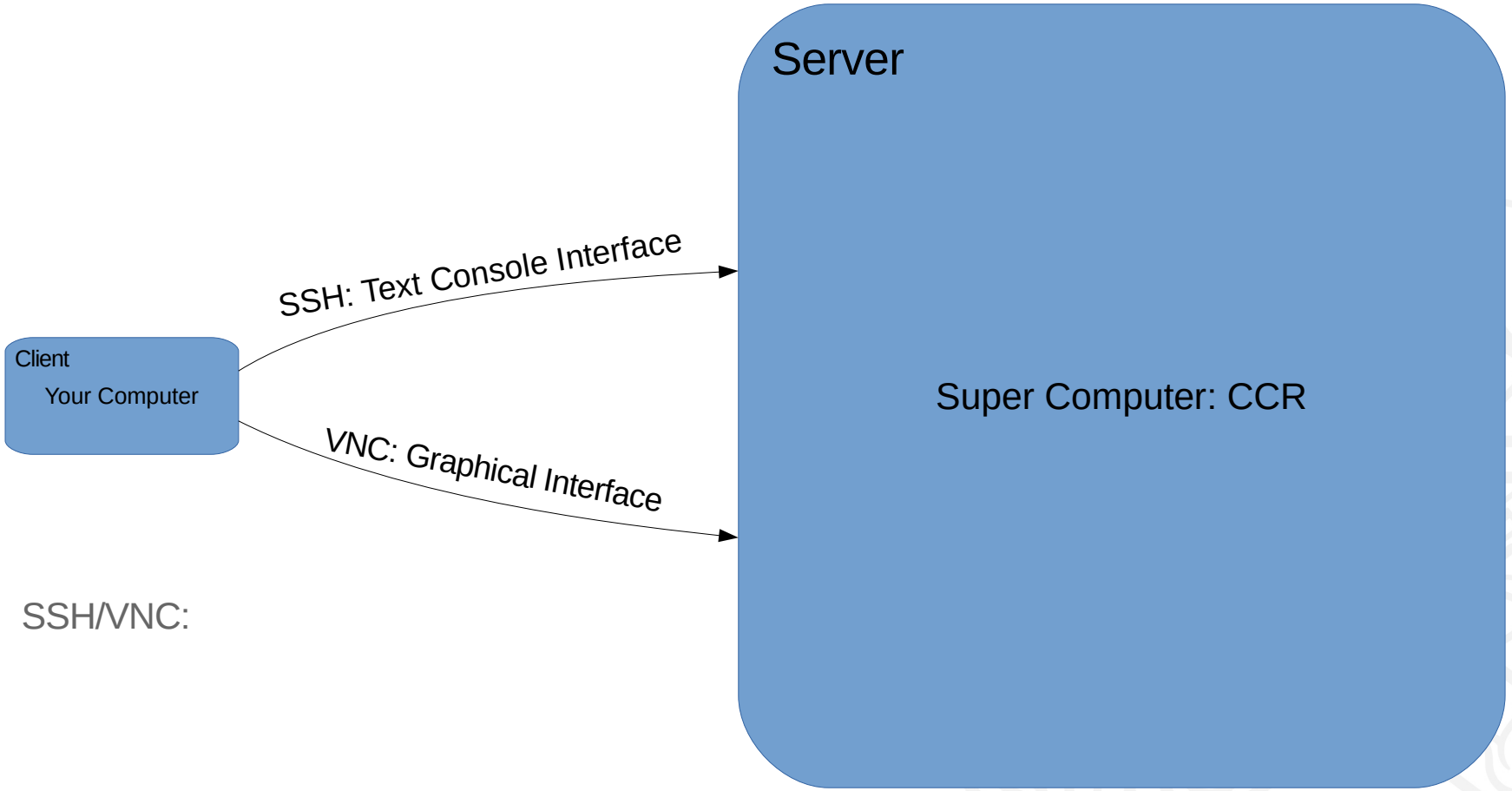

SSH/VNC:

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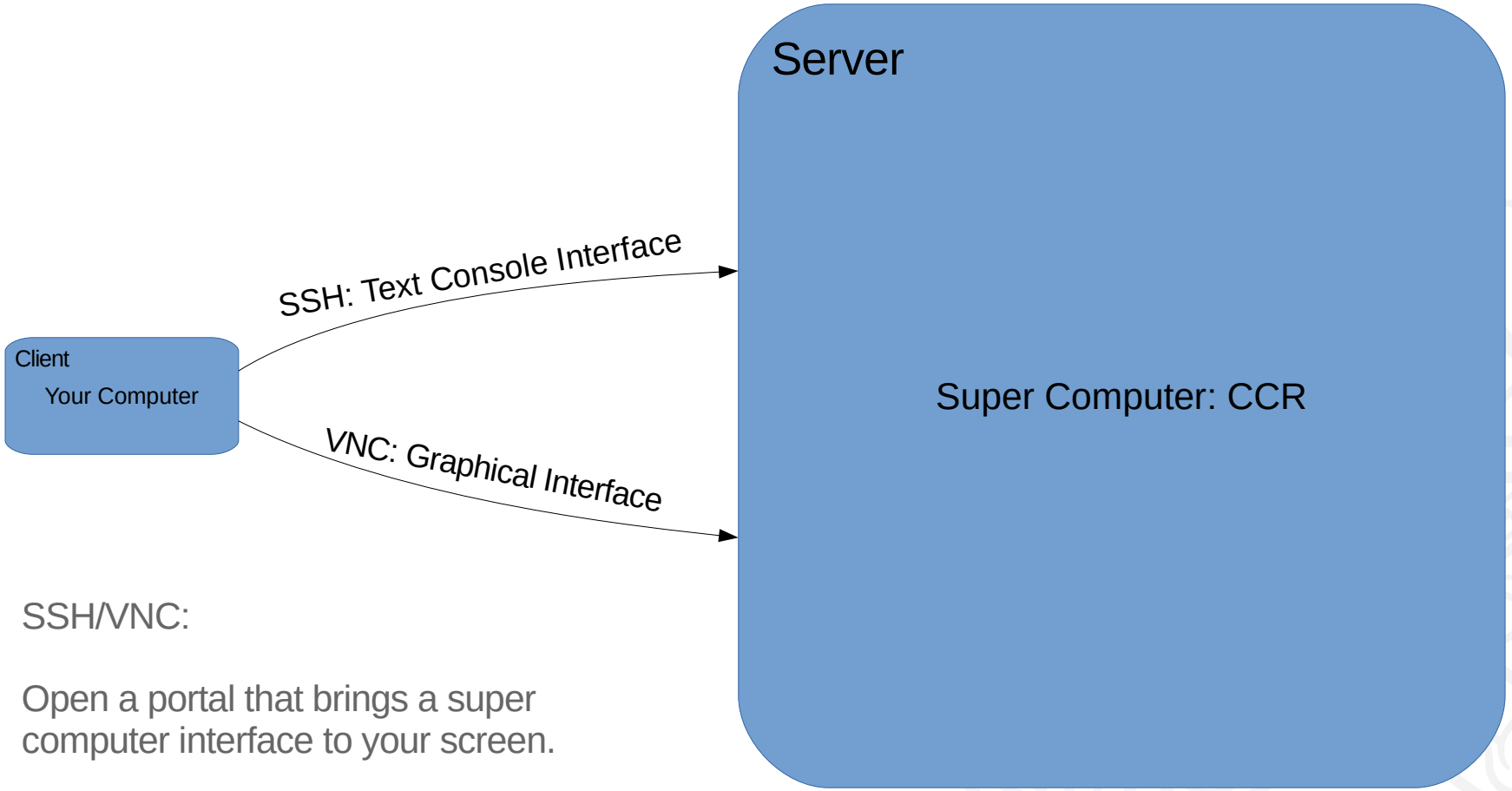

SSH/VNC:

Open a portal that brings a super computer interface to your screen.

The Face of a Server

The Face of a Server

You may think

SUPER ~

The Face of a Server

You may think

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In reality

where is my cursor

The Face of a Server

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WHY!!!

A Draft of System Structure

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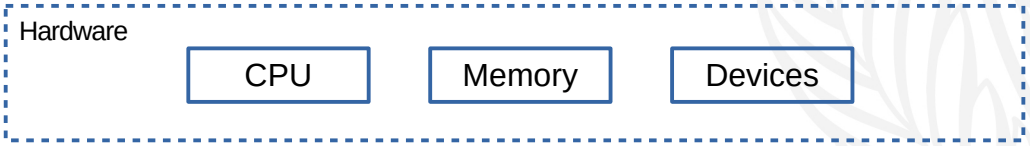

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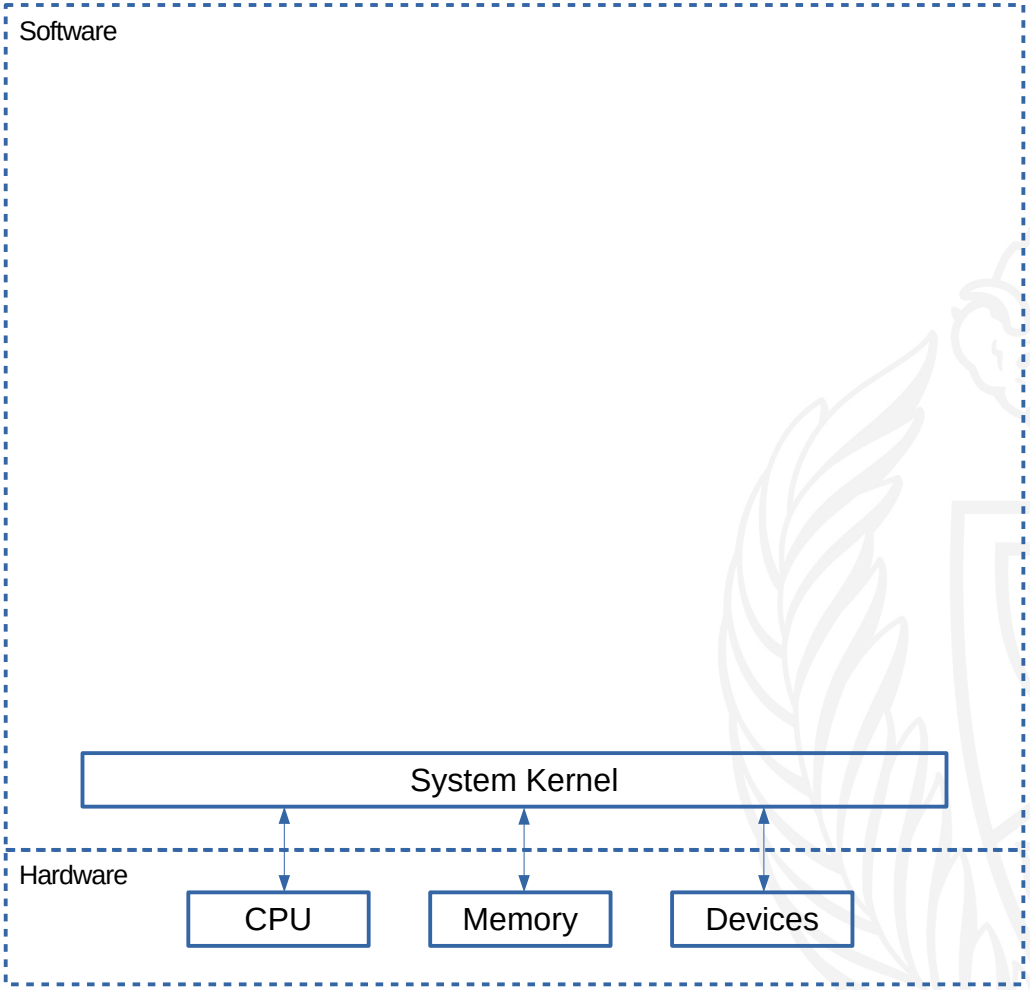

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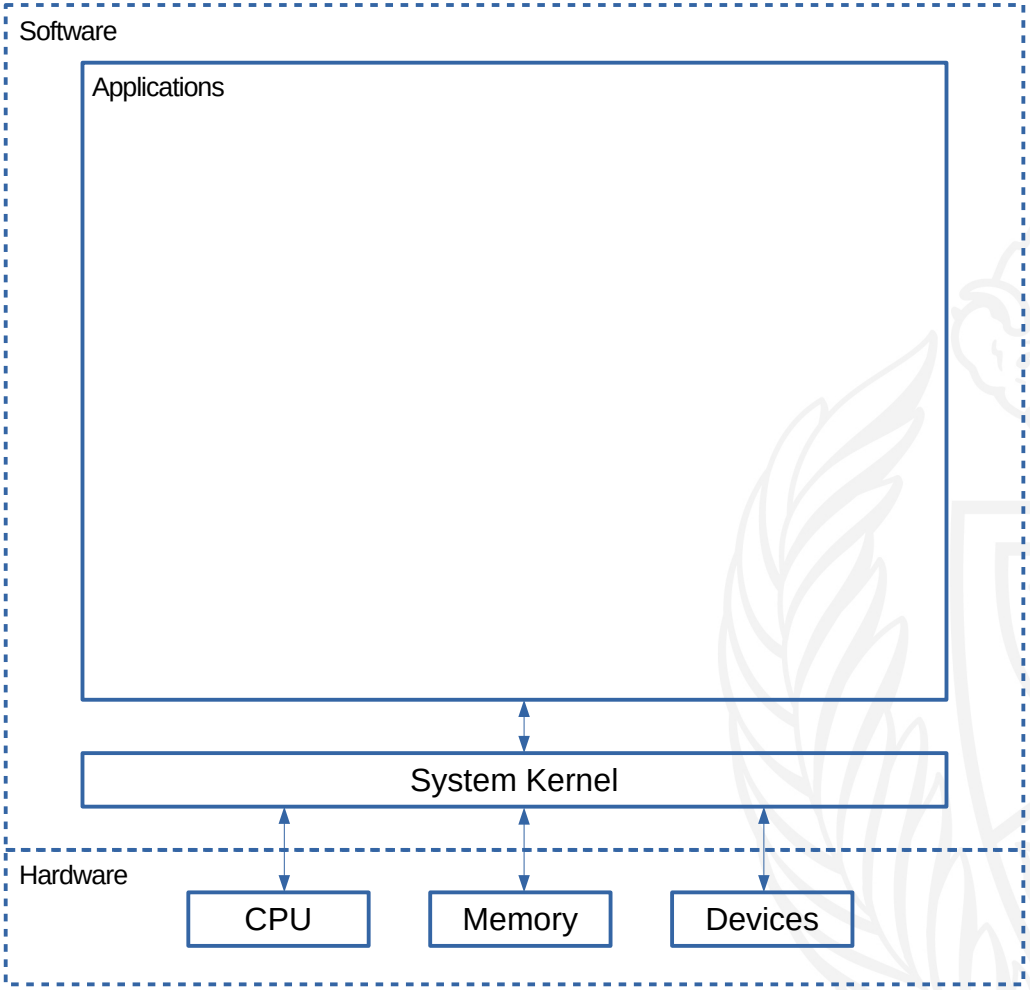

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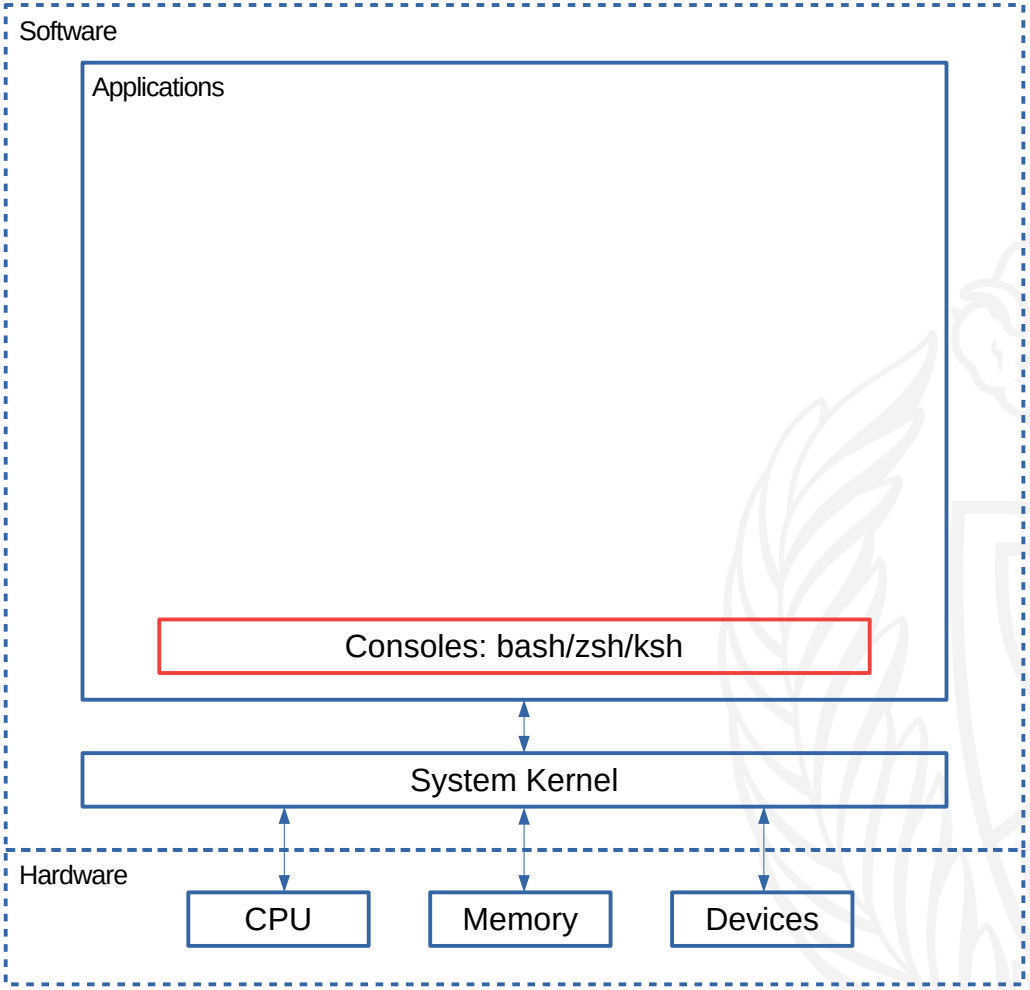

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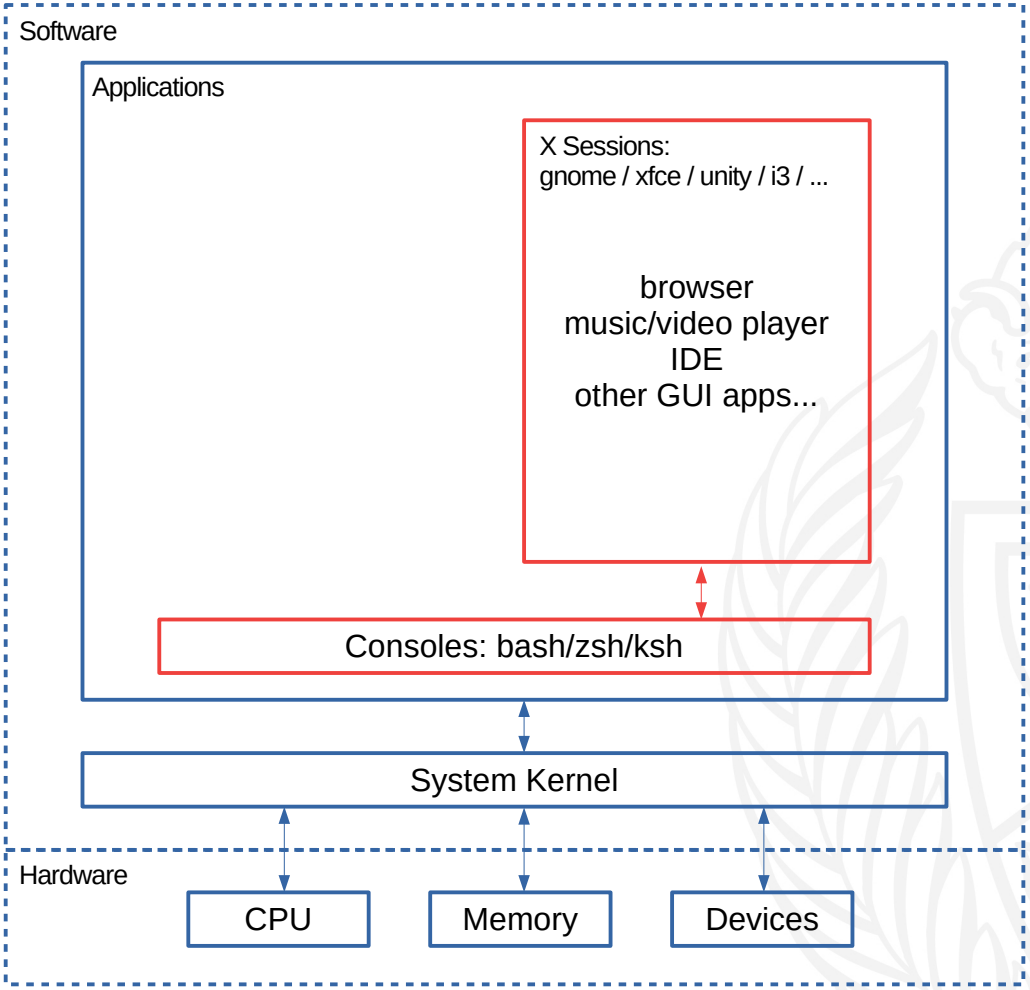

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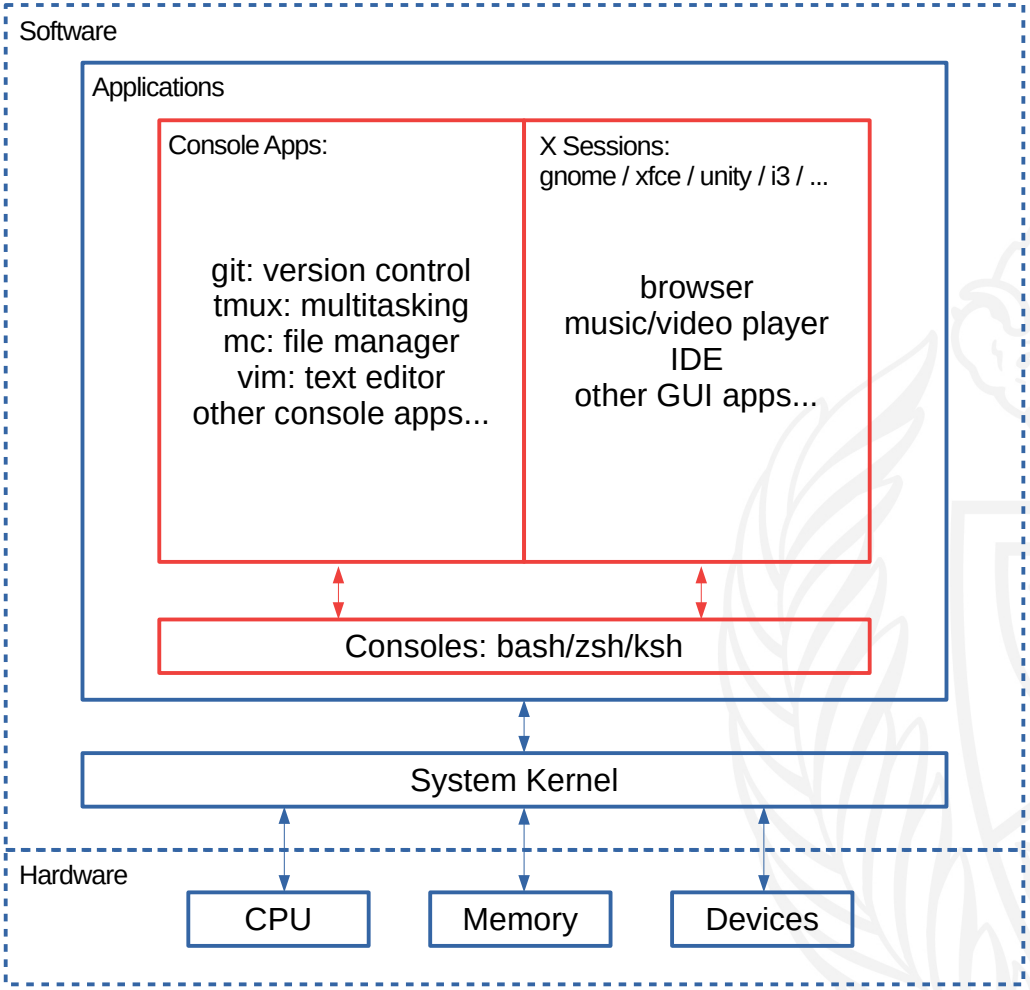

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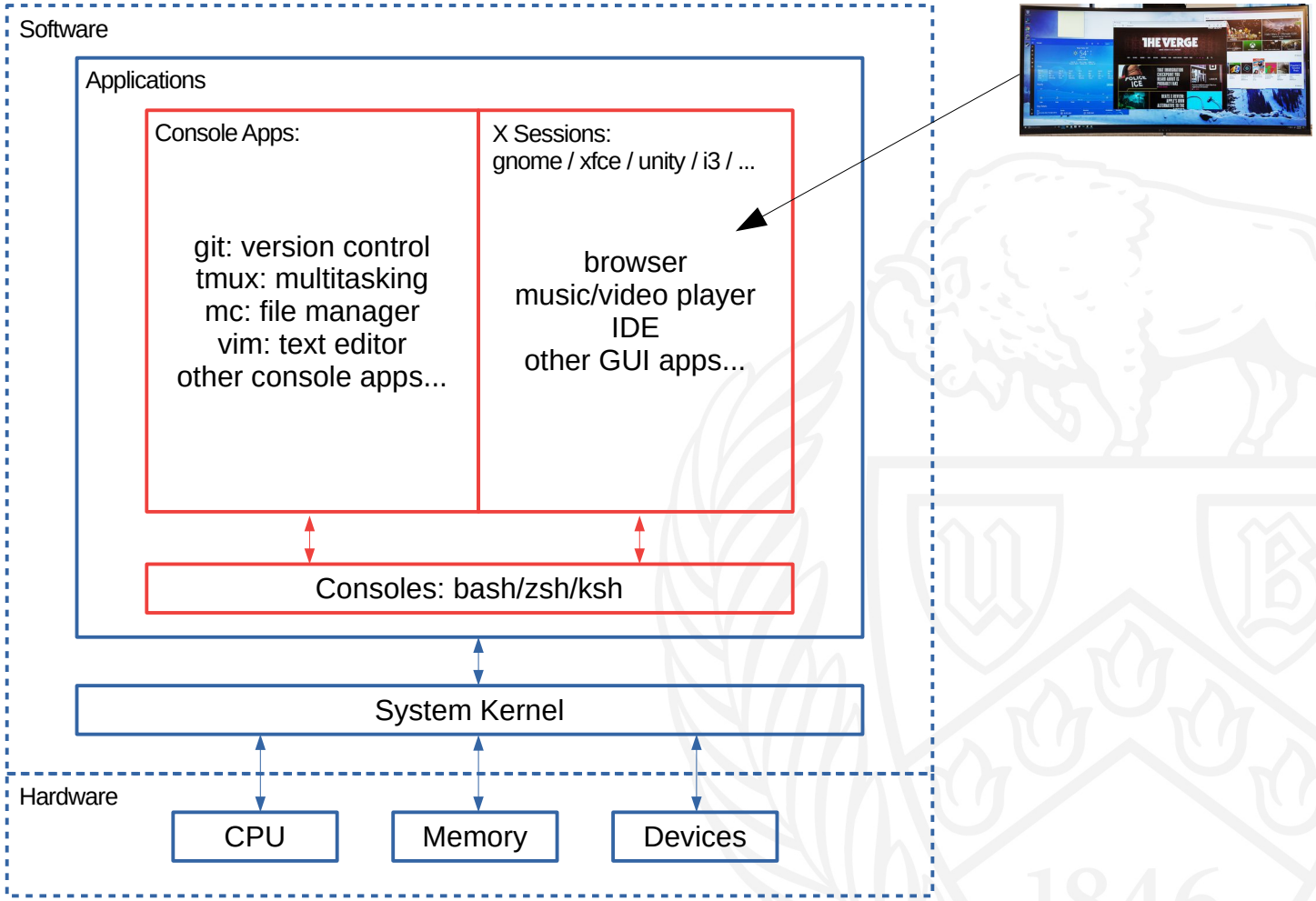

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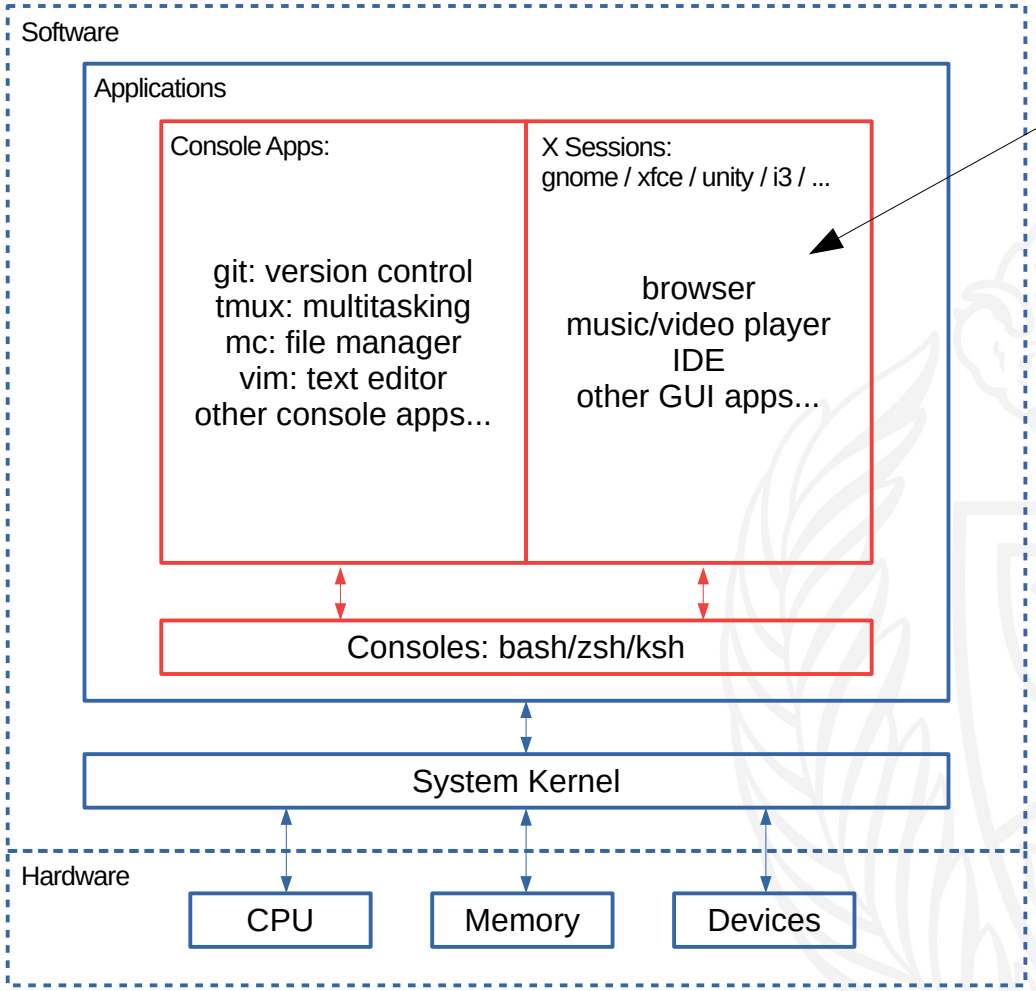

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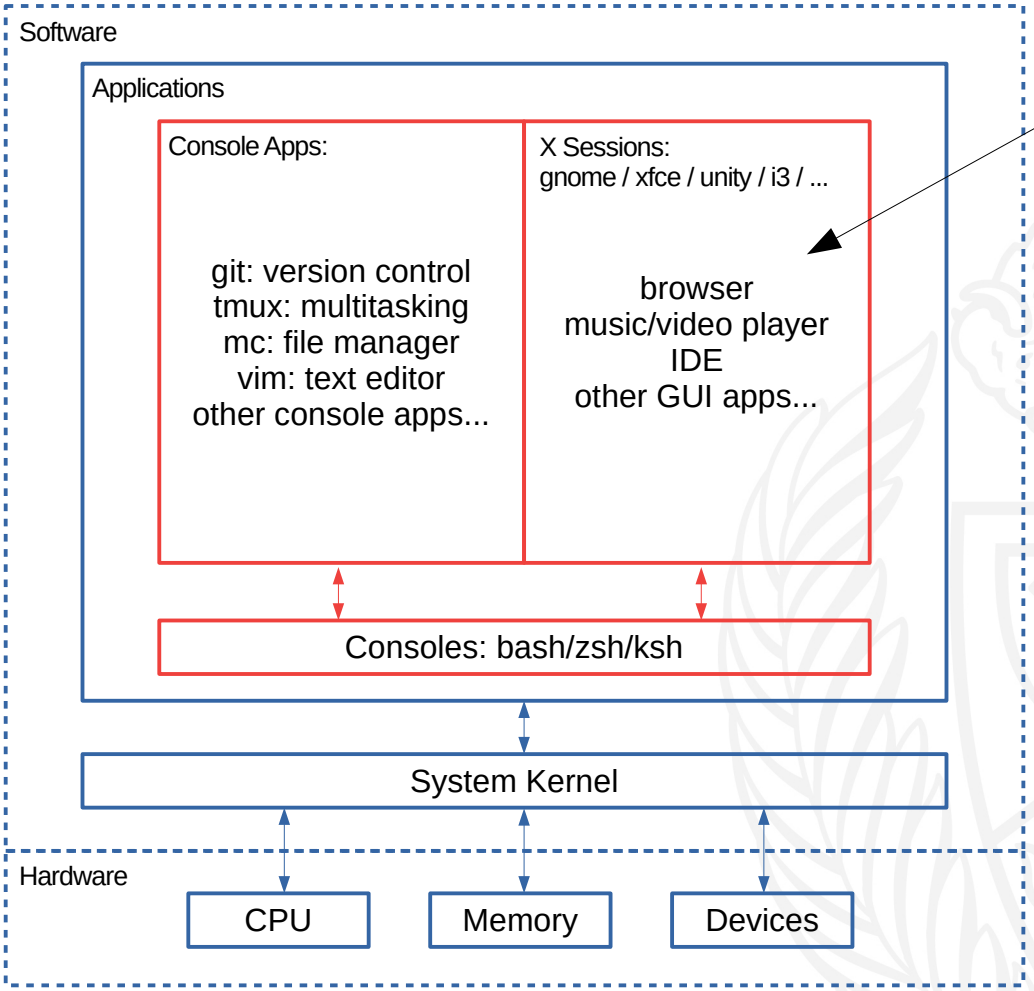

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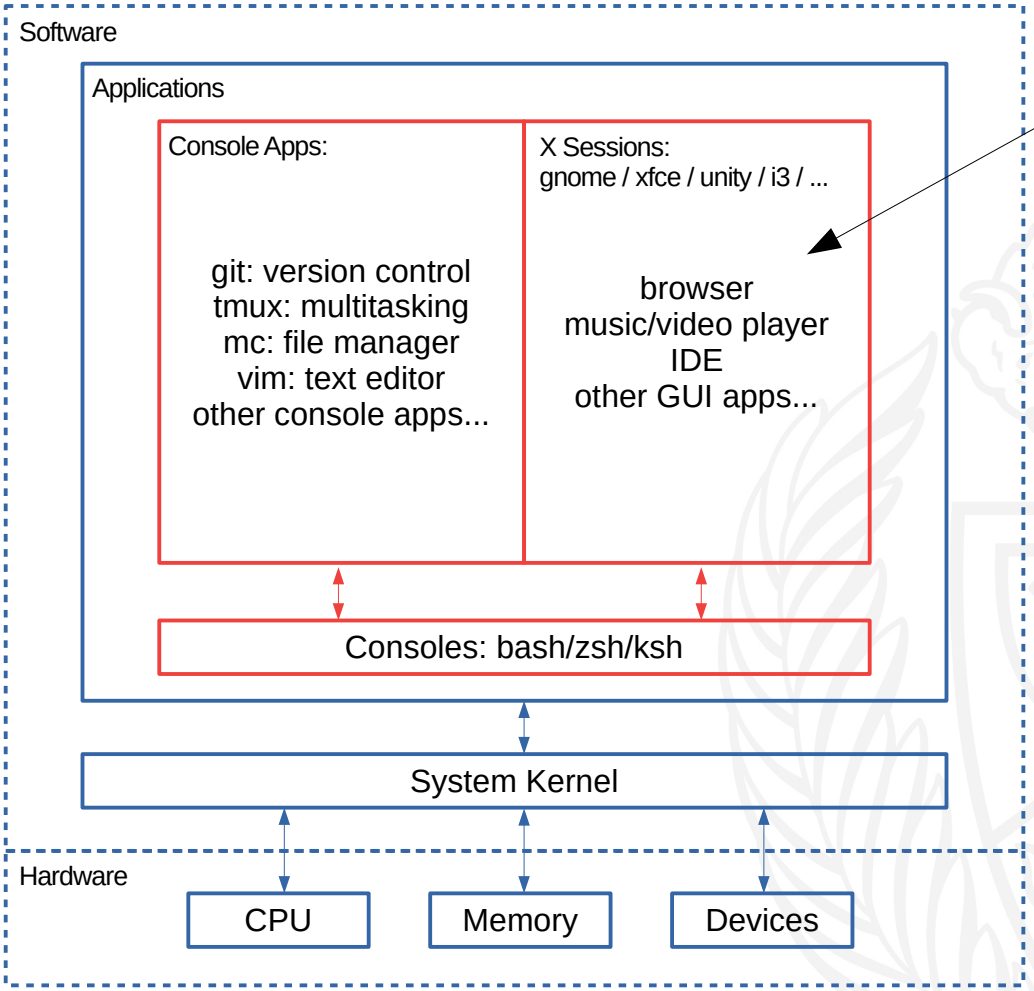

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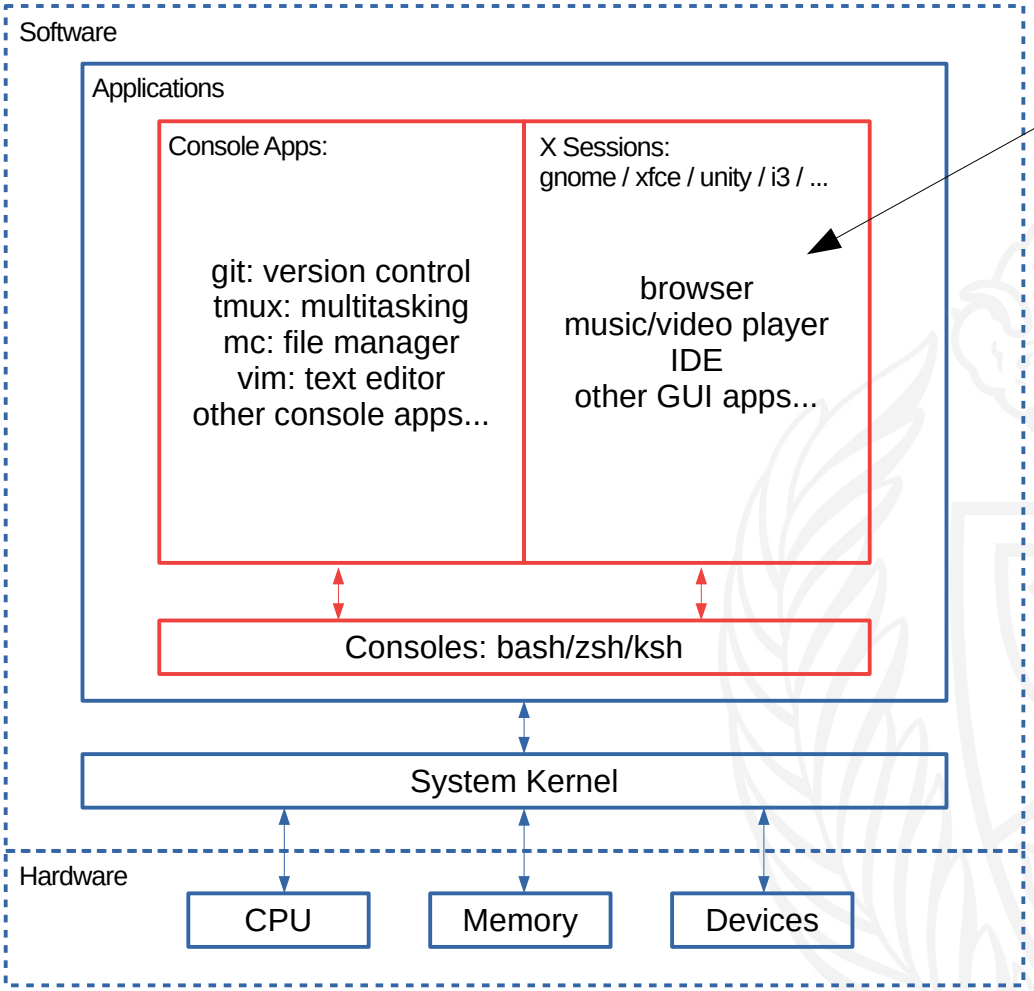

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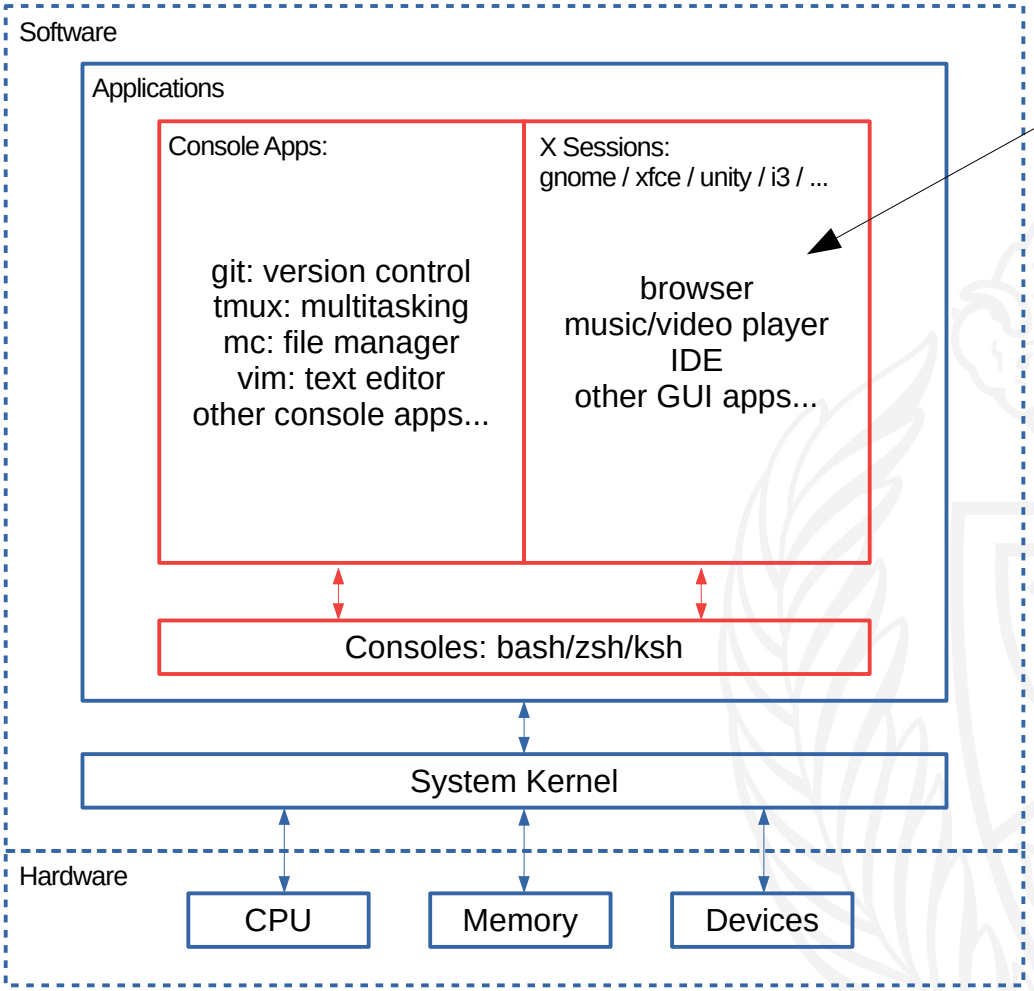

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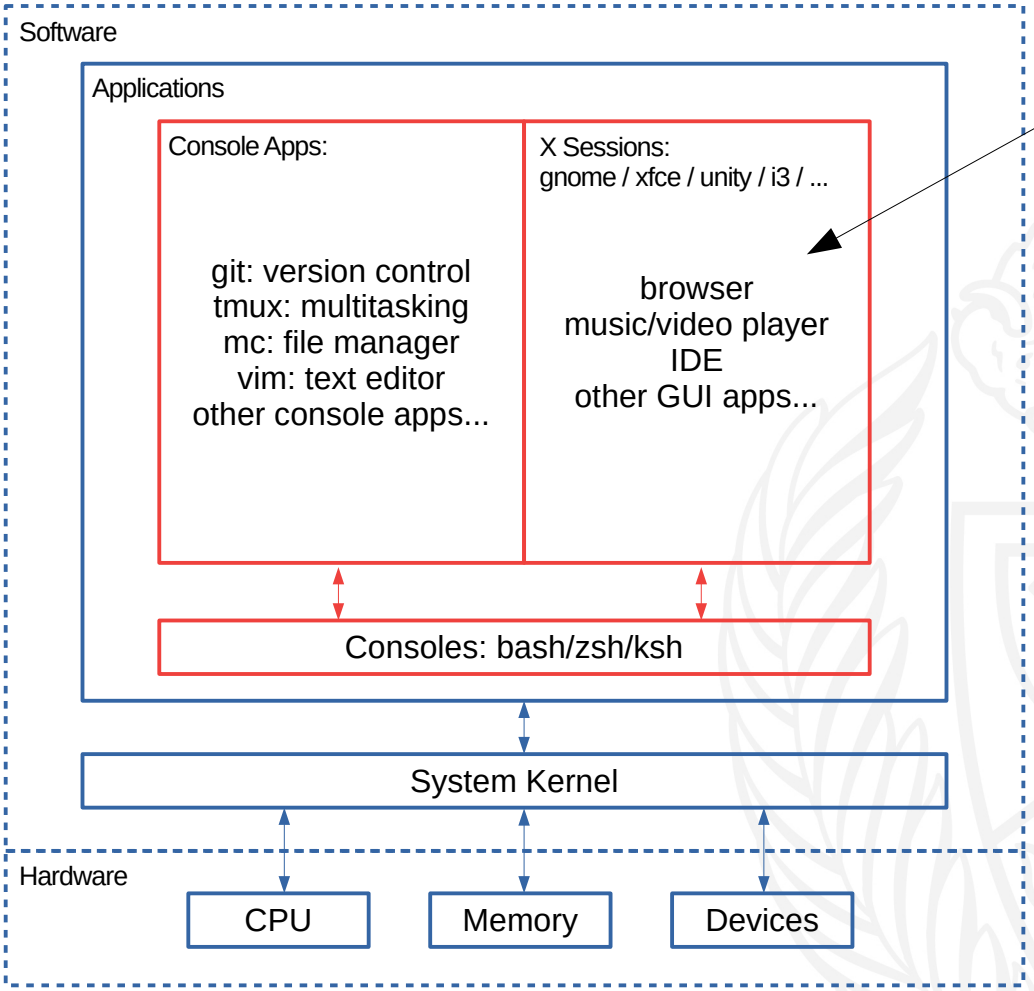

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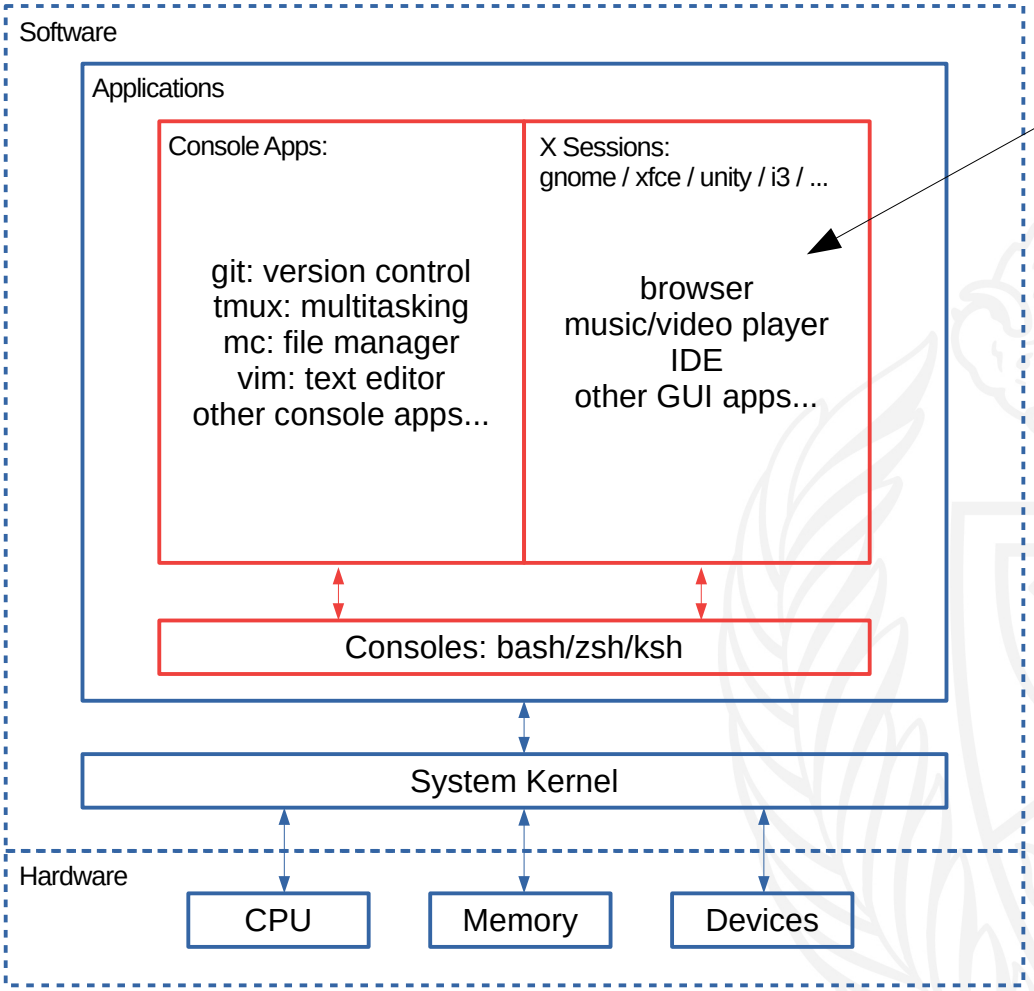

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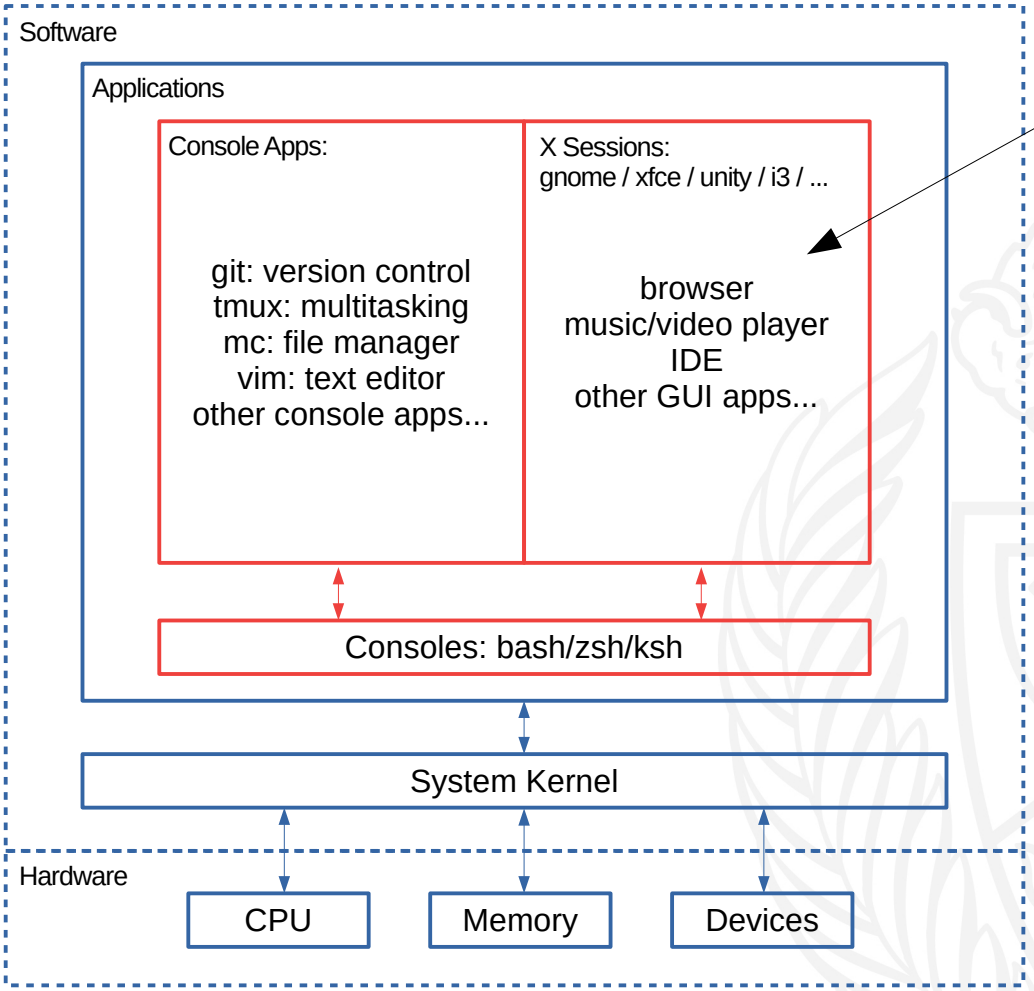

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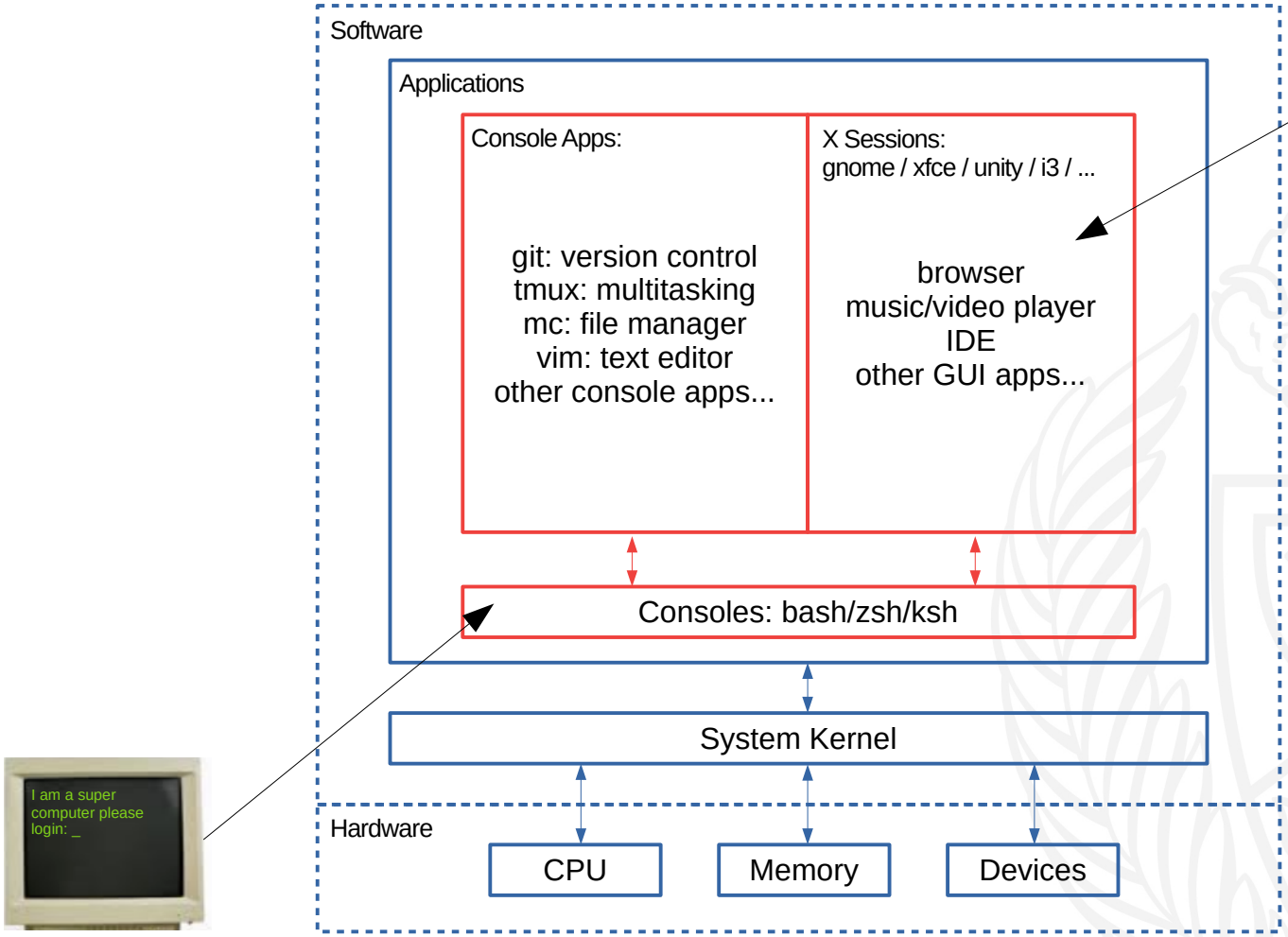

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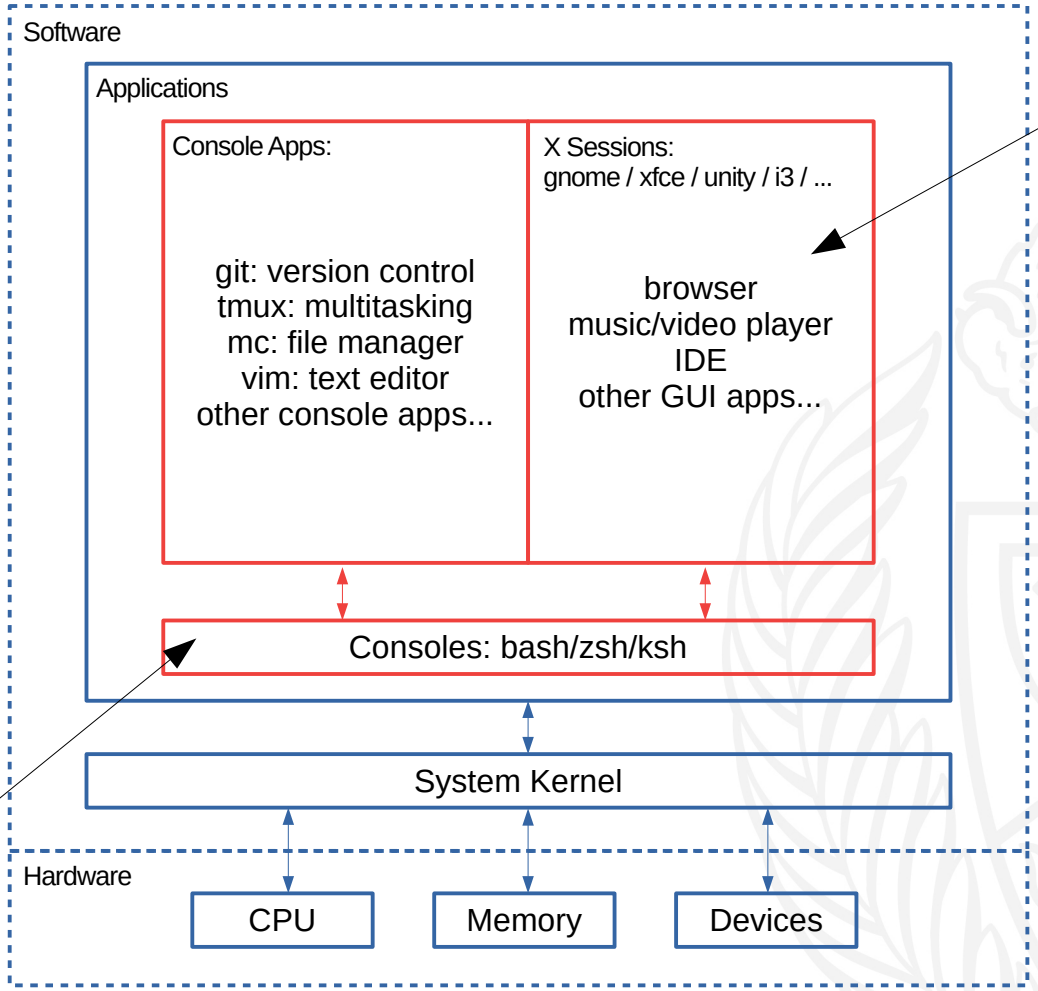

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- Low memory consumption
- Efficient once you know how to use

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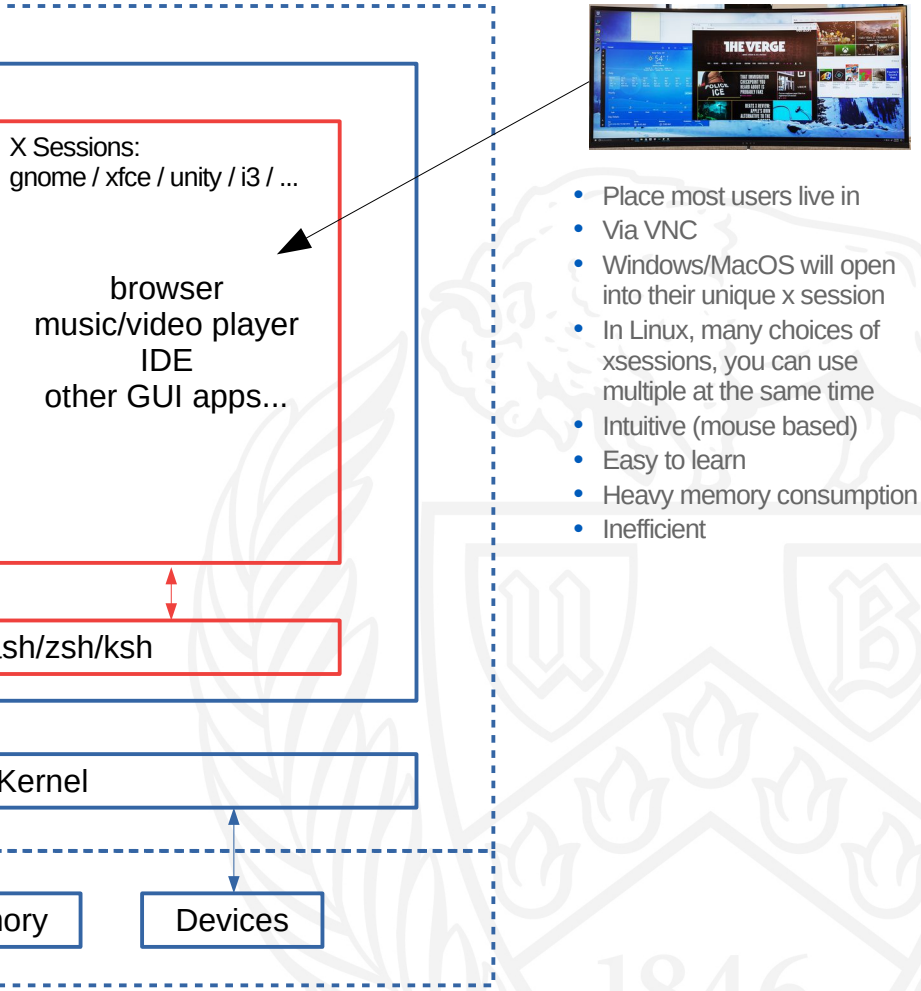
GOAL:

Learn tricks and apps to become a pro in the console environment



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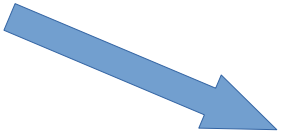

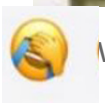

where is my cursor

The Face of a Server

Before the workshop

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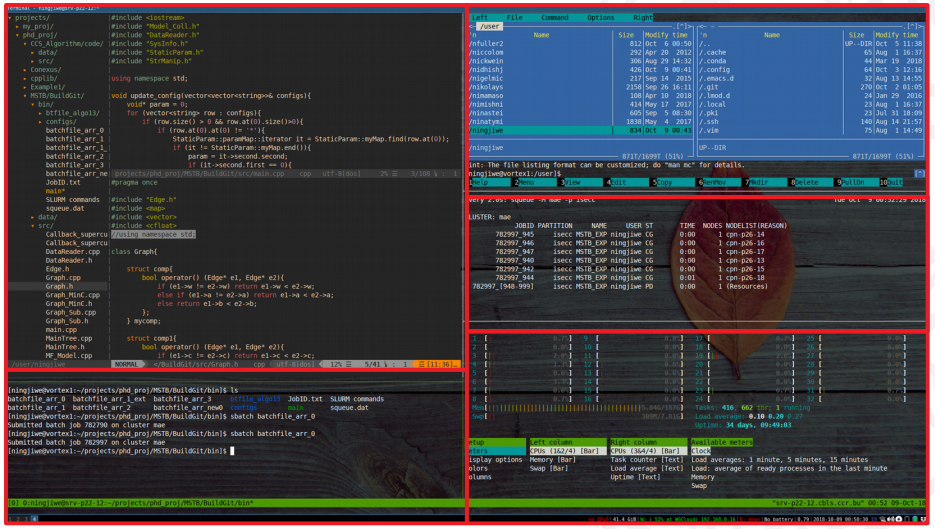
After the workshop



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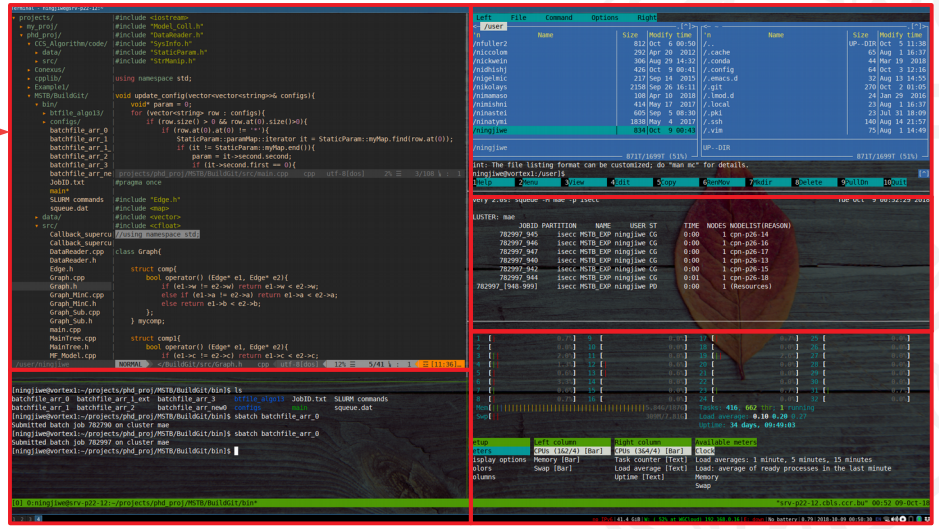

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Coding IDE

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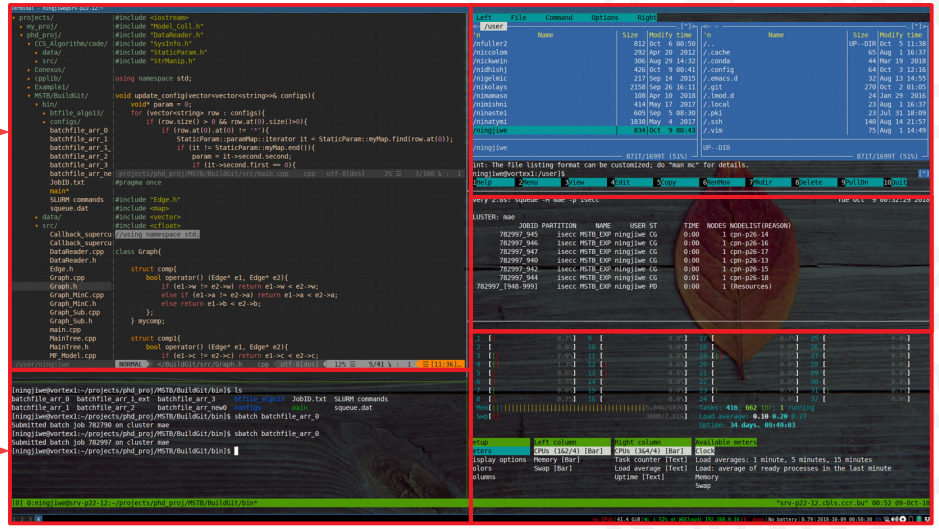

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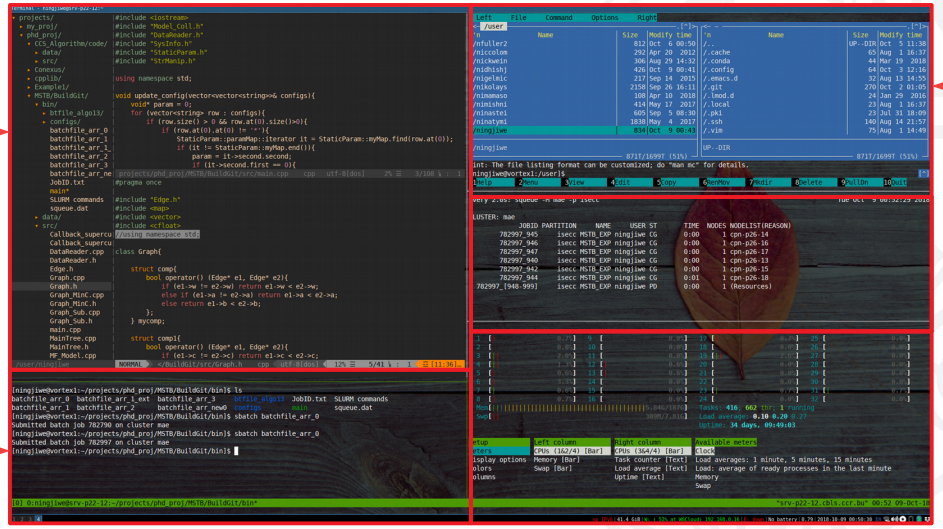

Coding IDE

File manager

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The Face of a Server

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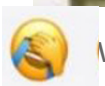

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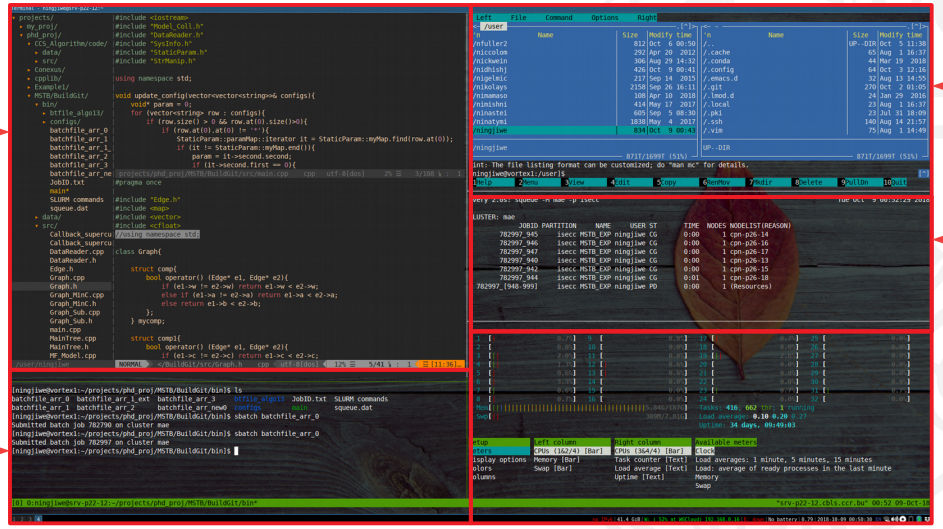

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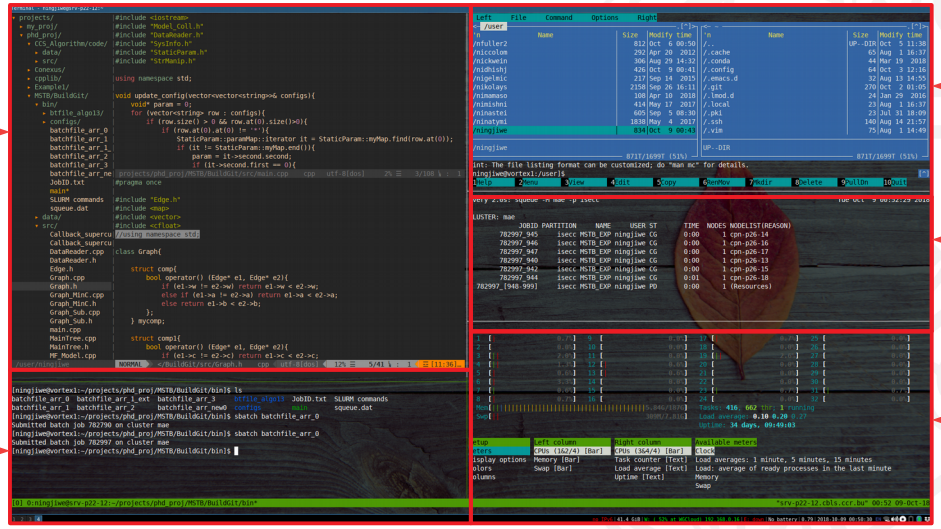

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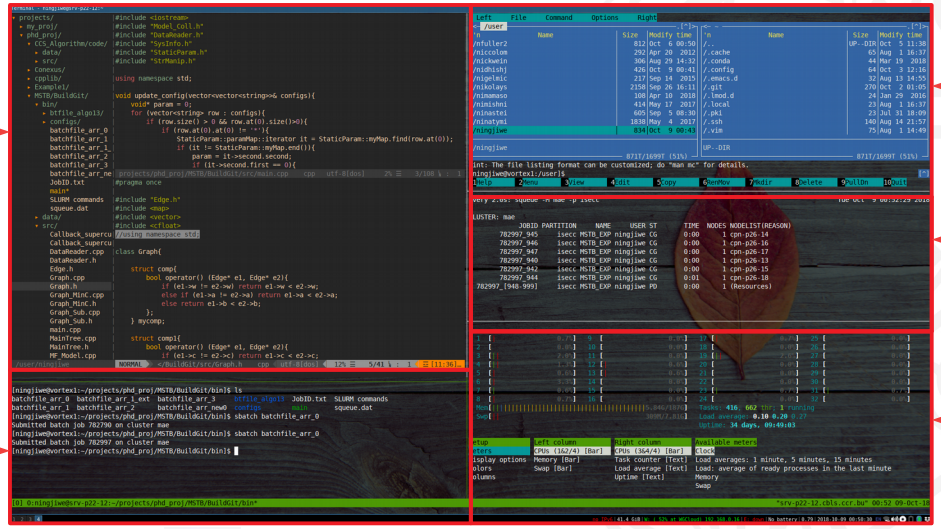

💪 call me Linux server ninja warrior

The Face of a Server

Before the workshop

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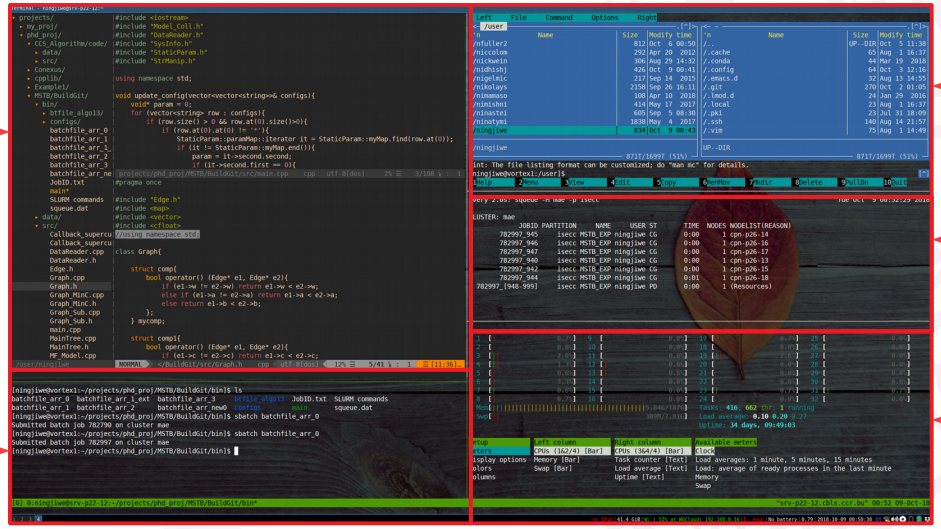
Let's Start !

After the workshop



💪 call me Linux server ninja warrior

Contents:

Local Console Environment (bash)

For Windows:

- Download, install and start MSYS2 (https://www.msys2.org/)

For Linux:

- Open terminal

For Mac:

- Open terminal, run command “bash”

Install Apps in Linux (Package Manager)

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System	Package Manager	Install	Remove	Update Database	Updata All
Debian Ubuntu Mint	apt	$ apt install PKG	$ apt remove PKG	$ apt update	$ apt upgrade
Arch Manjaro MSYS2	pacman	$ pacman -S PKG	$ pacman -R PKG	$ pacman -Sy	$ pacman -Syu
MacOs	homebrew	$ brew install PKG	$ brew remove PKG	$ apt update	$ apt upgrade

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Practice:

1. remove nano on your local linux
2. install nano on your local linux

Connect to CCR with SSH

```
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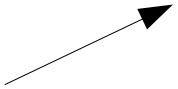

indicates all strings **after** need to be typed

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the name of a command

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the name of a command

the 1st parameter: username@server_address

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indicates all strings **after** need to be typed

the name of a command

the 1st parameter: username@server_address

Note1 : if you are not in the UB network, connect to it via VPN first

Connect to CCR with SSH

```
$  ssh ningjiwe@vortex.ccr.buffalo.edu
```

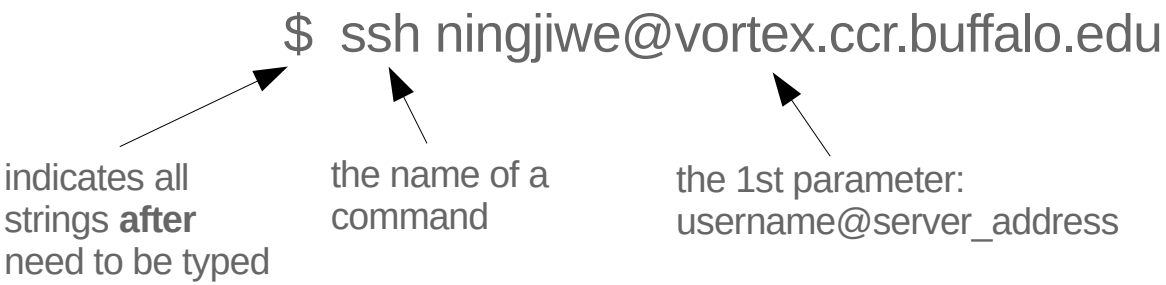
indicates all strings **after** need to be typed

the name of a command

the 1st parameter: username@server_address

Note1 : if you are not in the UB network, connect to it via VPN first (https://www.buffalo.edu/ubit/service-guides/connecting/vpn.html)

Connect to CCR with SSH



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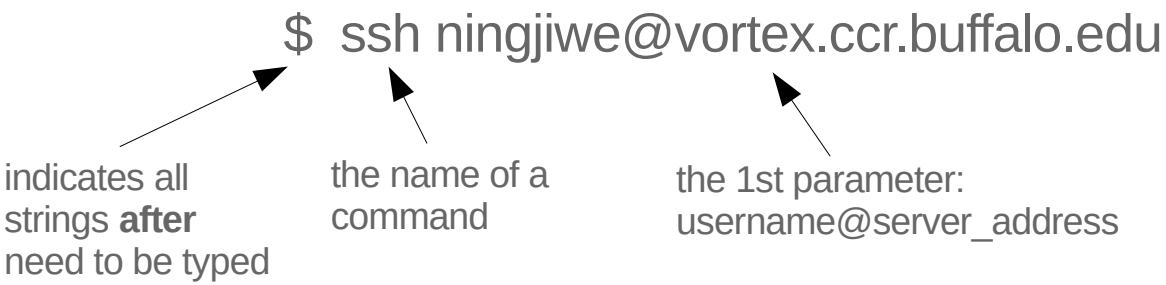
Connect to CCR with SSH



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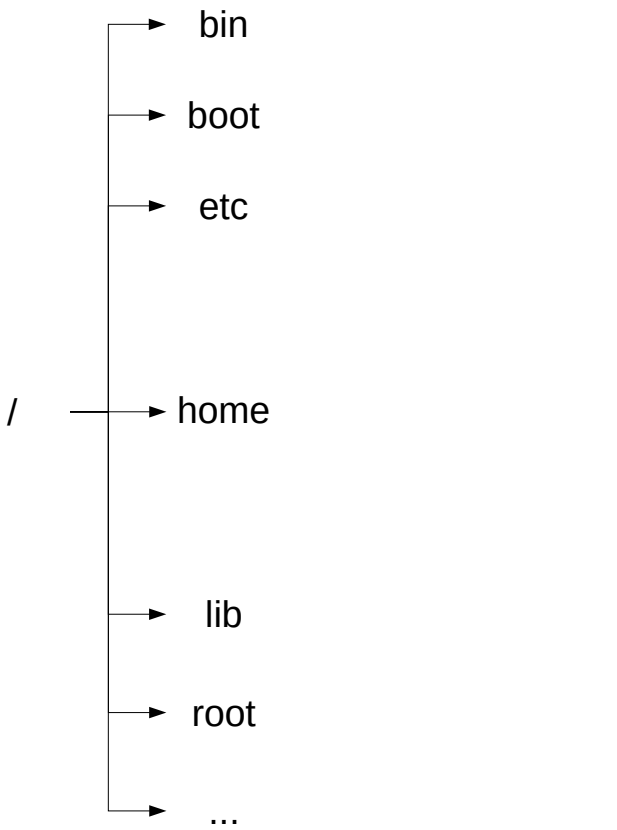
Linux Directory Structure

/

Full explaination: https://www.howtogeek.com/117435/htg-explains-the-linux-directory-structure-explained/

Linux Directory Structure



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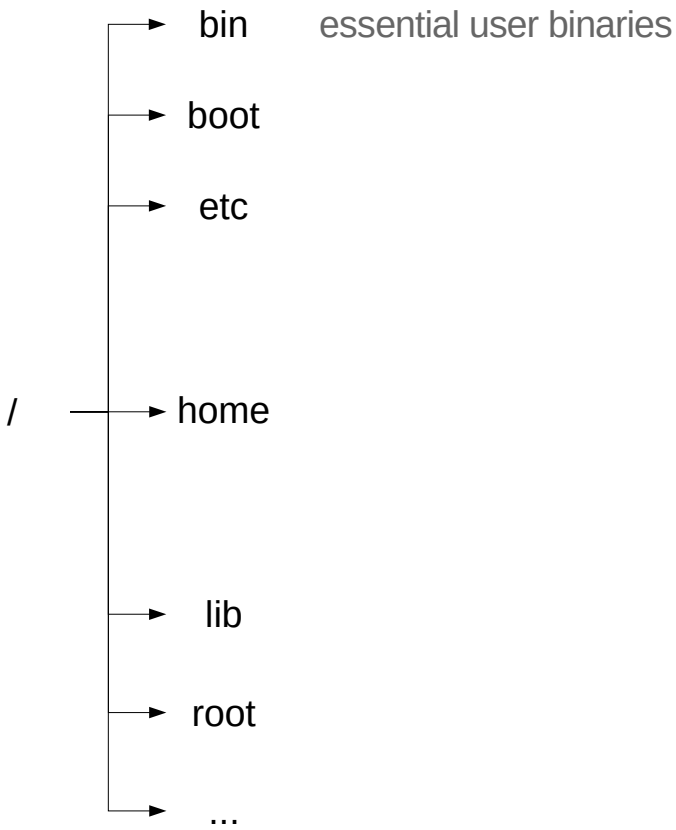

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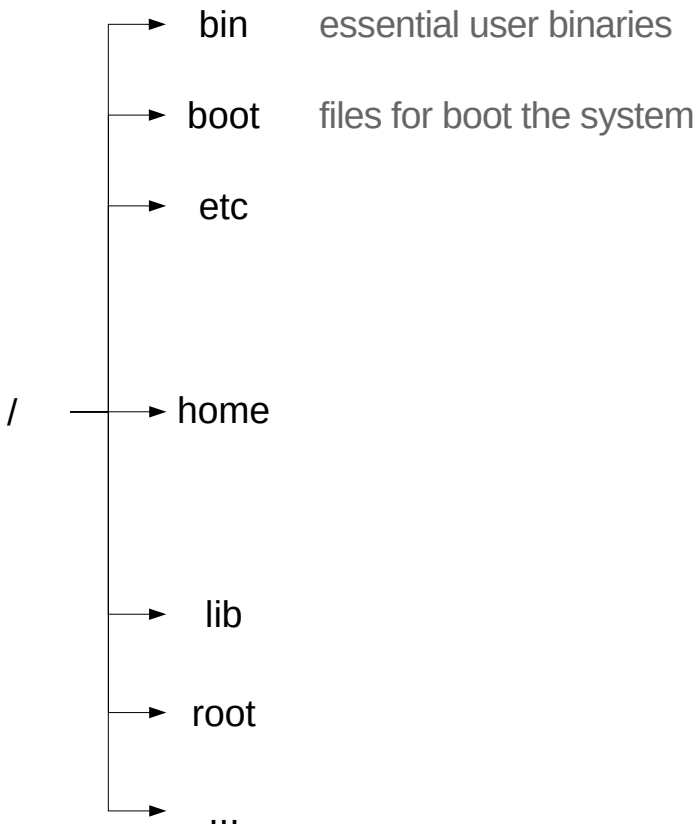

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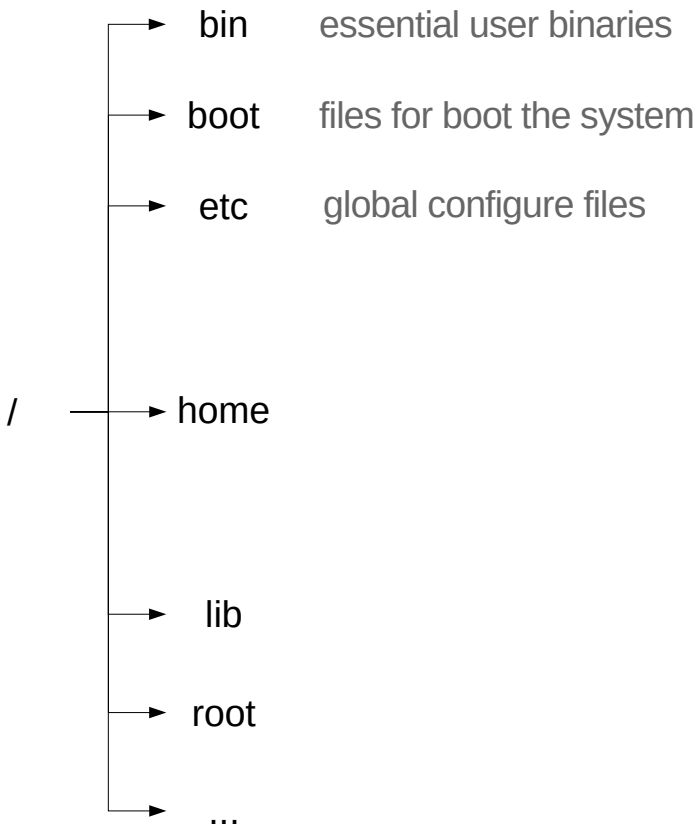

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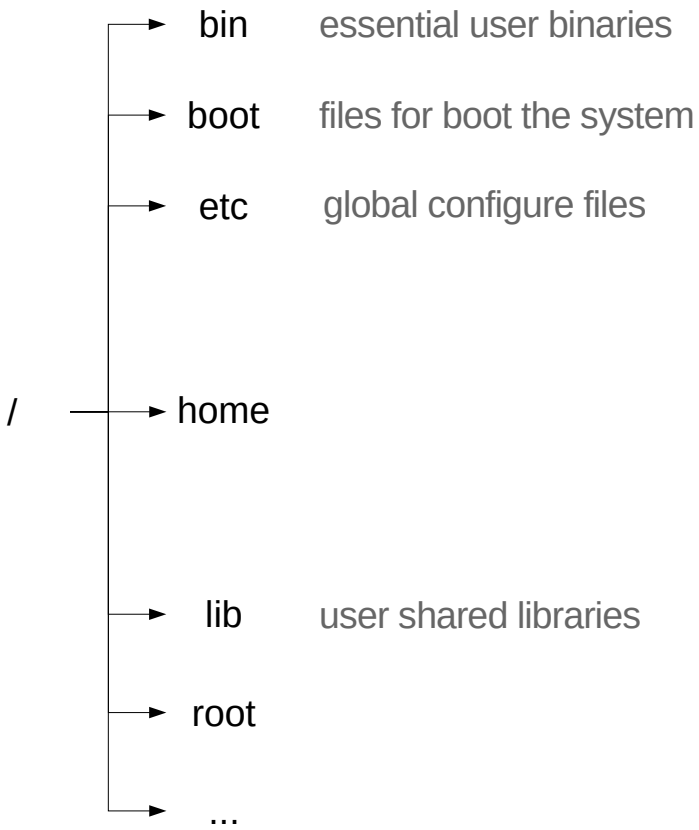

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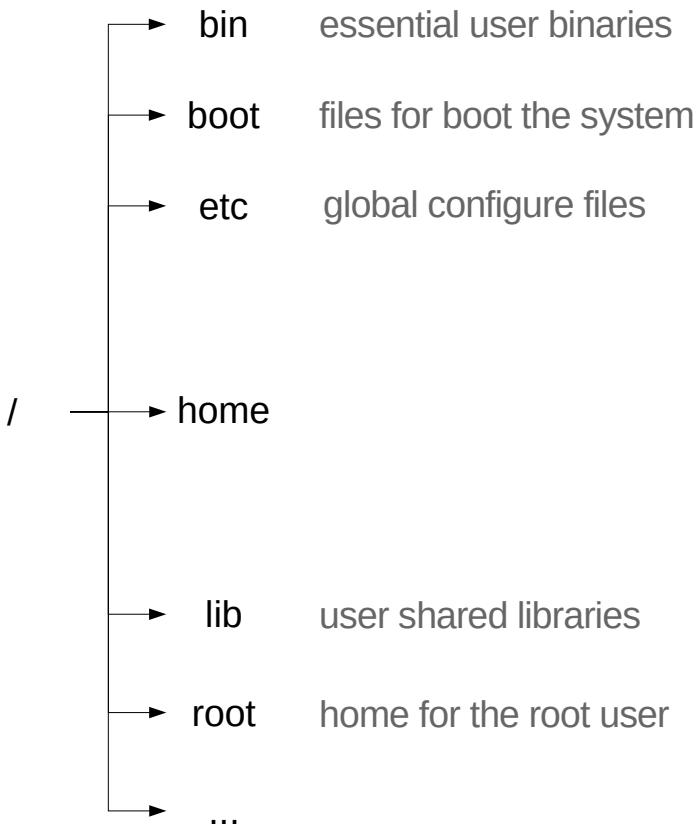

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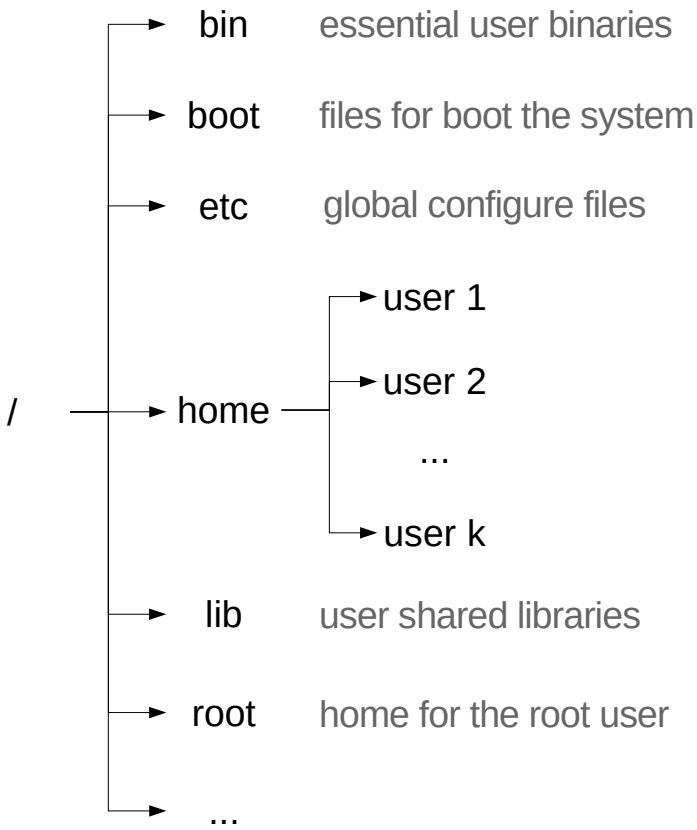

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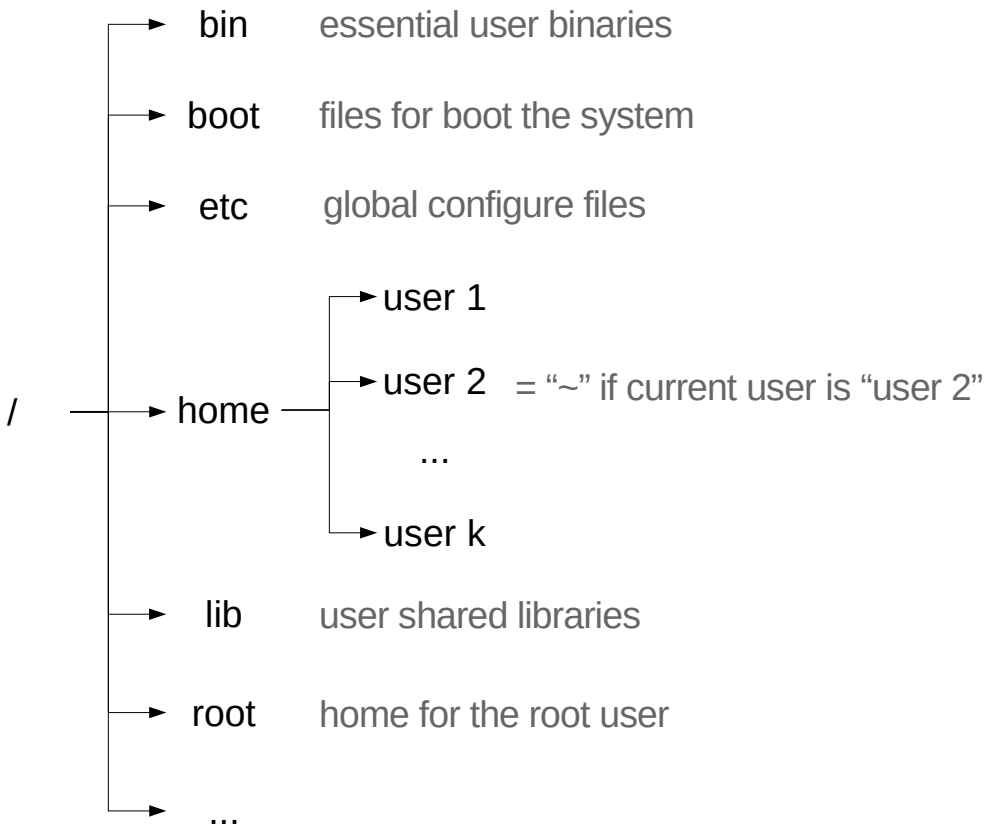

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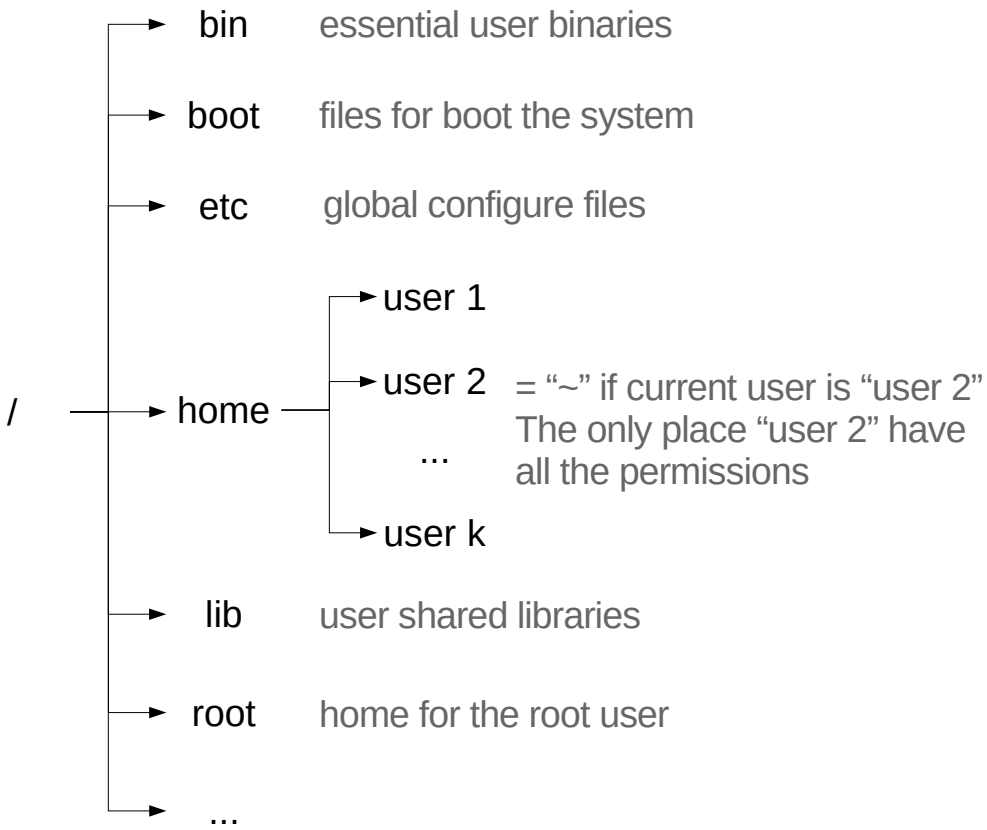

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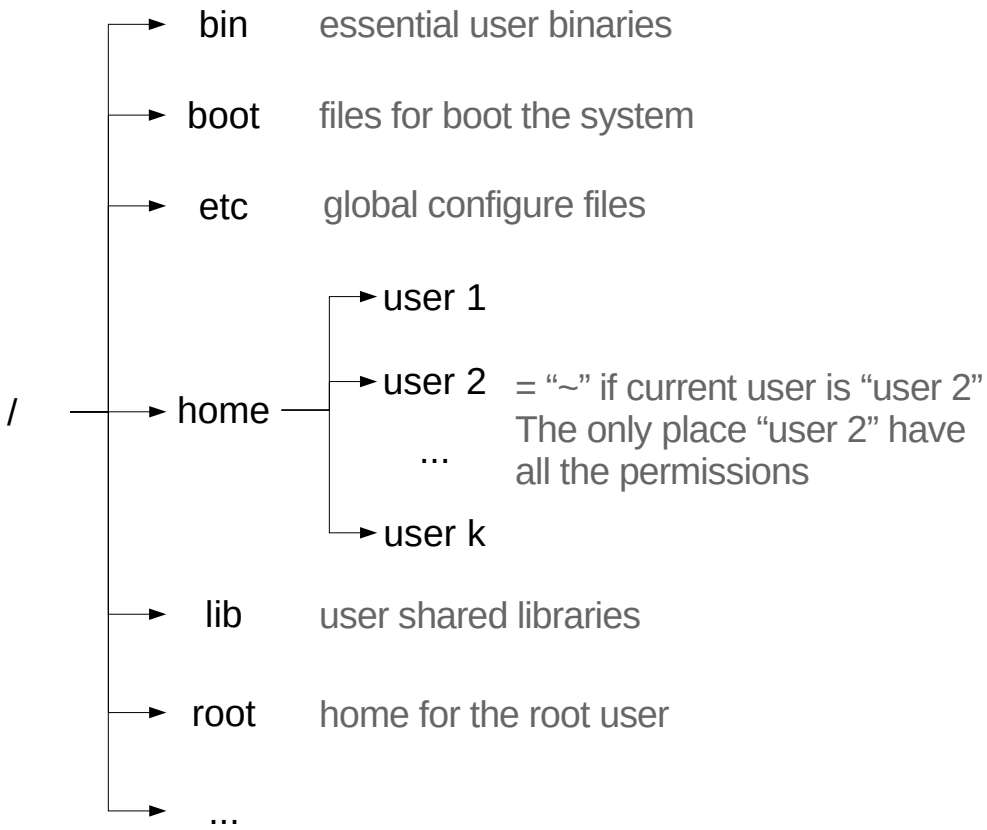

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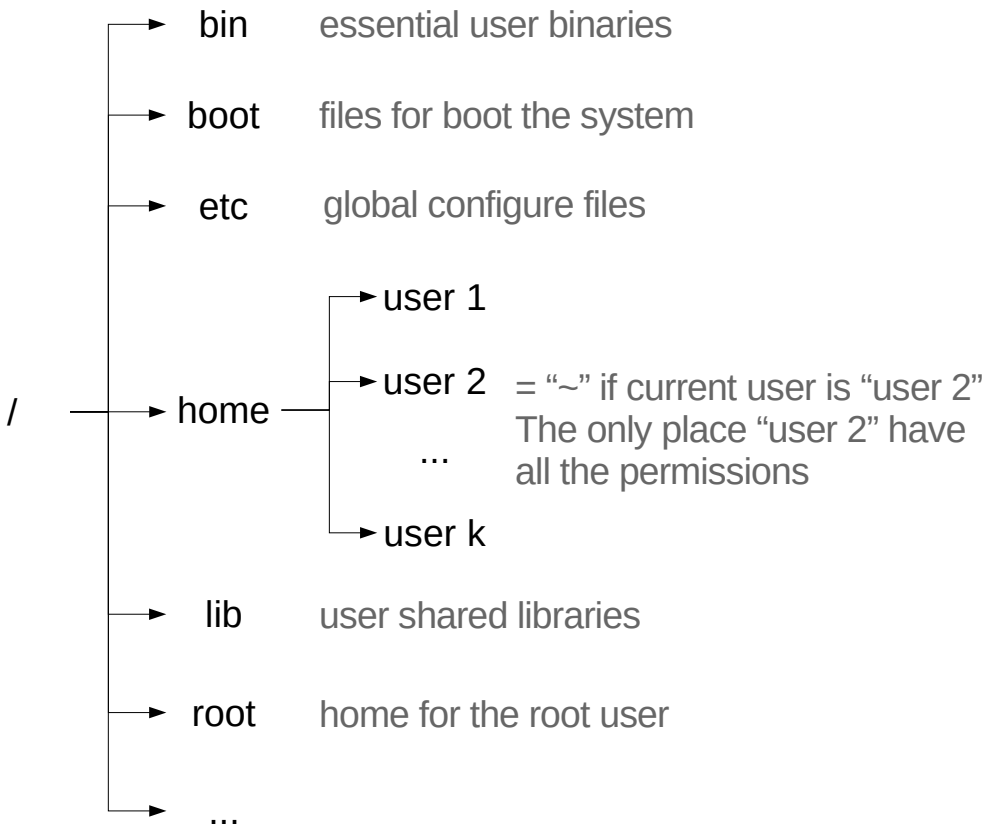
- Absolute path: starting with "/"
  /
  /bin/ssh
  /home/user1/Downloads

Linux Directory Structure



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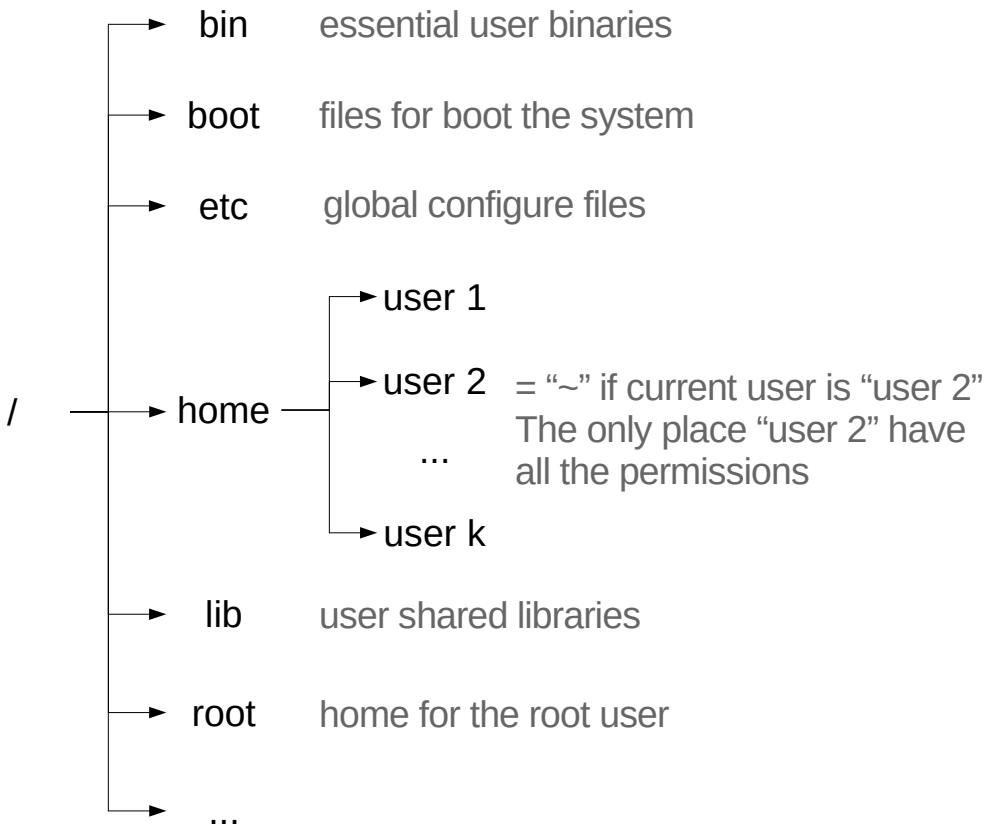
- Absolute path: starting with "/"
  /
  /bin/ssh
  /home/user1/Downloads
- Relative path: starting with "."
  ./
  ../
  ./project/../

Linux Directory Structure



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- Absolute path: starting with "/"
  /
  /bin/ssh
  /home/user1/Downloads
- Relative path: starting with "."
  ./
  ../
  ./project/../
- Hidden files: filename starting with "."
  ~/.bashrc
  ./.vimrc
  ../.mysecret.txt

Basic Linux Commands 1

A typical command:

$ CMD PARAM1 PARAM2 PARAM3 ...

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name of an excutable file

upper case means replace it is a placeholder

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$ ls PATH # list non-hidden files in PATH
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tab: auto complete

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Command Line Tricks:

tab: auto complete
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C-a: head of the command line
C-e: end of the command line

Basic Linux Commands 1

A typical command:

```
$  CMD  PARAM1  PARAM2  PARAM3 ...
```

name of an excutable file

upper case means replace it is a placeholder

Basic commands:

change directory:

```
$ cd PATH      # go to PATH
```

list contents:

```
$ ls PATH      # list non-hidden files in PATH
$ ls -a PATH   # list all files in PATH
$ ls -l PATH   # list files in PATH with more info
$ ls -al PATH  # equivalent to $ ls -a -l PATH
```

printing:

```
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```

Command Line Tricks:

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C-a: head of the command line
C-e: end of the command line
C-left/right: fast move cursor
up: previous commands

Practice:

1. find path of ssh binary file
2. show “~” = “/home/[user]”

Basic Linux Commands 2

Basic Linux Commands 2

```
$ touch FILE                    # create file
```

Basic Linux Commands 2

```
$ touch FILE          # create file
$ mkdir FOLDER        # create folder
```

Basic Linux Commands 2

```
$ touch FILE          # create file
$ mkdir FOLDER        # create folder
$ rm FILE             # remove file
```

Basic Linux Commands 2

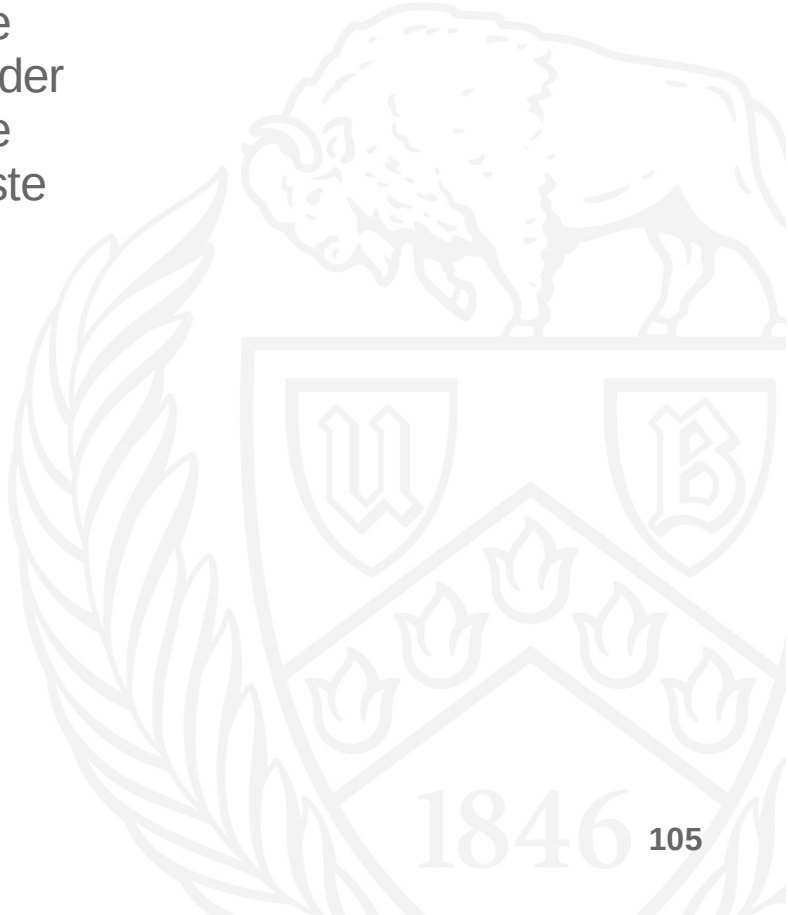
```
$ touch FILE          # create file
$ mkdir FOLDER        # create folder
$ rm FILE             # remove file
$ rm -r FOLDER        # remove folder
```

Basic Linux Commands 2

```
$ touch FILE          # create file
$ mkdir FOLDER        # create folder
$ rm FILE             # remove file
$ rm -r FOLDER        # remove folder
$ mv FILE1 FILE2      # cut & paste
```

Basic Linux Commands 2

```
$ touch FILE          # create file
$ mkdir FOLDER        # create folder
$ rm FILE             # remove file
$ rm -r FOLDER        # remove folder
$ mv FILE1 FILE2      # cut & paste
$ cp  FILE1 FILE2     # copy & paste
```



Basic Linux Commands 2

```
$ touch FILE                    # create file
$ mkdir FOLDER                  # create folder
$ rm FILE                       # remove file
$ rm -r FOLDER                  # remove folder
$ mv FILE1 FILE2                # cut & paste
$ cp  FILE1 FILE2               # copy & paste
$ mv/cp -r FOLDER1 FOLDER2      # cut/copy & paster the entire folder
```

Basic Linux Commands 2

```
$ touch FILE                    # create file
$ mkdir FOLDER                  # create folder
$ rm FILE                       # remove file
$ rm -r FOLDER                  # remove folder
$ mv FILE1 FILE2                # cut & paste
$ cp  FILE1 FILE2               # copy & paste
$ mv/cp -r FOLDER1 FOLDER2      # cut/copy & paster the entire folder
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How to rename?

Basic Linux Commands 2

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$ touch FILE                    # create file
$ mkdir FOLDER                  # create folder
$ rm FILE                       # remove file
$ rm -r FOLDER                  # remove folder
$ mv FILE1 FILE2                # cut & paste
$ cp  FILE1 FILE2               # copy & paste
$ mv/cp -r FOLDER1 FOLDER2      # cut/copy & paster the entire folder
```

How to rename?
Move to the same folder with a new name.

Basic Linux Commands 2

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$ touch FILE                    # create file
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$ rm FILE                       # remove file
$ rm -r FOLDER                  # remove folder
$ mv FILE1 FILE2                # cut & paste
$ cp  FILE1 FILE2               # copy & paste
$ mv/cp -r FOLDER1 FOLDER2      # cut/copy & paster the entire folder
```

How to rename?
Move to the same folder with a new name.

Practice:

1. create folder prac1, prac2
2. create files test1.dat, test2.dat, test3.dat, na.info in folder prac1