Lecture 4

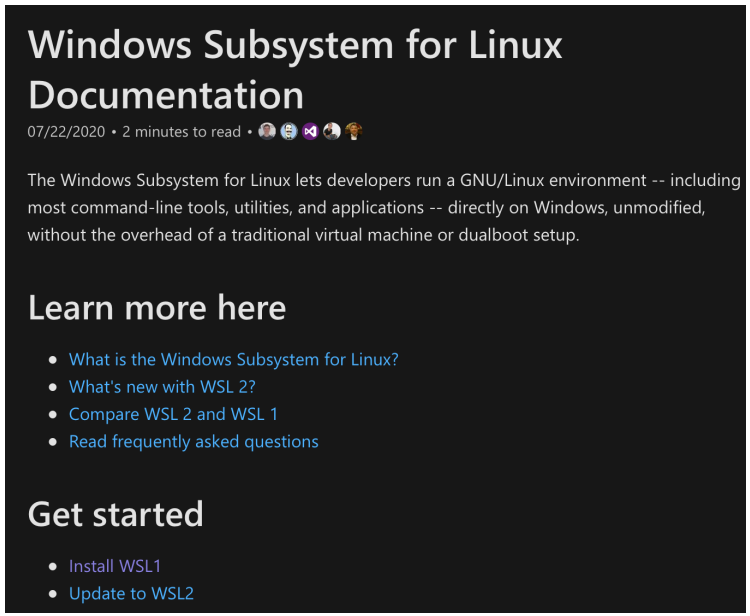
408/508 *Computational Techniques for Linguists*

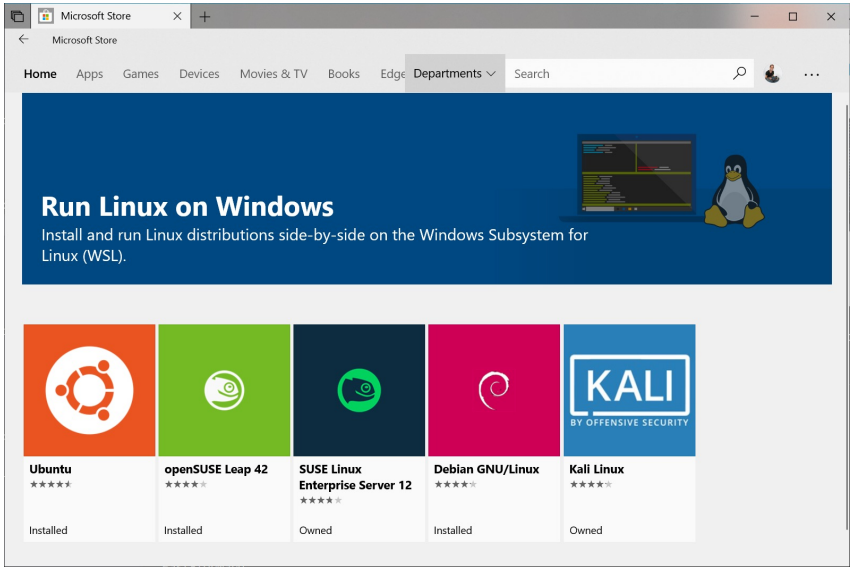
Today's Topic

- We're gonna need the Terminal
  - but we don't want our mistakes to kill the machine
  - can run stuff inside a guest **Operating System**, or be very careful
    - Example: `rm -rf *`
- Homework 2:
  - for Windows 10/11 users, install Microsoft WSL2
  - for Apple Intel users, install VirtualBox (or use existing Terminal)
  - for Apple Silicon users, install Multipass (or use existing Terminal)
  - for Linux users, do nothing

WSL2

- Windows Subsystem for Linux
  - https://docs.microsoft.com/en-us/windows/wsl/



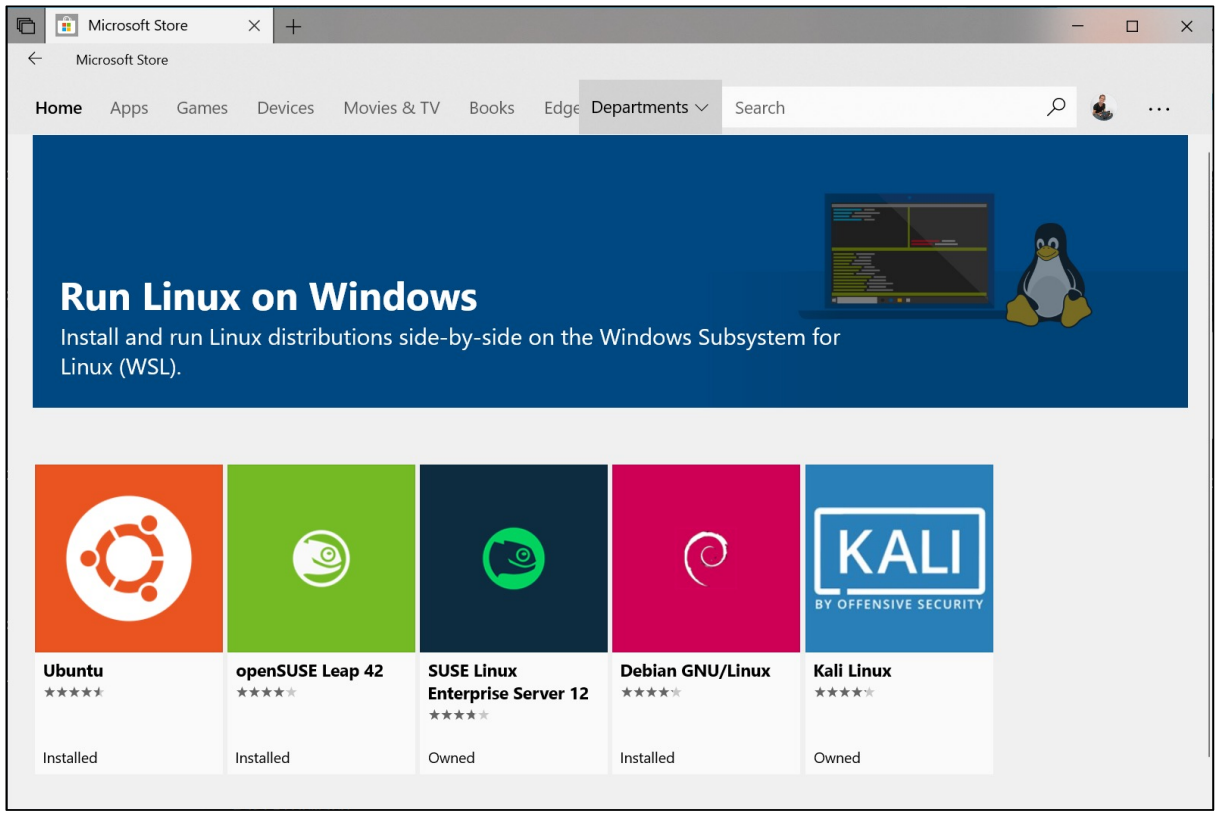


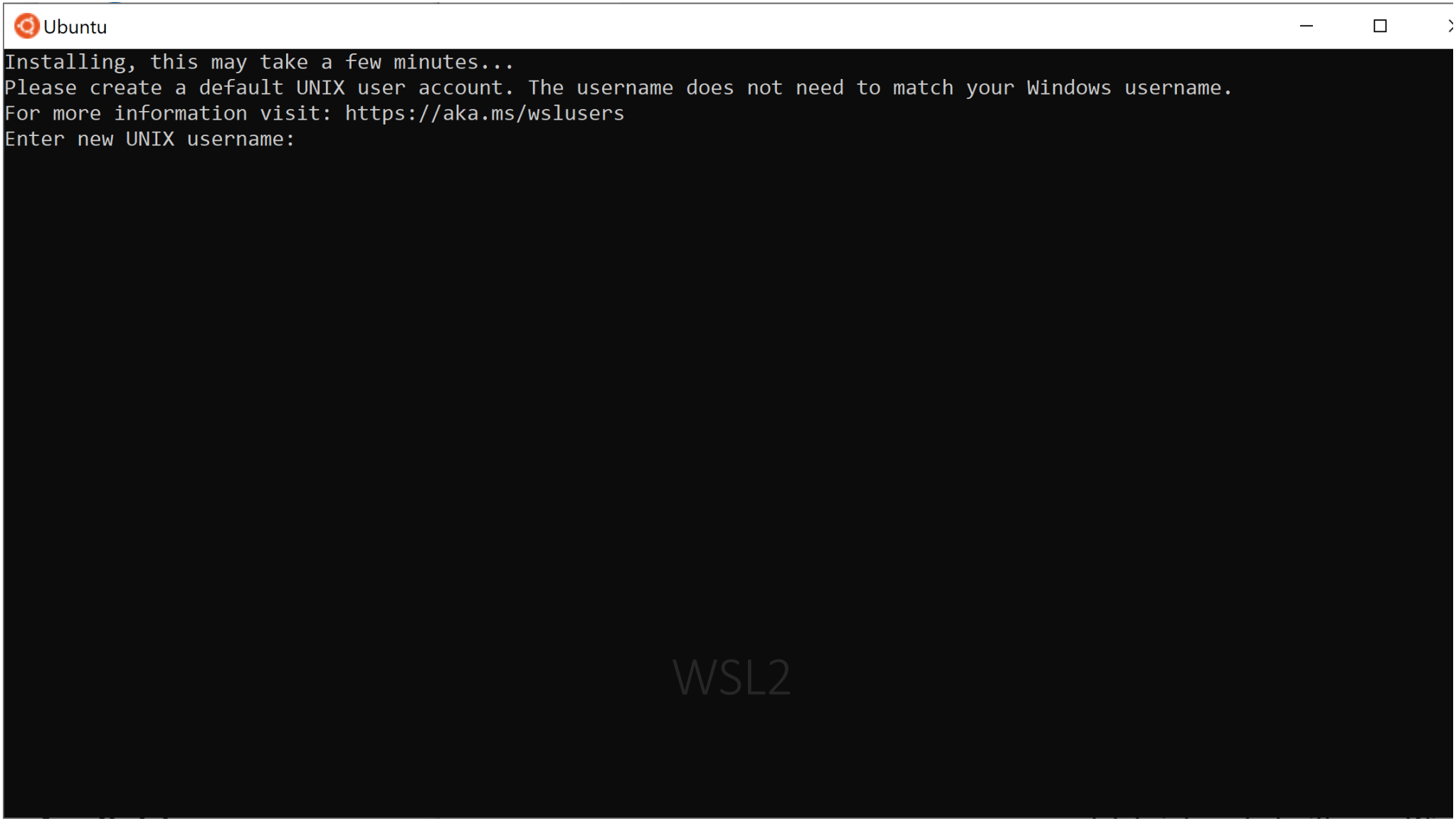
WSL2

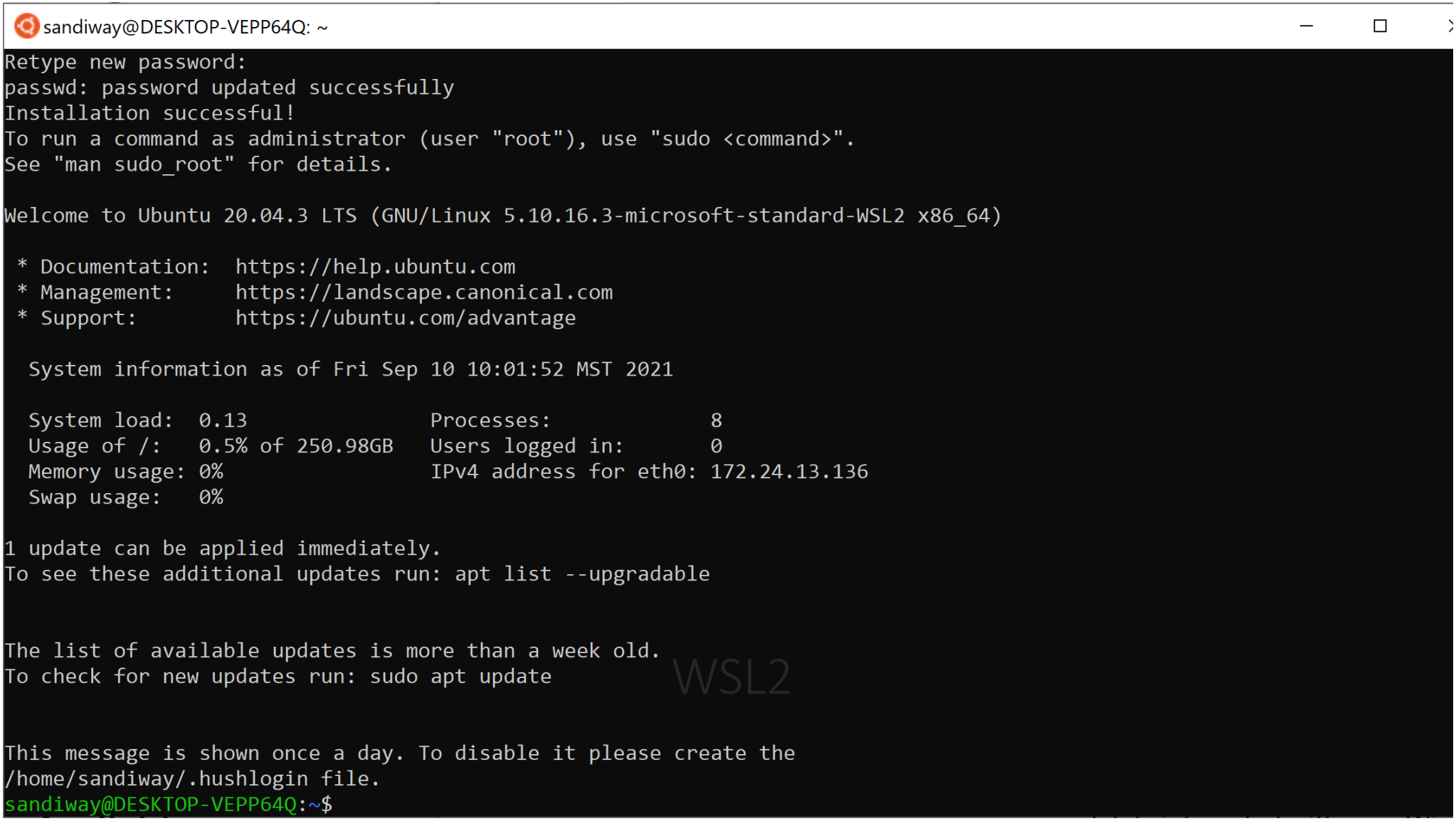
- Consider installing WSL2 (Windows Subsystem for Linux 2)
  - https://learn.microsoft.com/en-us/windows/wsl/
- Why?
  - gives you a Bash shell (*with quoting consistent with the lecture slides*)
  - (*simultaneously*) use Linux under Windows 10/11 (not dual-booting)
  - can access your Windows C: drive via directory `/mnt/c`

WSL2

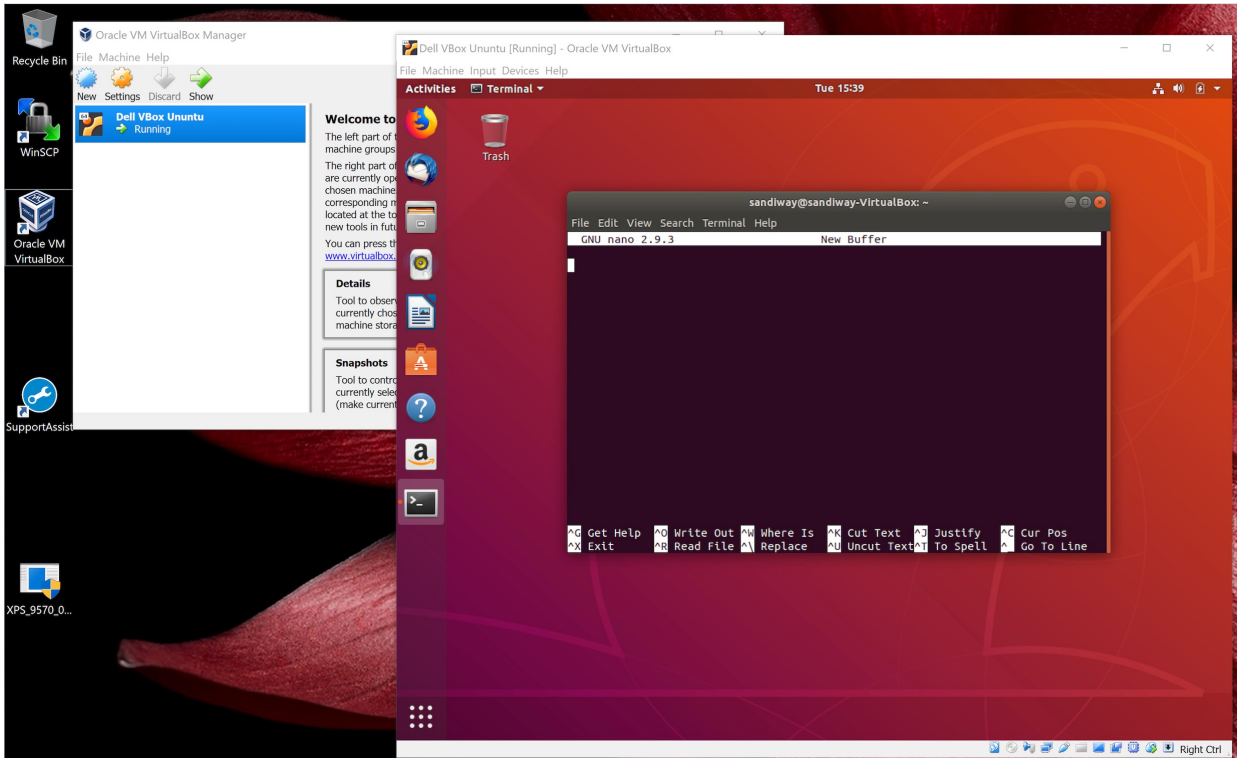
I installed Ubuntu




Ubuntu
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username:
WSL2


sandiway@DESKTOP-VEPP64Q: ~
Retype new password:
passwd: password updated successfully
Installation successful!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.10.16.3-microsoft-standard-WSL2 x86_64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/advantage
System information as of Fri Sep 10 10:01:52 MST 2021
System load: 0.13
Processes: 8
Usage of /: 0.5% of 250.98GB
Users logged in: 0
Memory usage: 0%
IPv4 address for eth0: 172.24.13.136
Swap usage: 0%
1 update can be applied immediately.
To see these additional updates run: apt list --upgradable
The list of available updates is more than a week old.
To check for new updates run: sudo apt update
WSL2
This message is shown once a day. To disable it please create the
/home/sandiway/.hushlogin file.
sandiway@DESKTOP-VEPP64Q:~$

Ubuntu Text Editor: nano



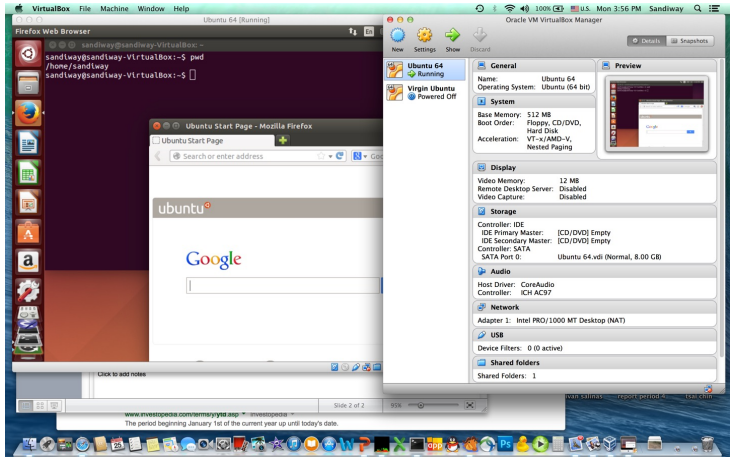
- **Text editor** (built in)
  - `nano` is a decent one for (use inside `Terminal`)
  - You might prefer it, but I can't stand `vi`
  - can install others via
    - `sudo apt-get install`

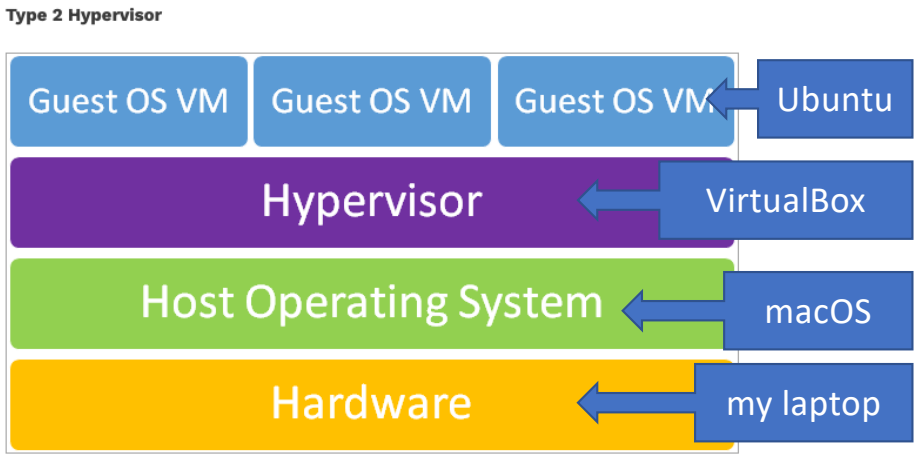
  or

    - `sudo apt install`

VirtualBox

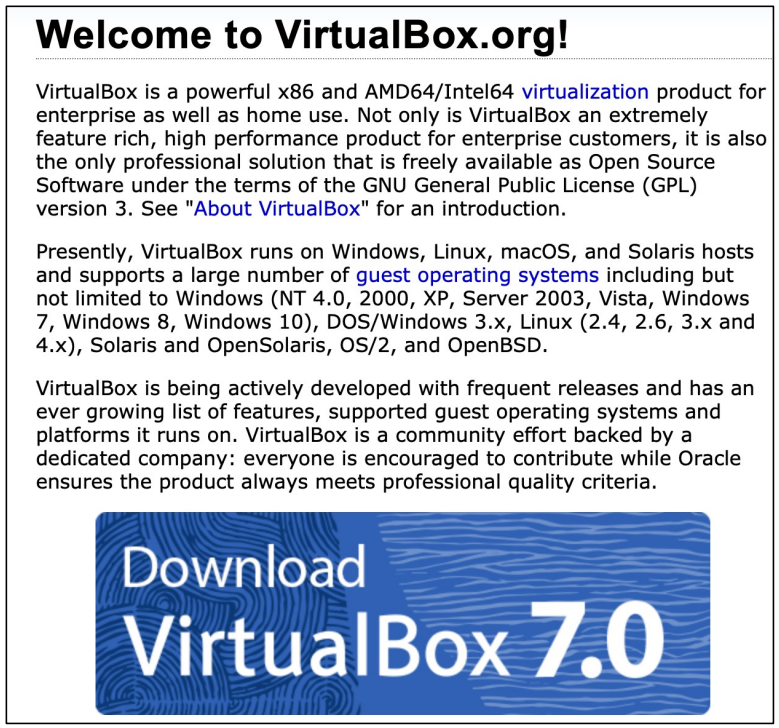
- permits the use of Guest Operating Systems (OS) in your computer
  - for x86 Intel/AMD only: virtual x86 machine(s)
  - they're *sandboxed*
  - install an OS running inside a window, we'll install Ubuntu (Linux) as a Guest OS





VirtualBox

- Free application at https://www.virtualbox.org
- Install VirtualBox on your x86 laptop:



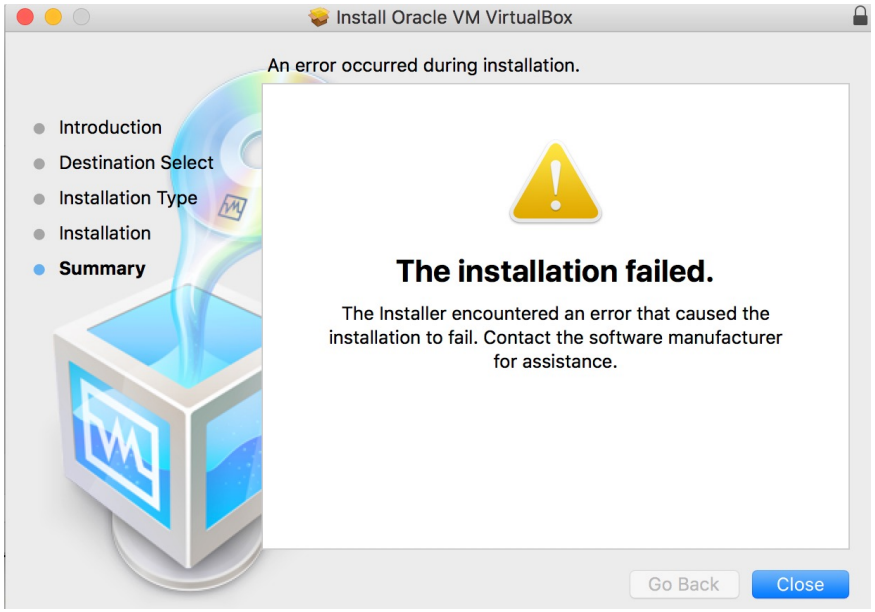
VirtualBox 7.0.10 platform packages

- Windows hosts
- macOS / Intel hosts
- Linux distributions
- Solaris hosts
- Solaris 11 IPS hosts

The binaries are released under the terms of the GPL version 3.

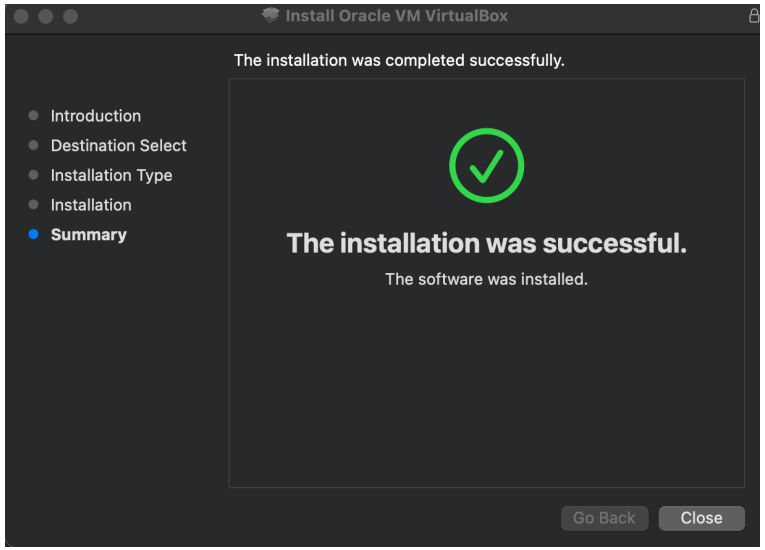
Installing VirtualBox

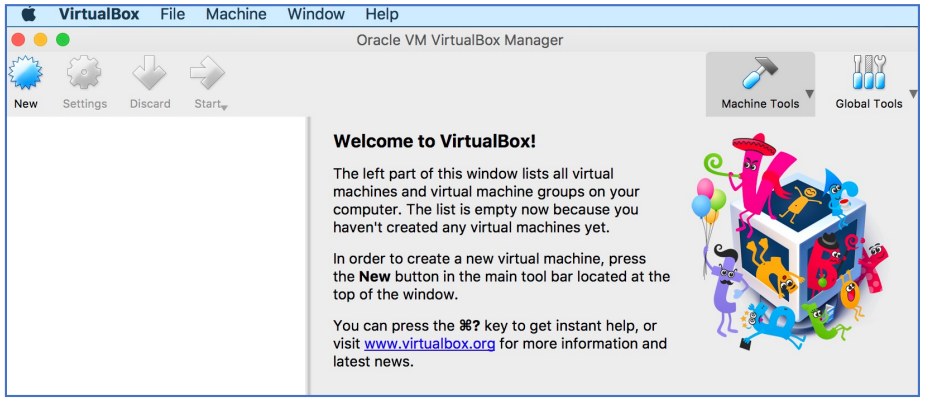
Installing VirtualBox



Installing VirtualBox

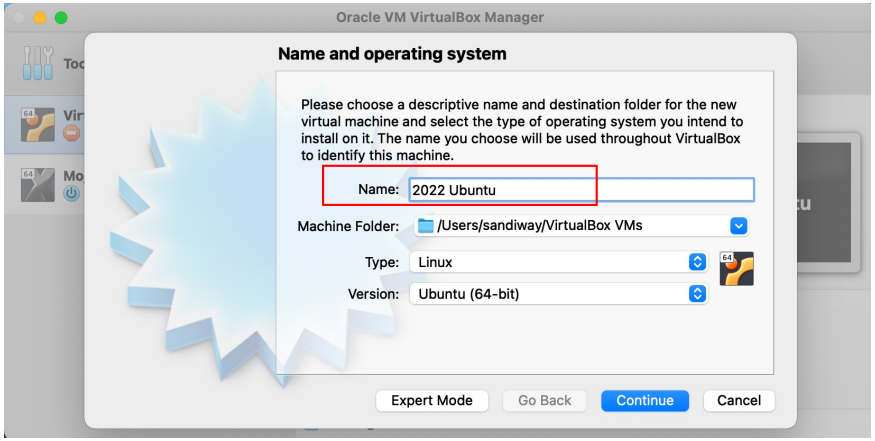
- Re-run installer after giving Oracle Computer permission





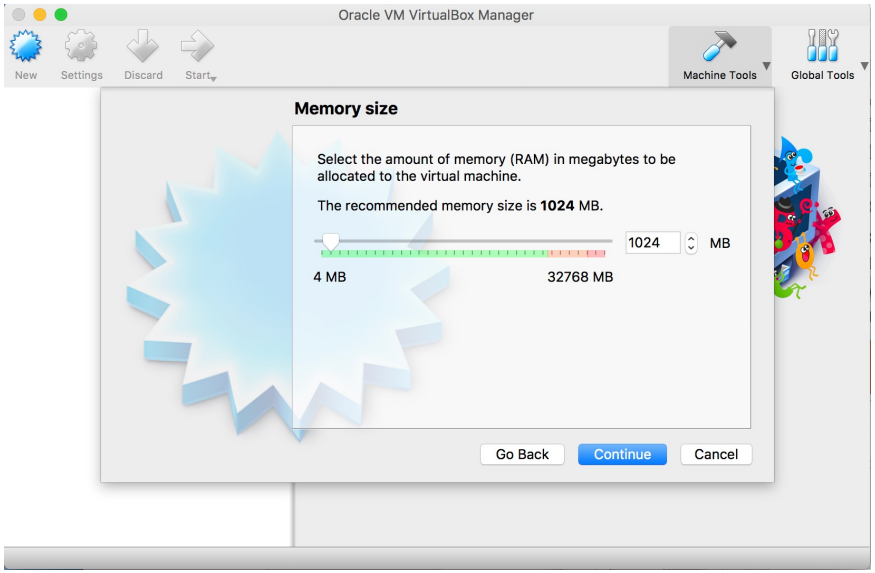
Read https://www.virtualbox.org/manual/ch01.html#idm272

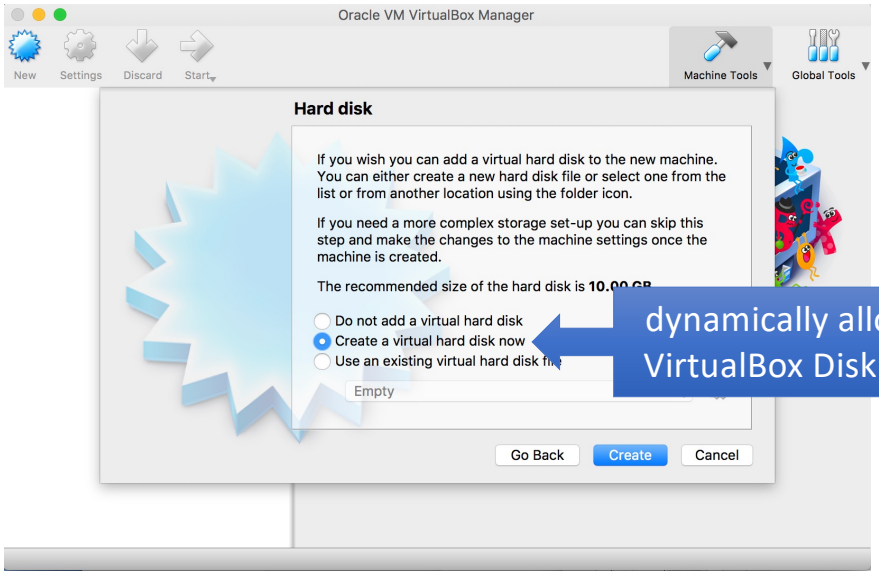
Start VirtualBox, select New



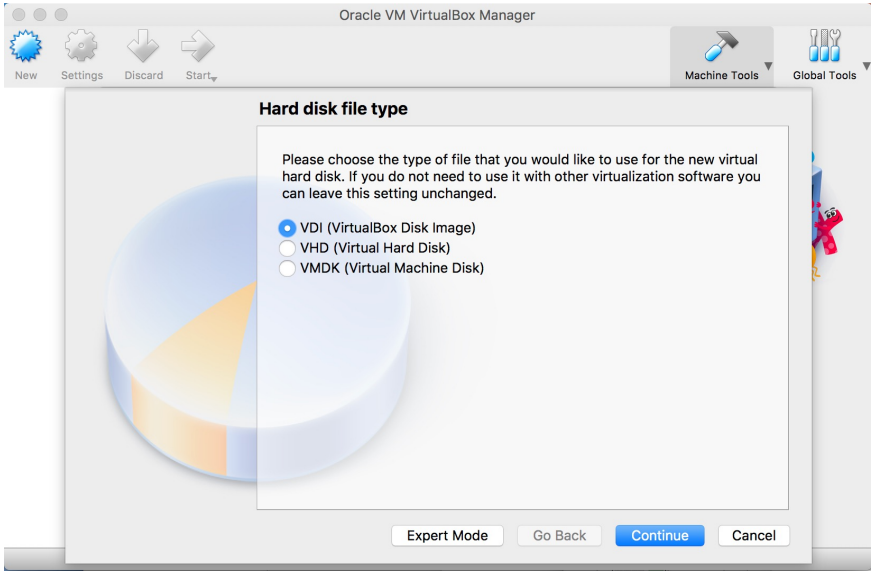
- Note:
  - choosing the name with Ubuntu in it auto-fills the Type/Version

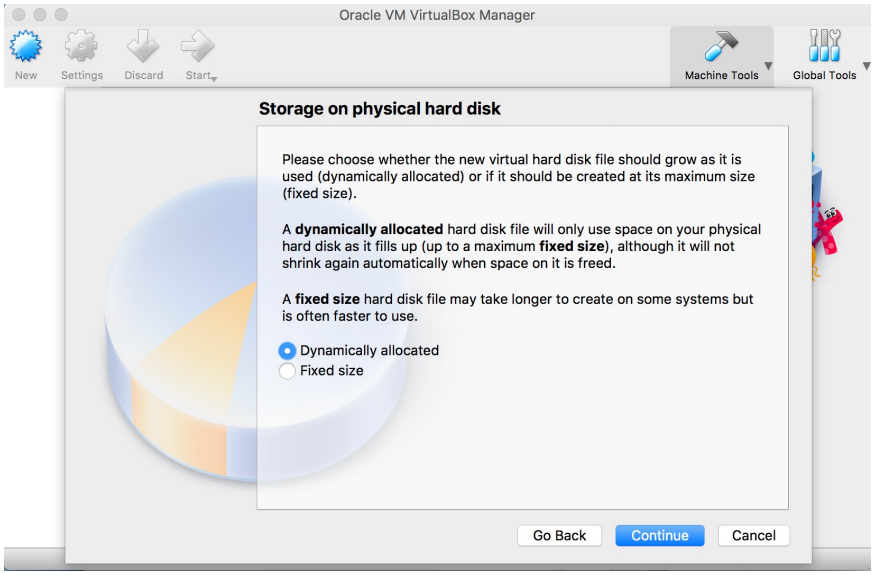
Virtual Machine Parameters



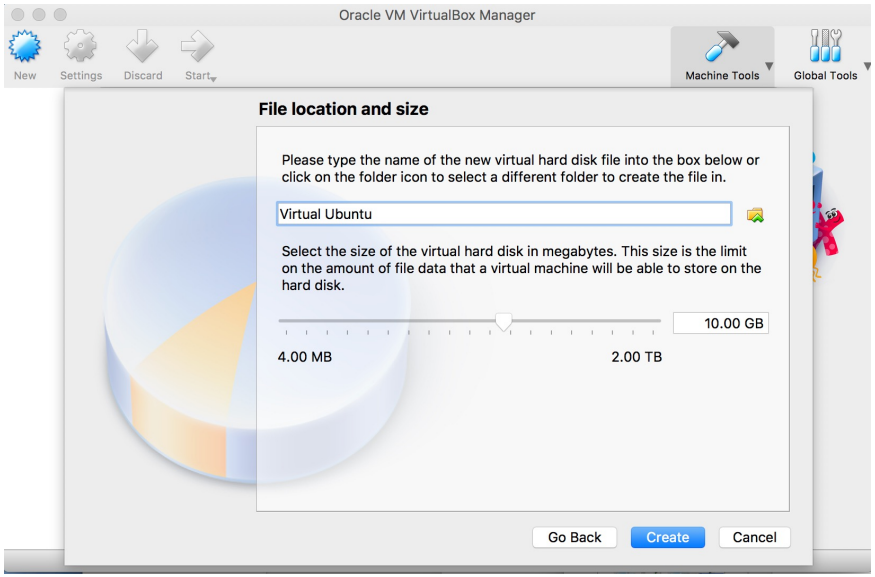


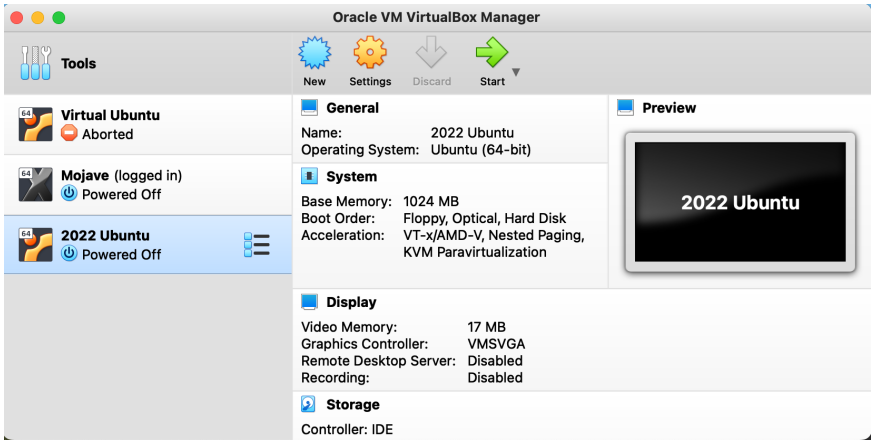
Virtual Machine Parameters





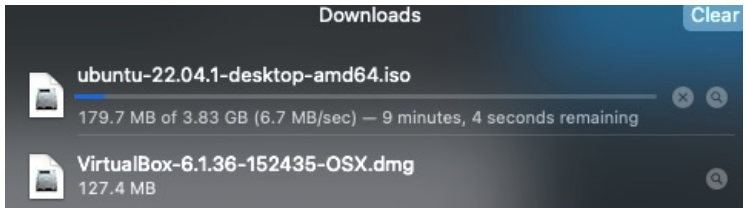
Virtual Machine Parameters





Ubuntu ISO Image

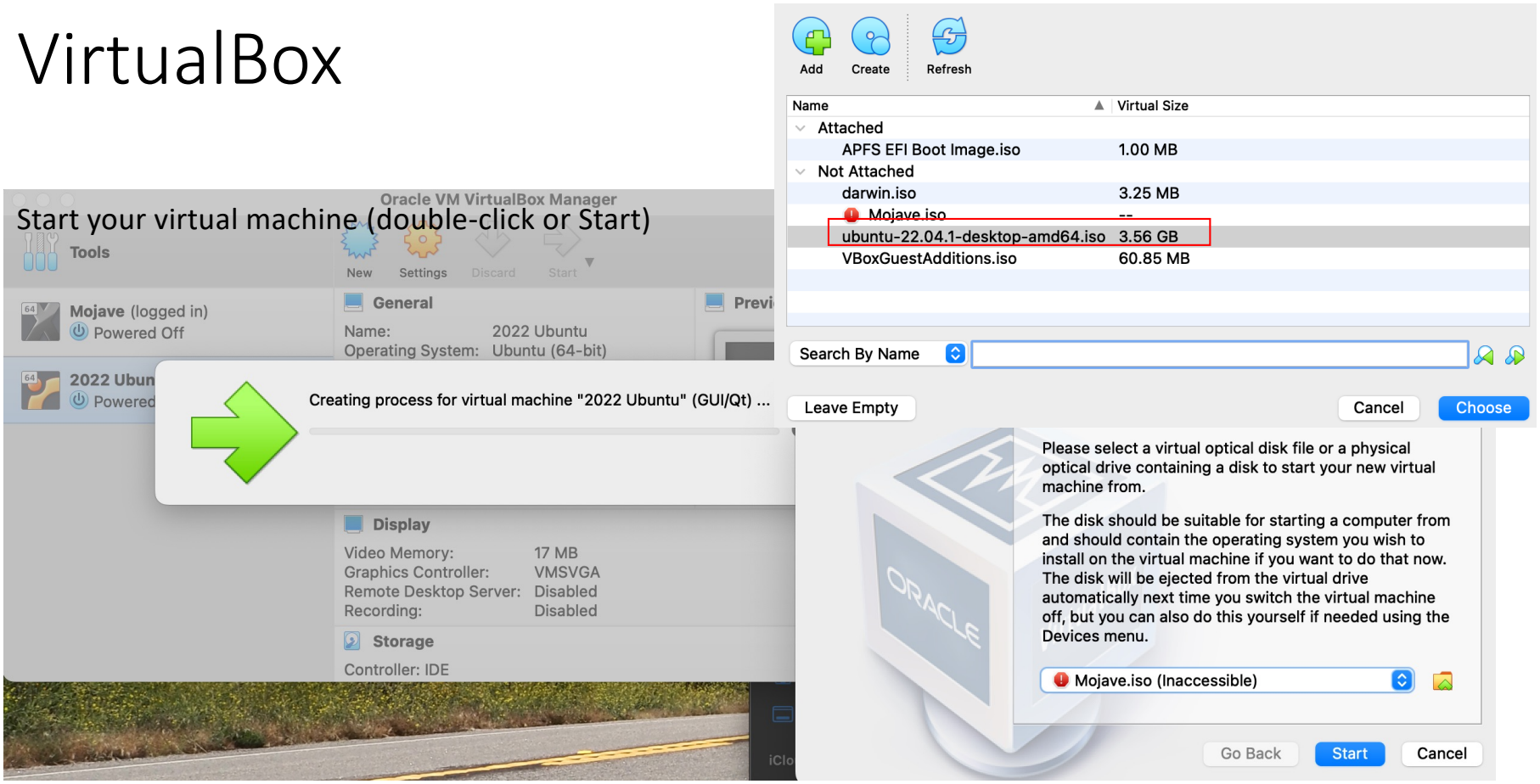
- Now we need a guest operating system: we'll use the latest version of Ubuntu (Linux) LTS (*Long Term Support*).
- https://ubuntu.com/download



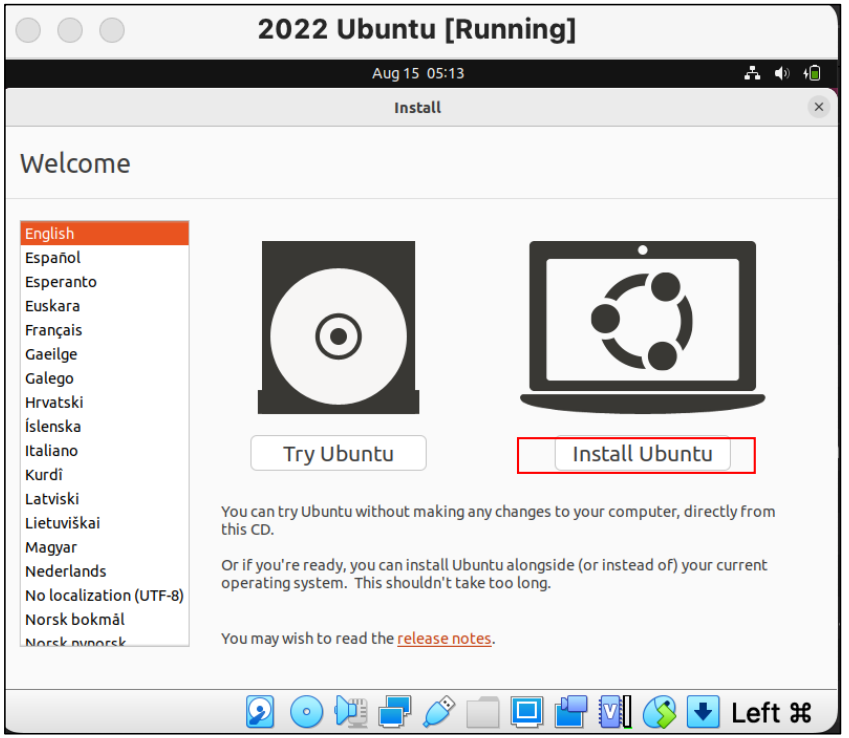
The .iso file is a BIG download!
It's a special file that is a virtual cd
ISO images:

- Macs can mount ISO images.
- Macs can't boot off a multitrack ISO image
- some versions of Windows can't mount an ISO image
- (without extra software).
- Install Microsoft's Virtual CD-ROM Control Panel.

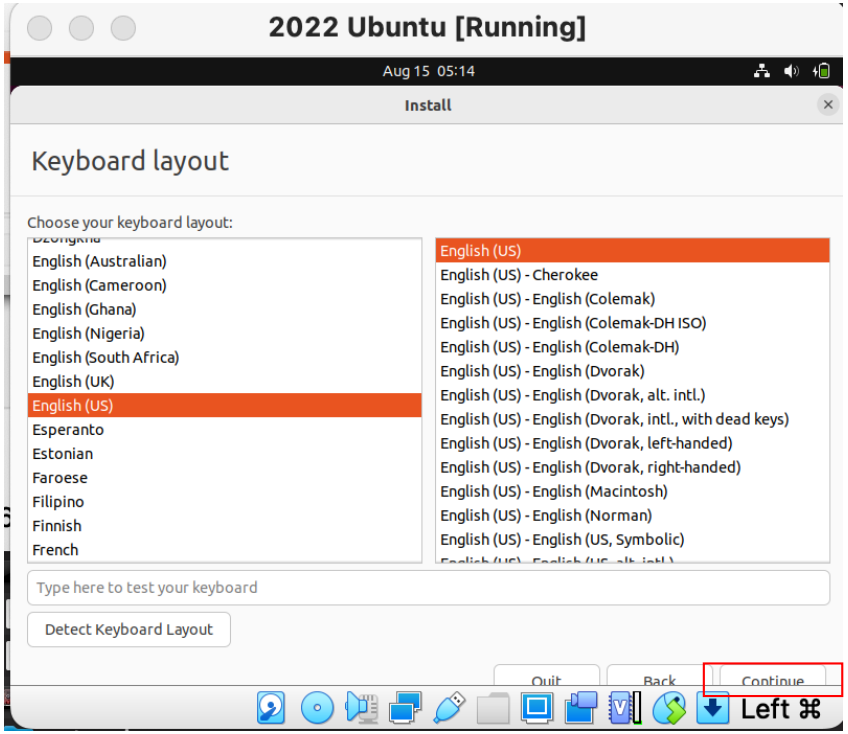
VirtualBox

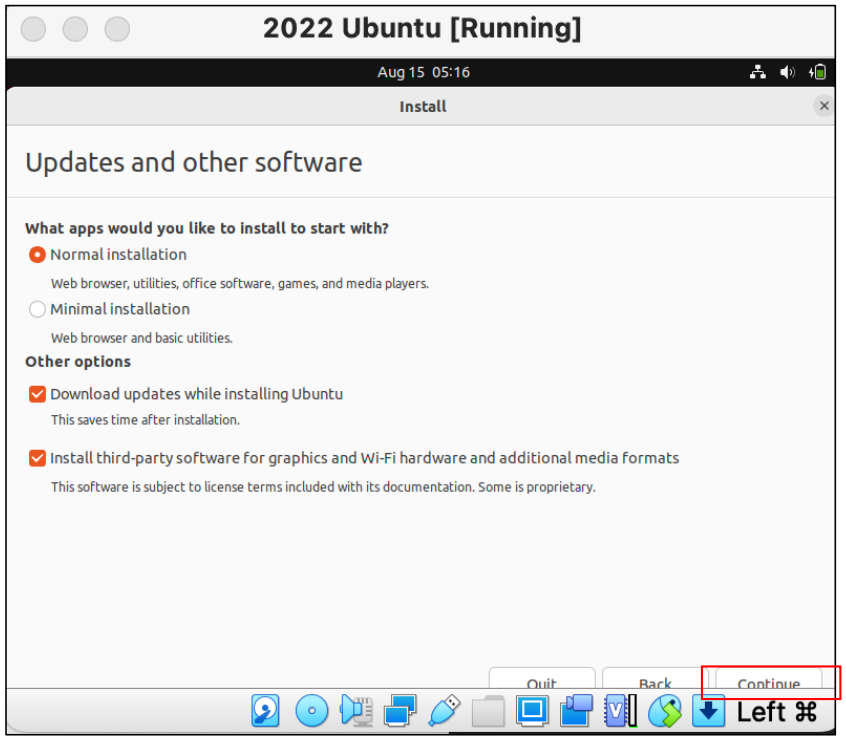

Start your virtual machine (double-click or Start)
Add
Create
Refresh
Name
Virtual Size
Attached
APFS EFI Boot Image.iso
1.00 MB
Not Attached
darwin.iso
3.25 MB
Mojave.iso
--
ubuntu-22.04.1-desktop-amd64.iso
3.56 GB
VBoxGuestAdditions.iso
60.85 MB
Search By Name
Leave Empty
Cancel
Choose
Oracle VM VirtualBox Manager
Tools
New
Settings
Discard
Start
Mojave (logged in)
Powered Off
General
Name:
2022 Ubuntu
Operating System:
Ubuntu (64-bit)
Creating process for virtual machine "2022 Ubuntu" (GUI/Qt) ...
Display
Video Memory:
17 MB
Graphics Controller:
VMSVGA
Remote Desktop Server:
Disabled
Recording:
Disabled
Storage
Controller: IDE
Please select a virtual optical disk file or a physical optical drive containing a disk to start your new virtual machine from.
The disk should be suitable for starting a computer from and should contain the operating system you wish to install on the virtual machine if you want to do that now. The disk will be ejected from the virtual drive automatically next time you switch the virtual machine off, but you can also do this yourself if needed using the Devices menu.
Mojave.iso (Inaccessible)
Go Back
Start
Cancel

VirtualBox: installing Ubuntu

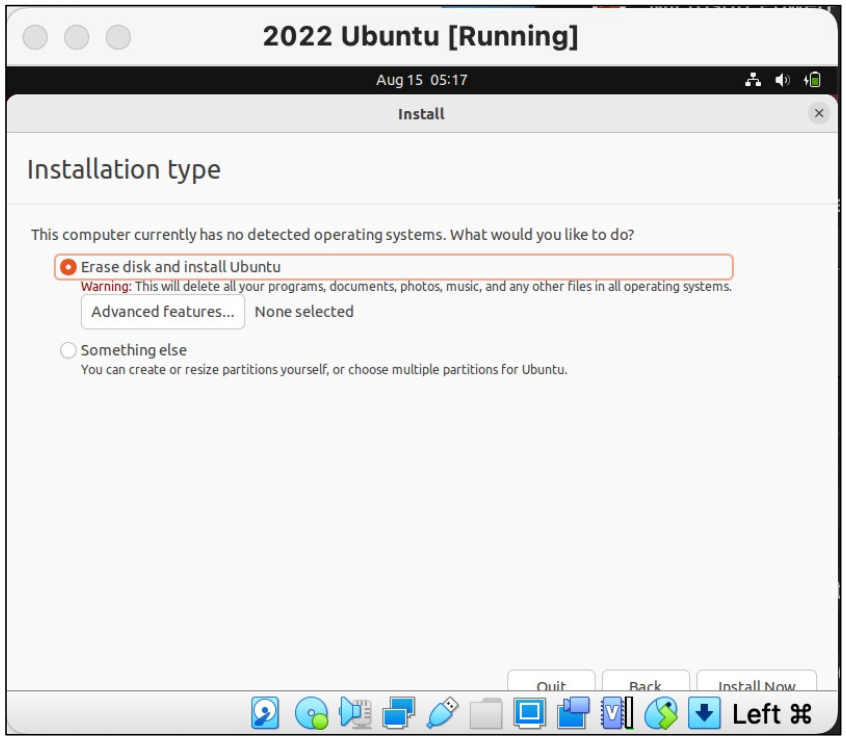


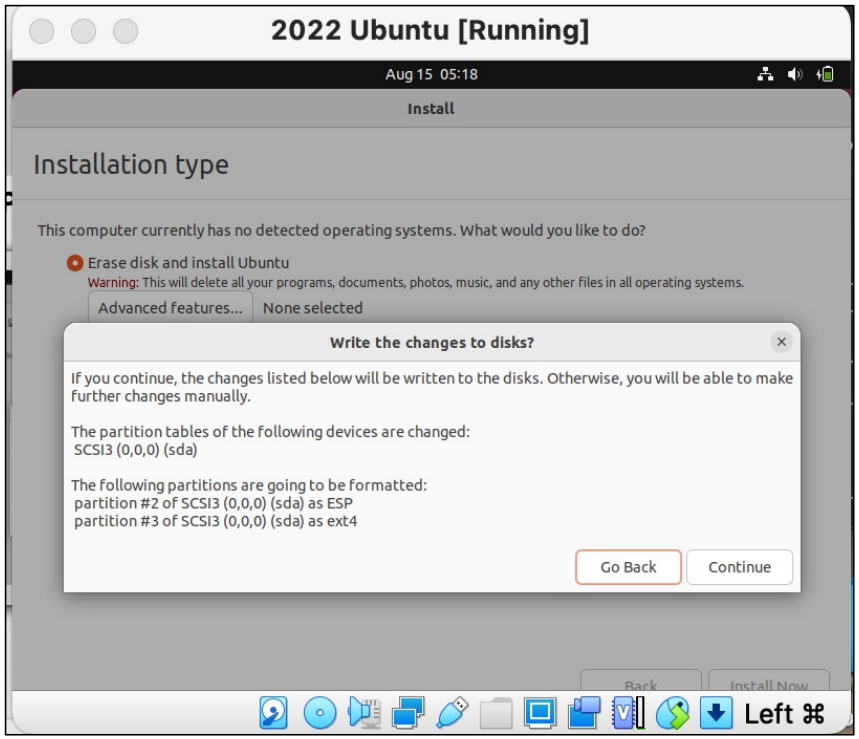
VirtualBox: installing Ubuntu



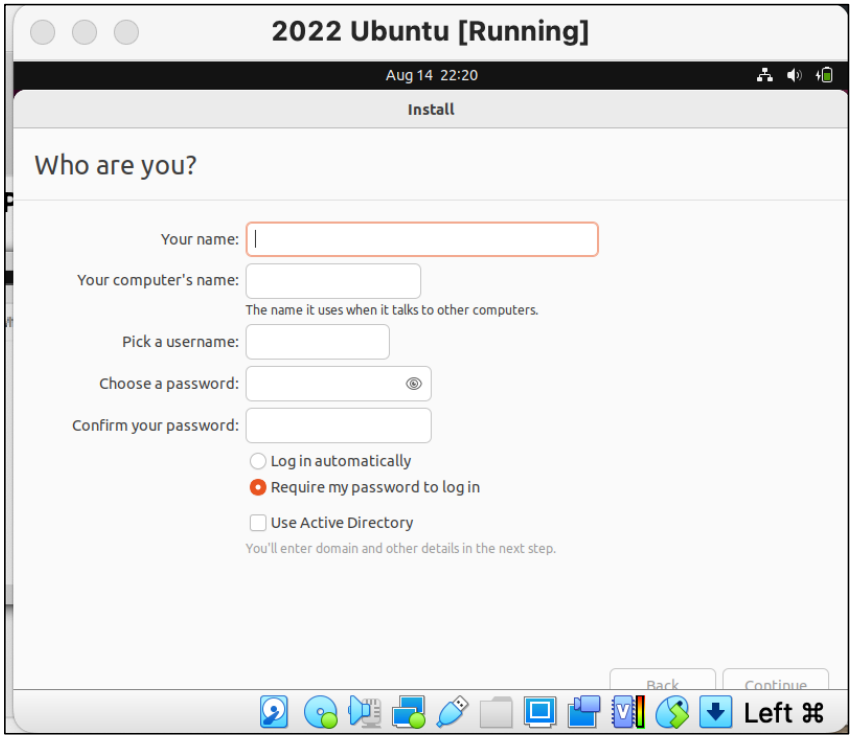


VirtualBox: installing Ubuntu

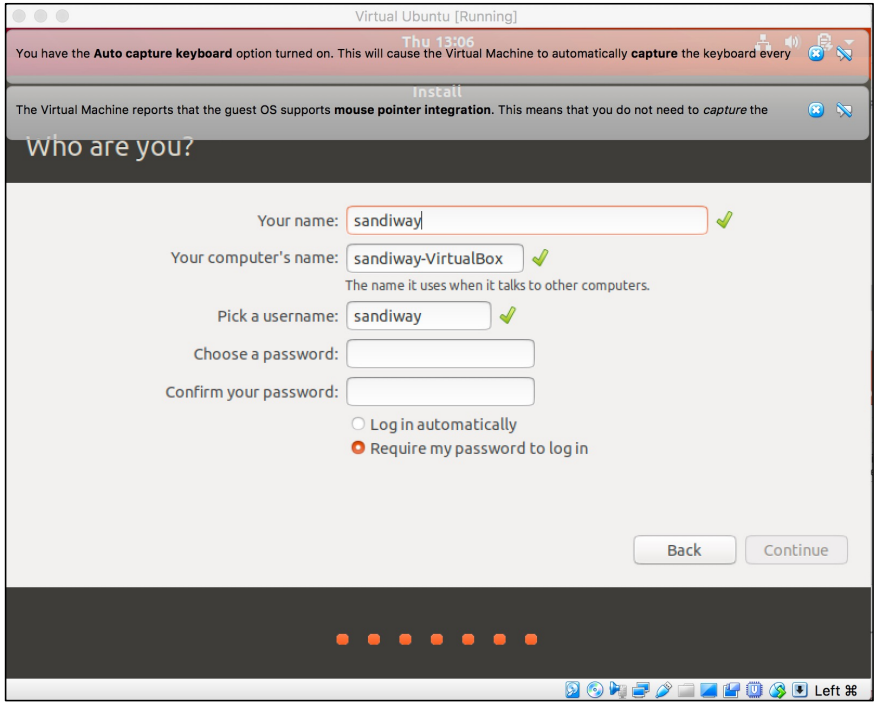


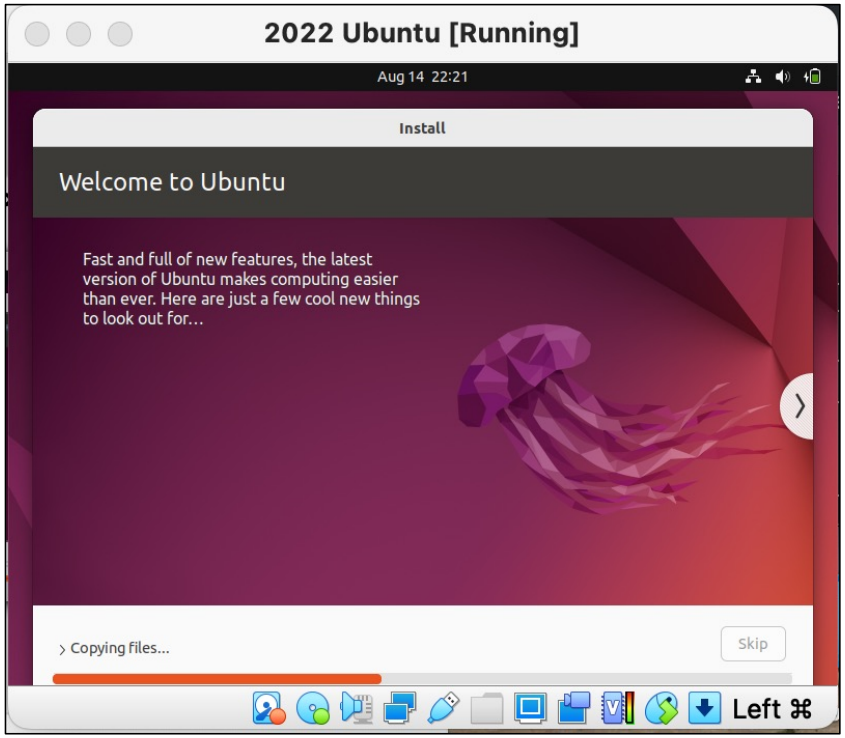


VirtualBox: installing Ubuntu

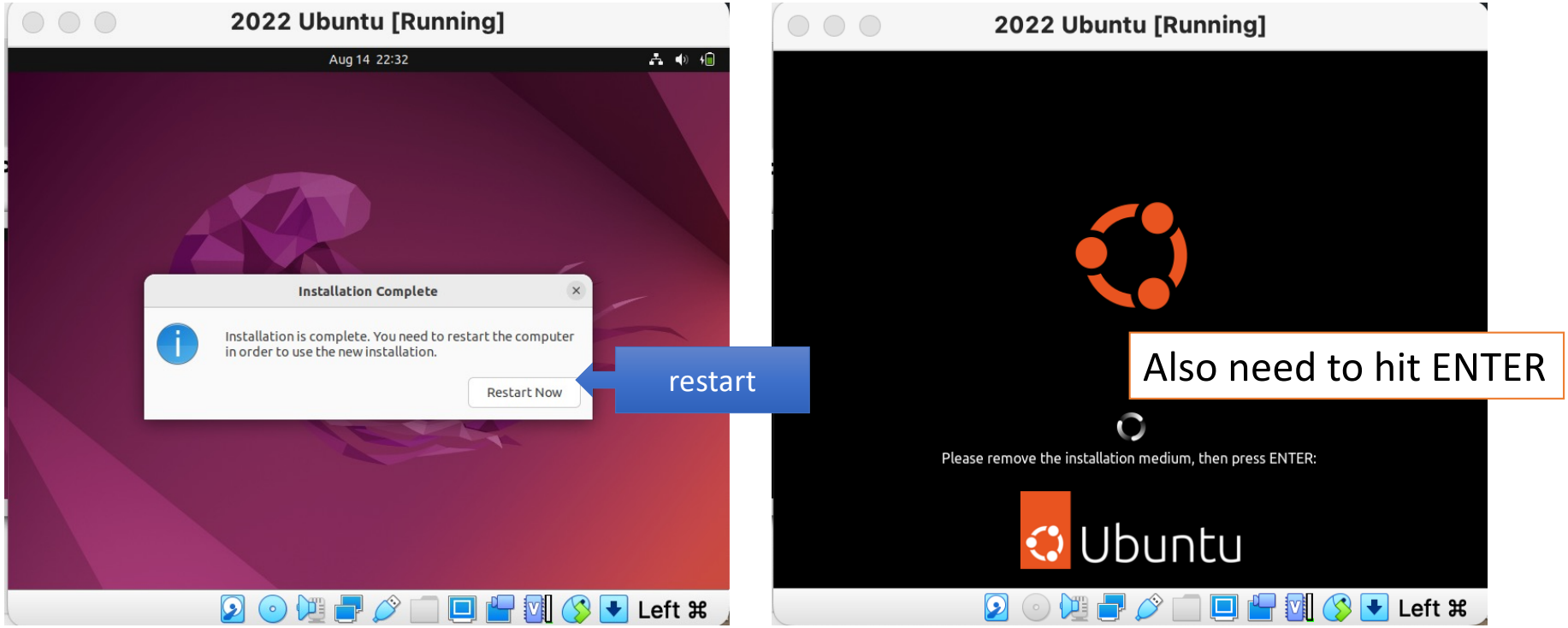


VirtualBox: installing Ubuntu

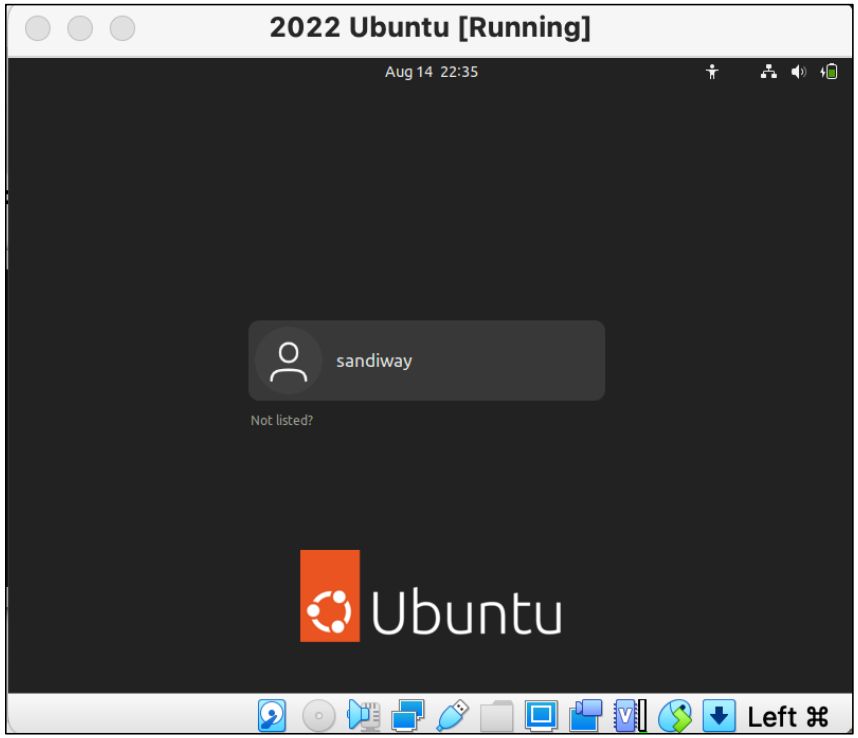


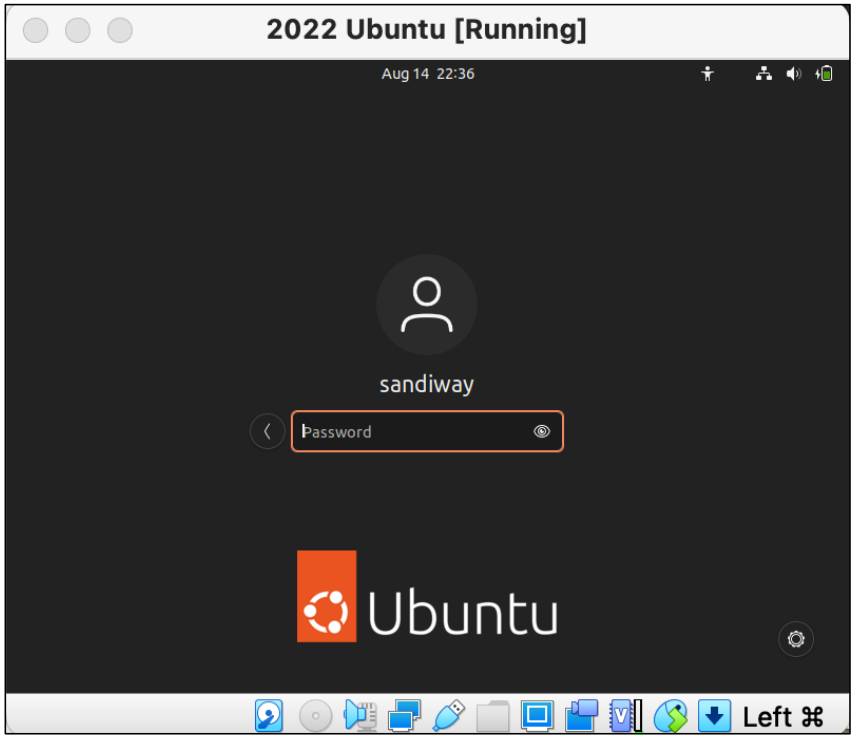


VirtualBox: installing Ubuntu

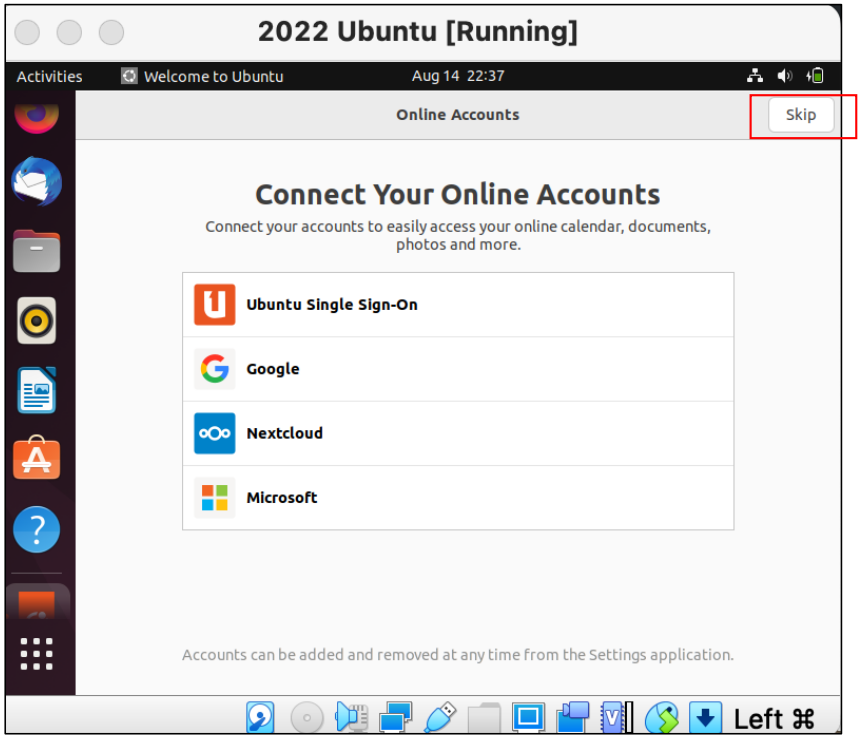


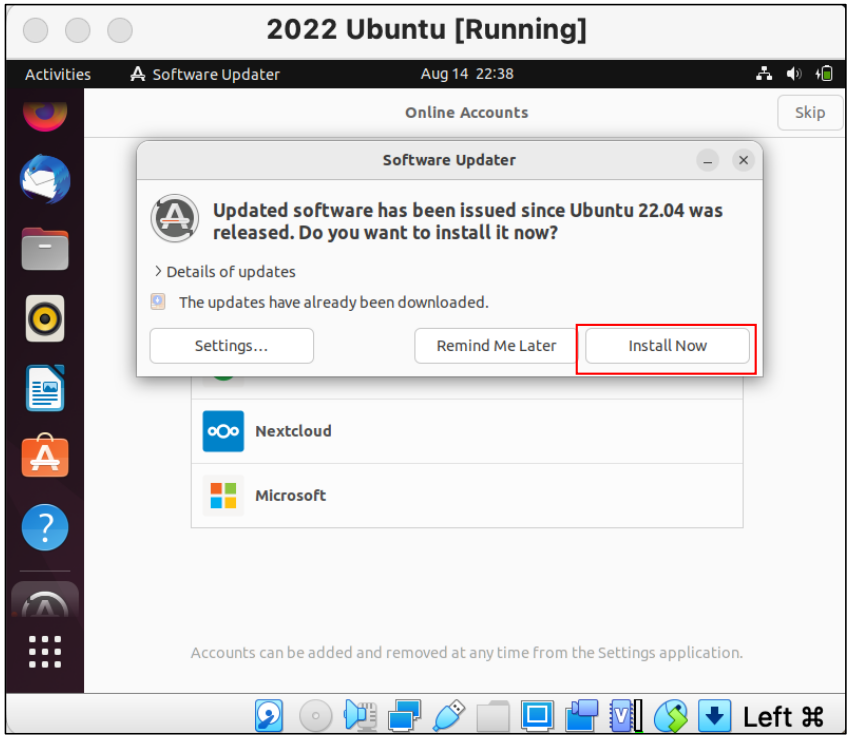
VirtualBox: running Ubuntu





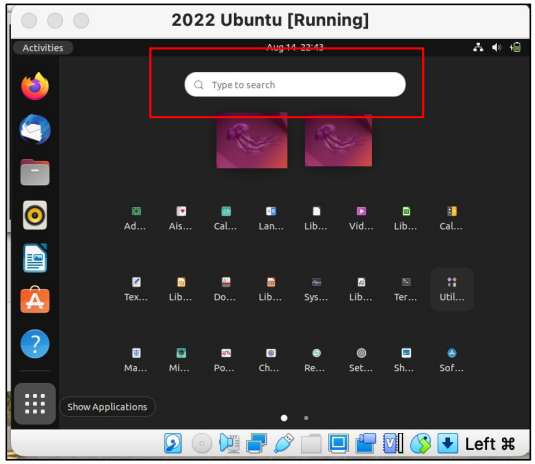
VirtualBox: running Ubuntu

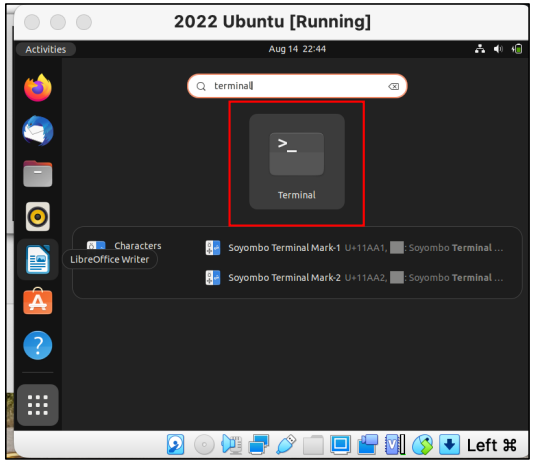




VirtualBox: running Ubuntu

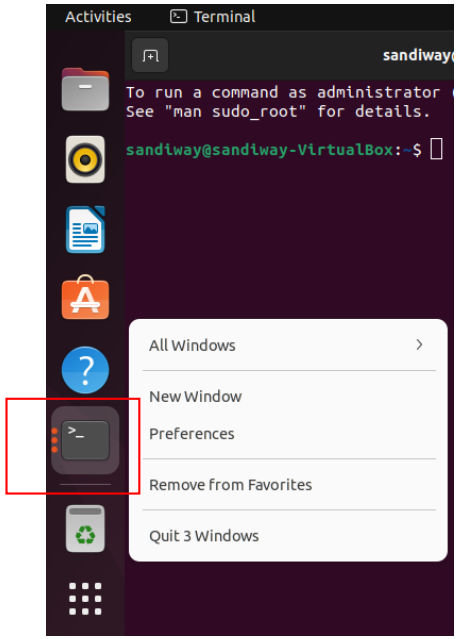
- Software packages
  - Terminal: **sudo** apt-get install <pkg-name>
  - **sudo** prefix: means execute the apt-get command with superuser privileges (typically needed for packages)
- How to find Terminal: use search via the *app menu* (9 squares icon)



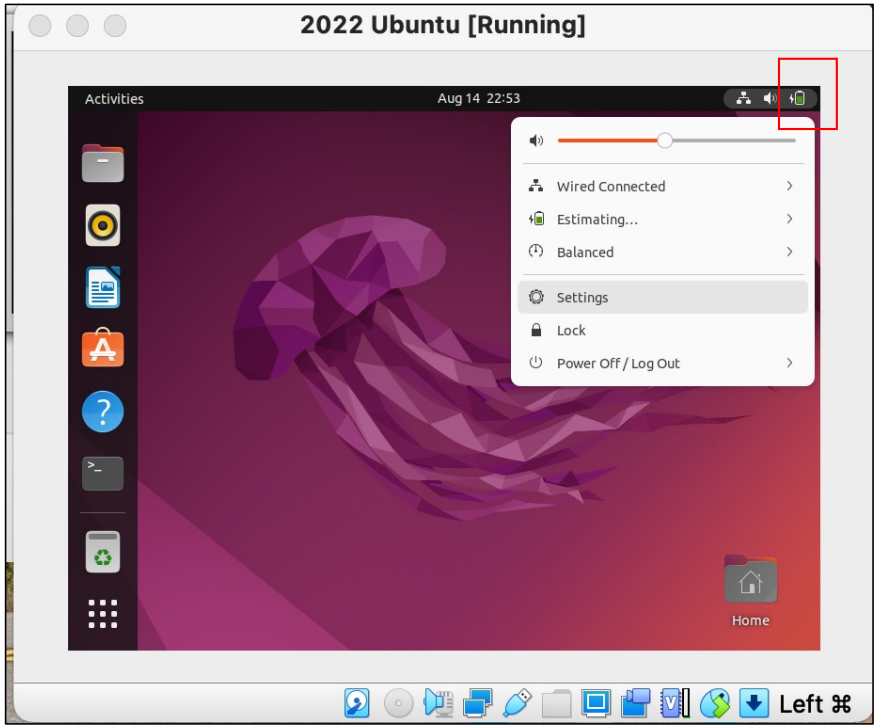


VirtualBox: running Ubuntu

- Add Terminal to favorites:
  - Control-Click Terminal icon: add/remove from Favorites

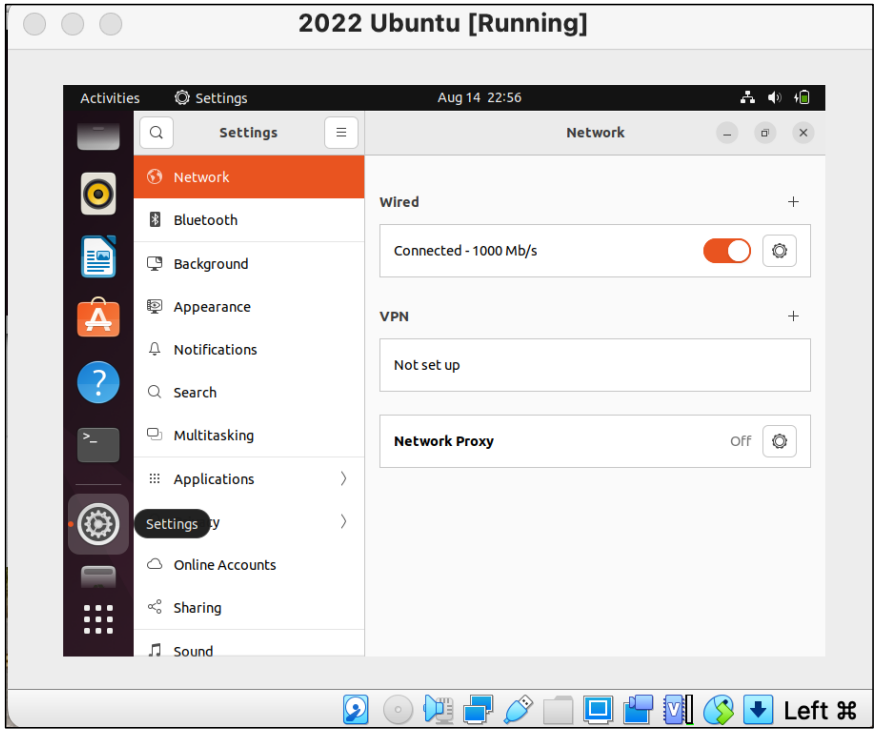


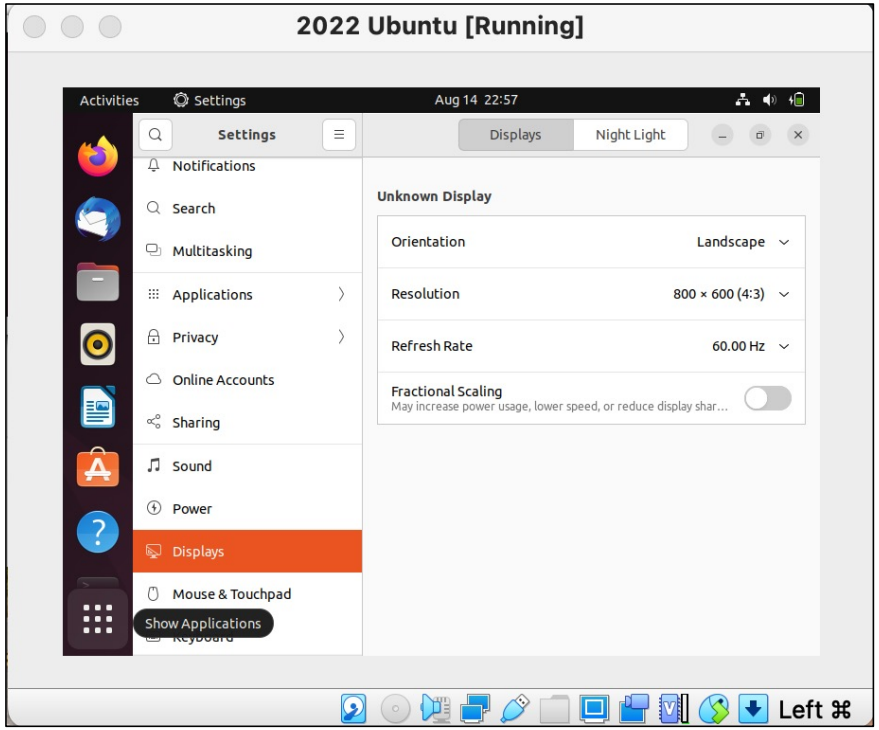
VirtualBox: running Ubuntu



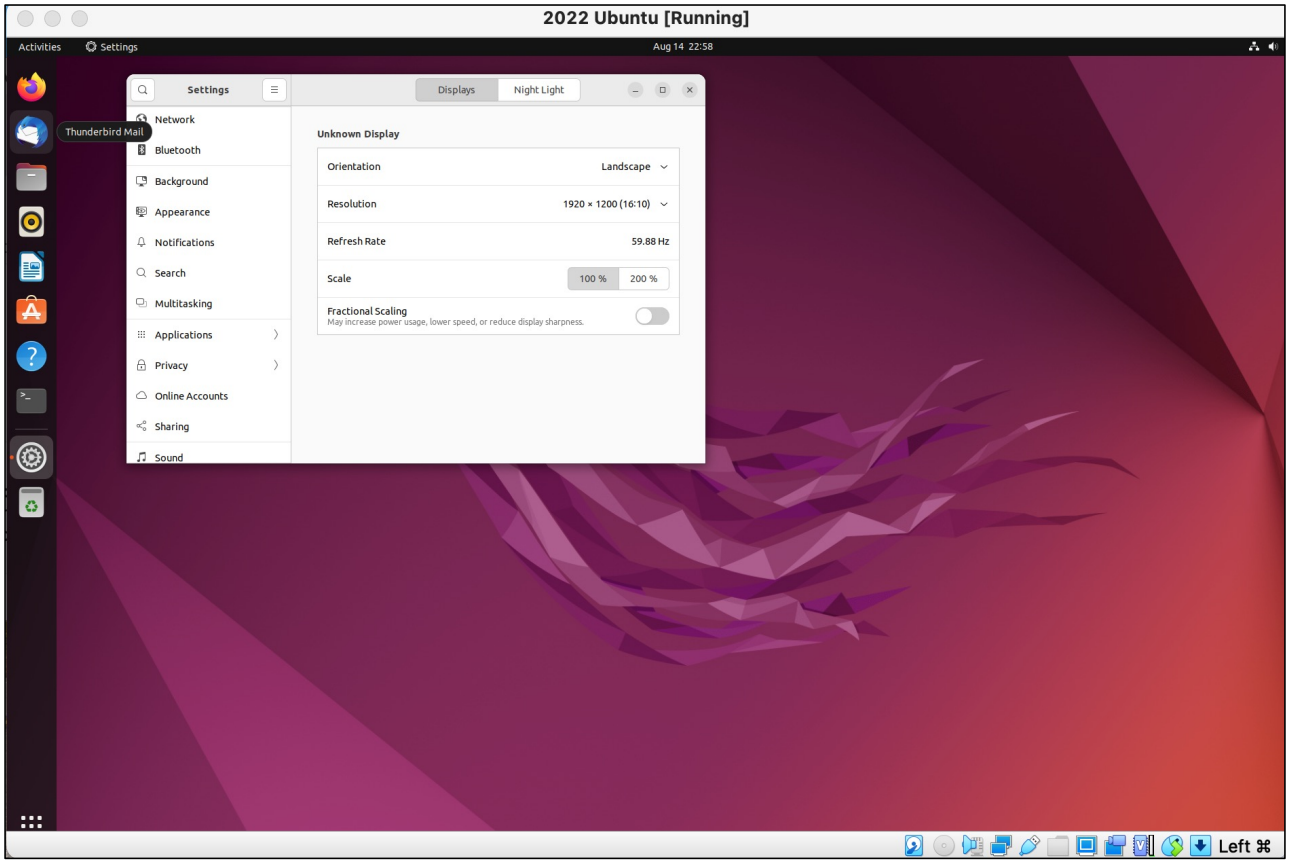
- Click top-right icon to bring up Power Off etc.
- In Settings, you can also change the screen resolution from the default 800 x 600

VirtualBox: running Ubuntu



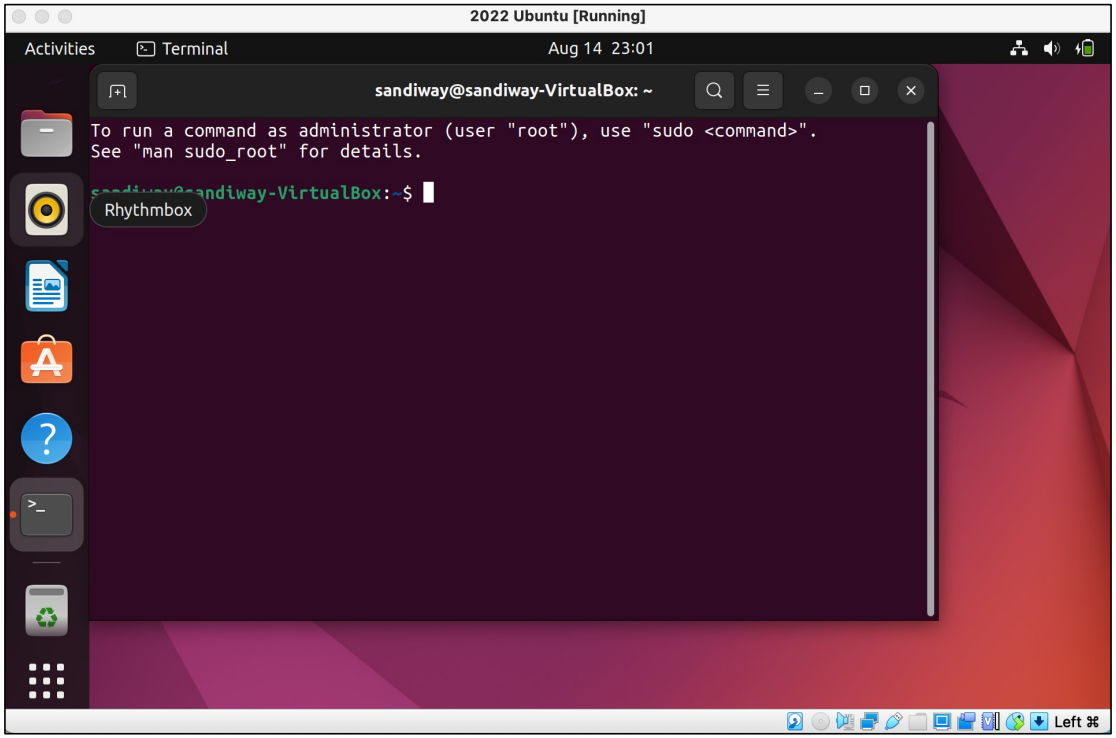


VirtualBox: running Ubuntu



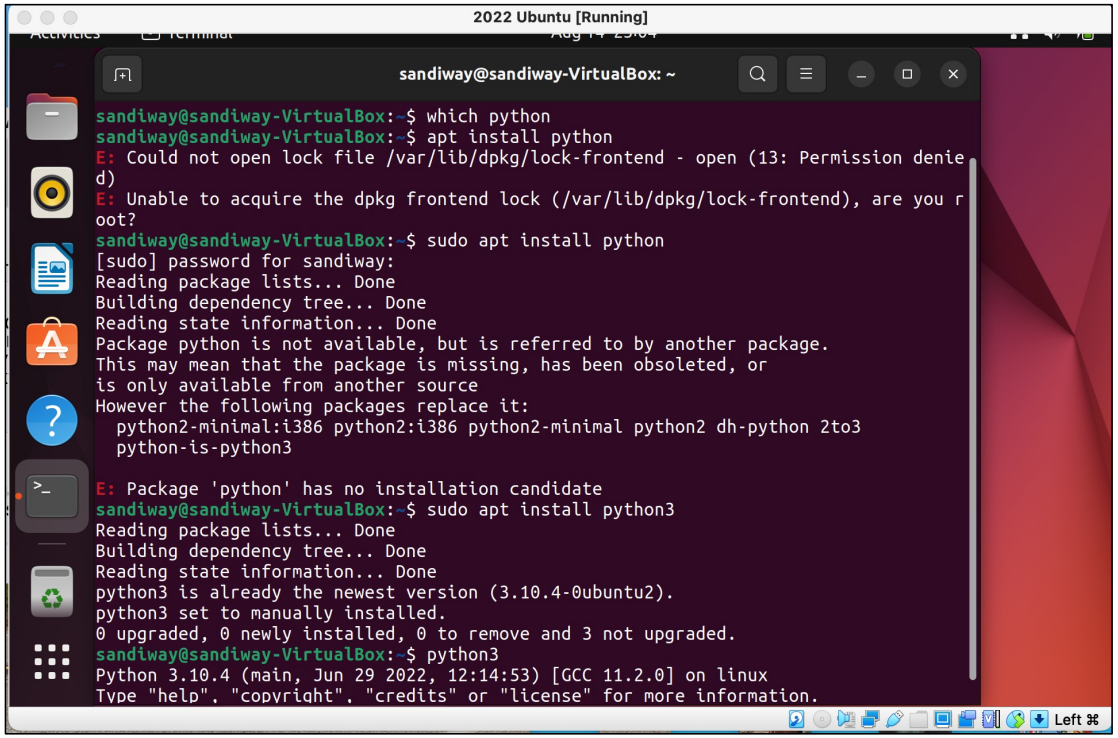
1920 x 1200 resolution

VirtualBox: running Ubuntu



Magnification: 200%

Ubuntu: python3 is already installed!



- `which python`

returns nothing

- `apt install python`

doesn't work: 1) not adminstrator, and 2) there's no such package!

- `sudo apt install python3`

says it's already there

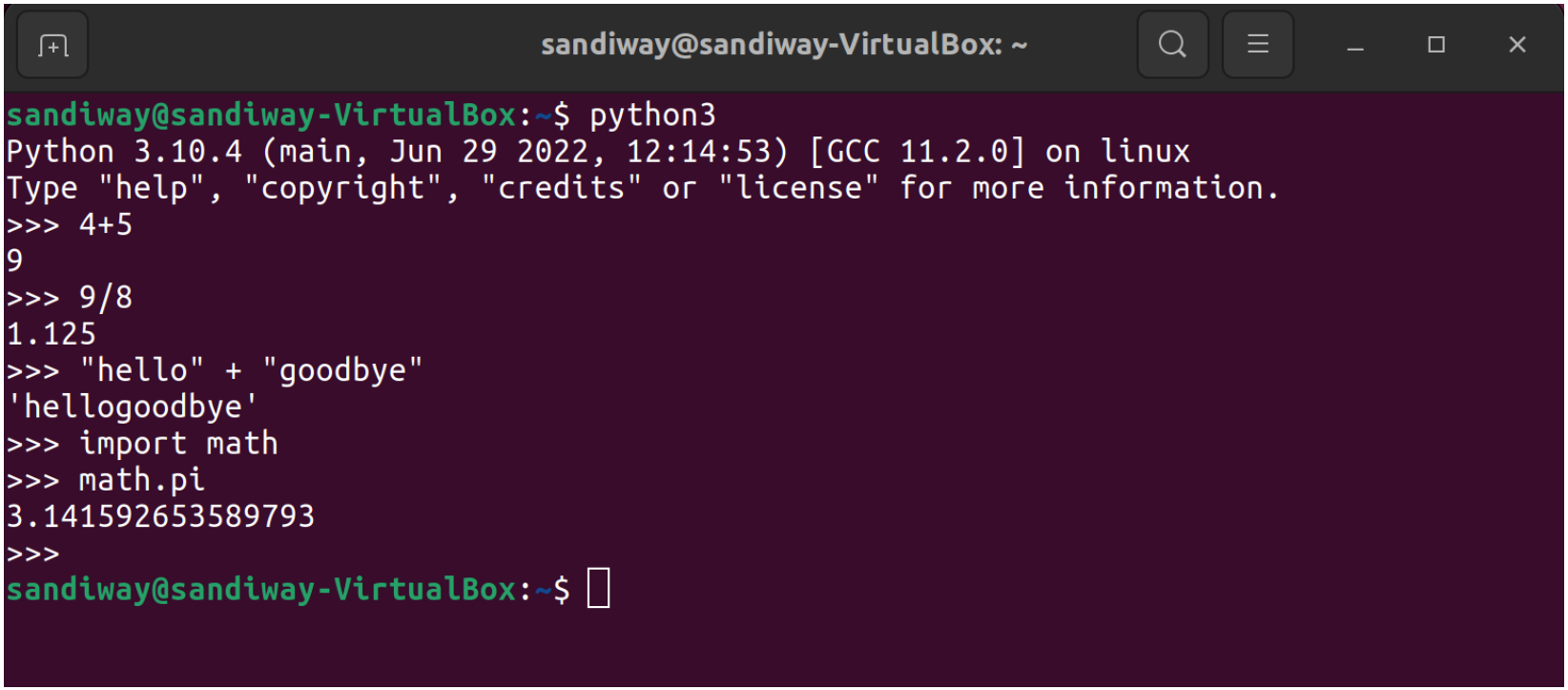
- `python3`

places you in the interpreter at the prompt >>>

- <Control>-D

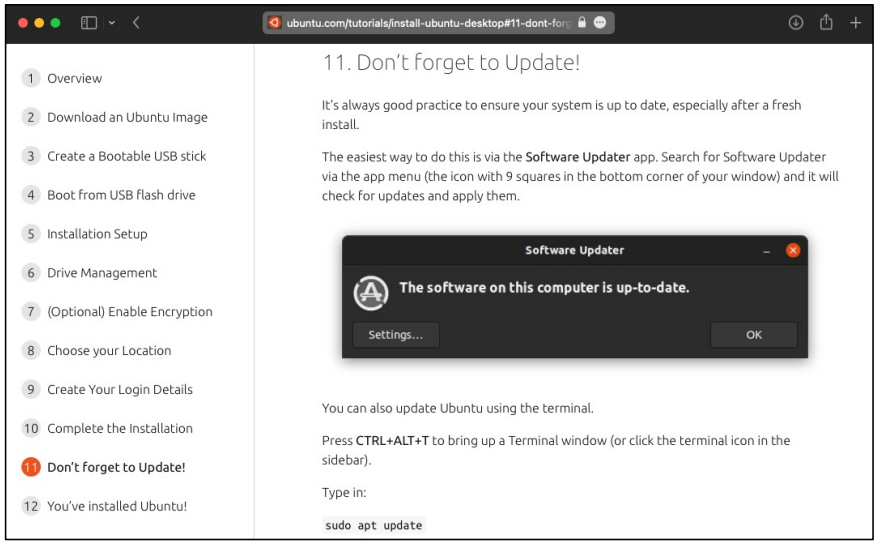
quits Python

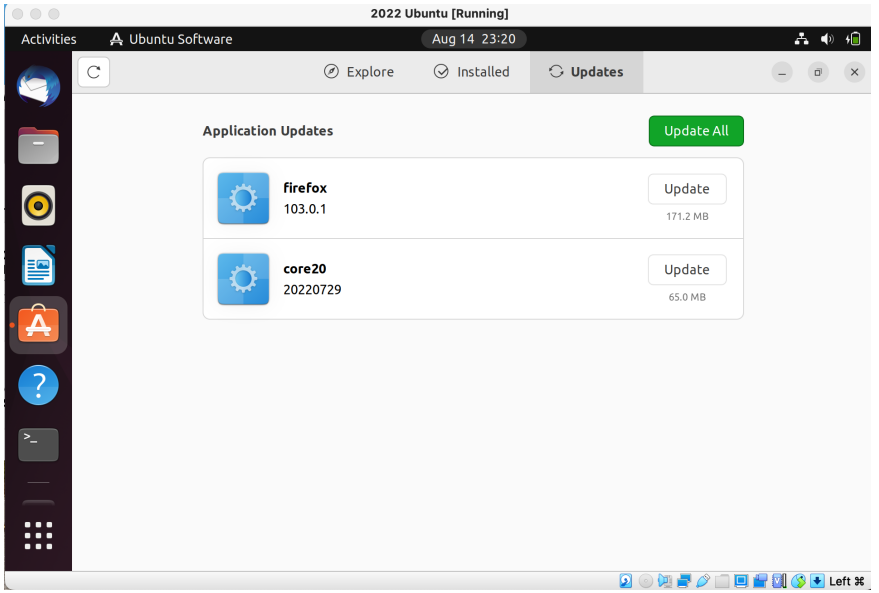
Ubuntu: python3 is already installed!



Keep Ubuntu up to date

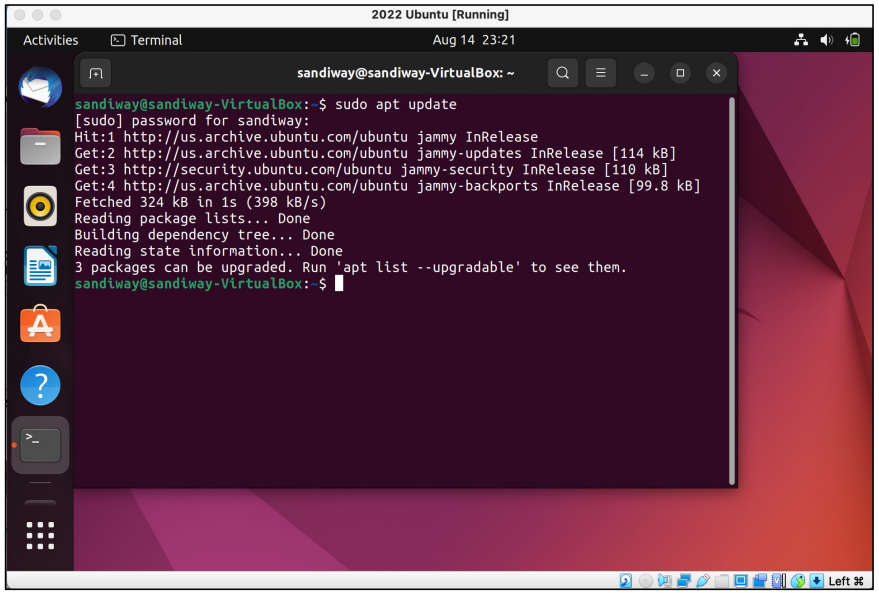
https://ubuntu.com/tutorials/install-ubuntu-desktop#1-overview





Keep Ubuntu up to date

- `sudo apt update`



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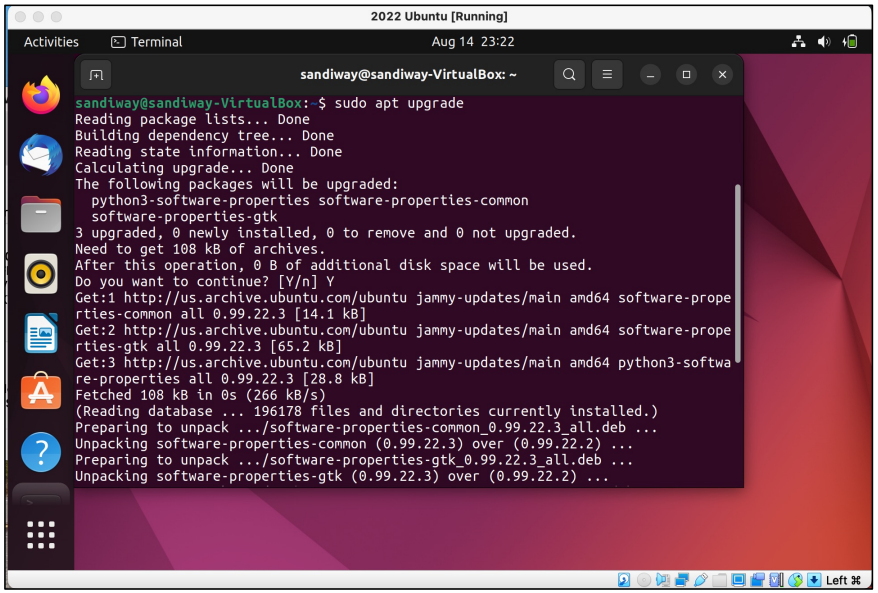
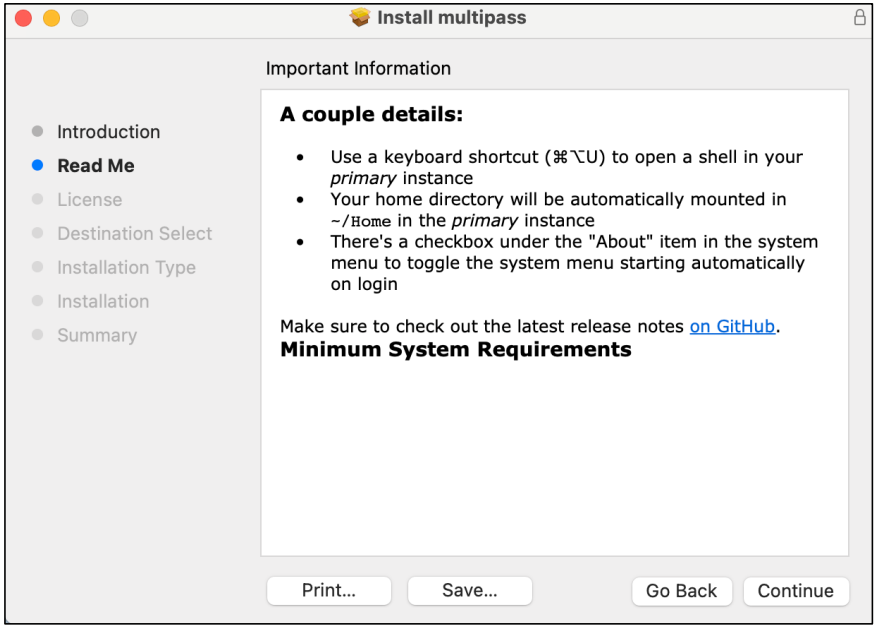
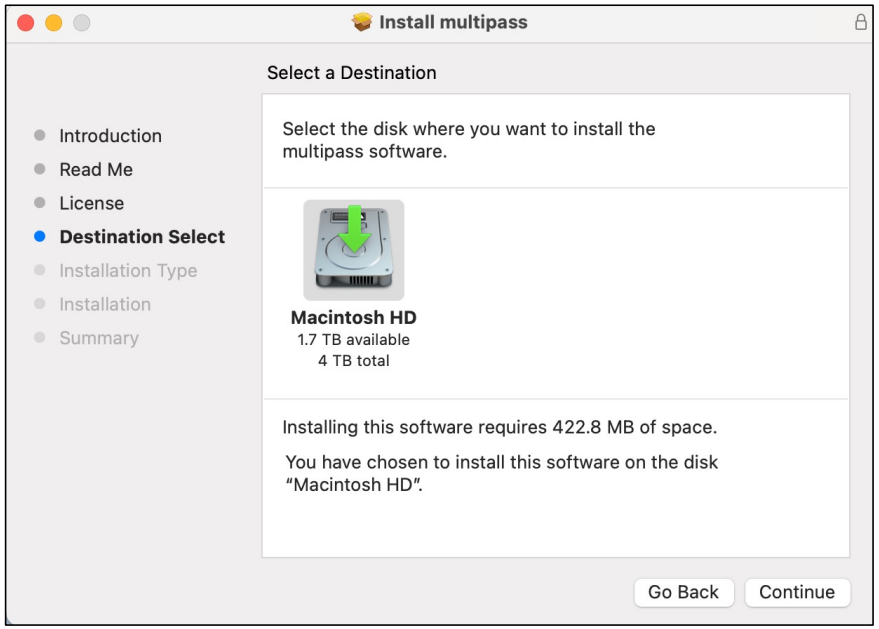


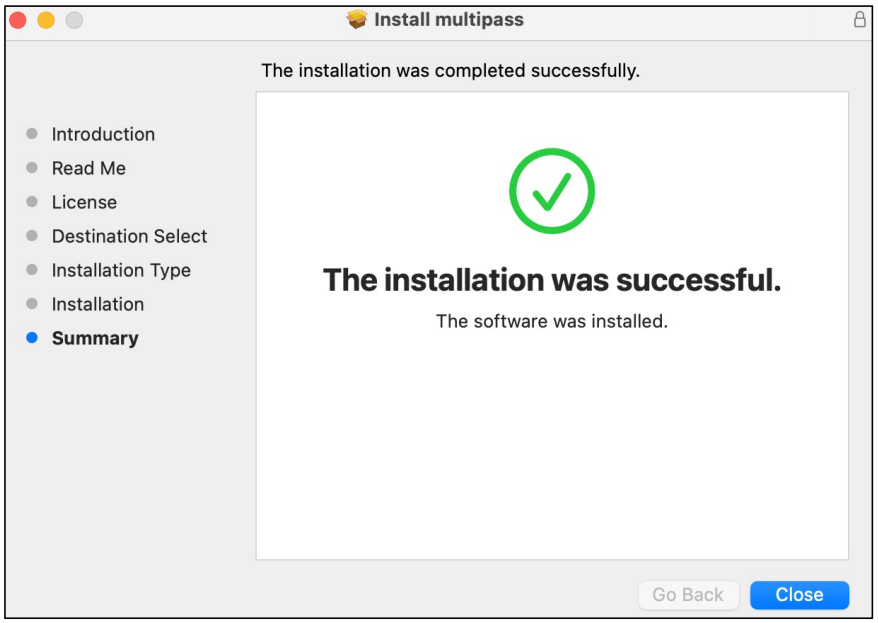
Multipass

https://discourse.ubuntu.com/t/how-to-guides/27142

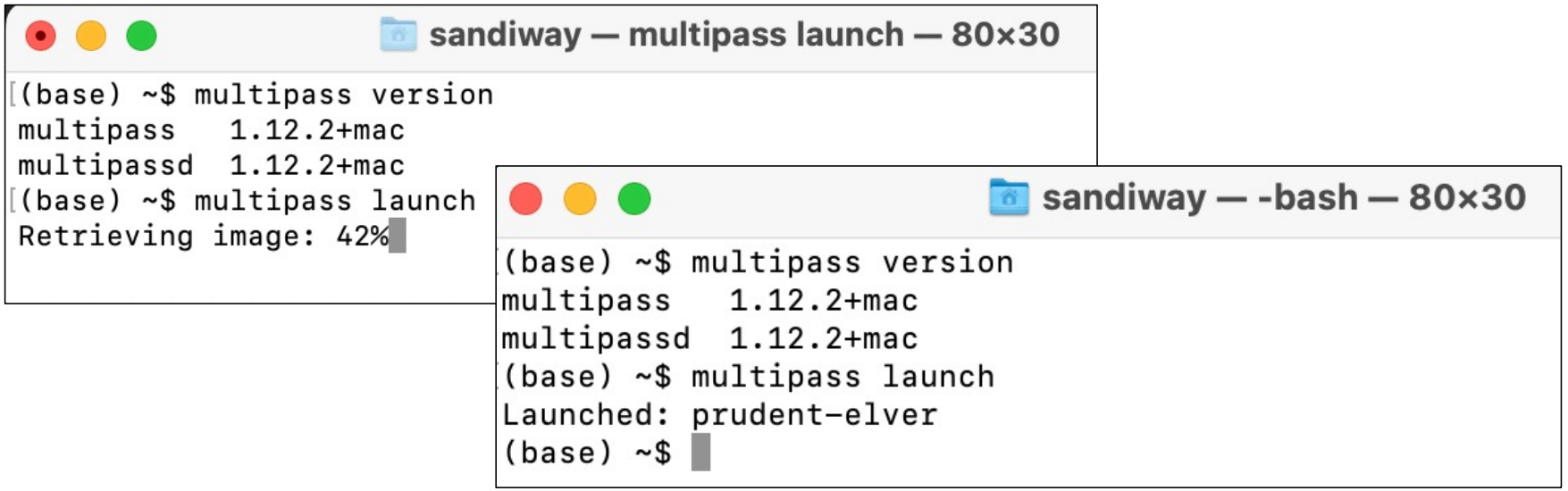


Multipass


Install multipass
Select a Destination
Introduction
Read Me
License
Destination Select
Installation Type
Installation
Summary
Select the disk where you want to install the multipass software.
Macintosh HD
1.7 TB available
4 TB total
Installing this software requires 422.8 MB of space.
You have chosen to install this software on the disk “Macintosh HD”.
Go Back
Continue


Install multipass
The installation was completed successfully.
Introduction
Read Me
License
Destination Select
Installation Type
Installation
Summary
The installation was successful.
The software was installed.
Go Back
Close

Multipass


sandiway — multipass launch — 80×30
(base) ~$ multipass version
multipass 1.12.2+mac
multipassd 1.12.2+mac
(base) ~$ multipass launch
Retrieving image: 42%
sandiway — -bash — 80×30
(base) ~$ multipass version
multipass 1.12.2+mac
multipassd 1.12.2+mac
(base) ~$ multipass launch
Launched: prudent-elver
(base) ~$

Multipass

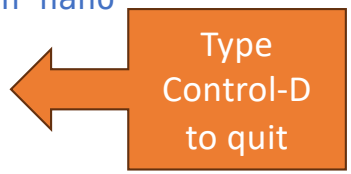
- Terminal:

```
$ multipass launch
Launched: prudent-elver
$ multipass info prudent-elver
Name:           prudent-elver
State:          Running
IPv4:           192.168.64.2
Release:        Ubuntu 22.04.3 LTS
Image hash:     9c59c6097711 (Ubuntu 22.04 LTS)
CPU(s):         1
Load:           0.00 0.02 0.00
Disk usage:     1.4GiB out of 4.8GiB
Memory usage:   153.3MiB out of 962.4MiB
Mounts:         --
```

```
$ multipass shell prudent-elver
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.15.0-79-generic aarch64)

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@prudent-elver:~$ uname -a
Linux prudent-elver 5.15.0-79-generic #86-Ubuntu SMP Mon Jul 10 16:11:29 UTC 2023 aarch64 aarch64 aarch64 GNU/Linux
ubuntu@prudent-elver:~$ pwd
/home/ubuntu
ubuntu@prudent-elver:~$ which nano
/usr/bin/nano
ubuntu@prudent-elver:~$
```



Multipass

```
ubuntu@prudent-elver:~$ ls -a
.  ..  .bash_logout  .bashrc  .cache  .profile  .ssh
ubuntu@prudent-elver:~$ nano .bashrc
ubuntu@prudent-elver:~$
```