## Last updated 2/24/19

- Pre-setup
  - Visit IT in person and ask to have: virtualization enabled in the UEFI/BIOS

- Check your computer
  - Settings → About
    - Amount of RAM installed
    - If < 8MB contact instructor
  - File Explorer right click on c:  $\rightarrow$  properties
    - Check Free Space
    - If < 40MB contact instructor</li>

- System virtual machines
  - Provide full virtualization
    - Full functionality required to execute an entire operating system
  - A hypervisor is used to share and manage hardware
    - Isolated environments (including hardware) that exist on the same physical machine.

- Operating System Ubuntu
- Hypervisor VirtualBox

- VirtualBox
  - Free, OpenSource Hypervisor from Oracle
  - www.virtualbox.org
    - Download VirtualBox 6.0



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VirtualBox

Select Windows hosts

# VirtualBox

#### Download VirtualBox

Here you will find links to VirtualBox binaries and its source code.

#### VirtualBox binaries

By downloading, you agree to the terms and conditions of the resp

If you're looking for the latest VirtualBox 5.2 packages, see VirtualI need support for 32-bit hosts, as this has been discontinued in 6.0.

#### VirtualBox 6.0.4 platform packages

- B⇒Windows hosts
- BYOS X hosts
- Linux distributions
- General Solaris hosts

The binaries are released under the terms of the GPL version 2.

Can the changelog for what has changed

VirtualBox

Save the file in Downloads

💿 Save As					×
← → ~ ↑ 📕	Th	iis PC > Downloads > V	ර Search Downloa	ds	٩
Organize 🔻 Ne	w fold	er			?
> 🧊 3D Objects	^	Name	Date modified	Туре	
> 📃 Desktop		🍰 vlc-3.0.2-win64.exe	5/15/2018 8:05 PM	Application	
> 🔮 Documents		🐝 ModelSimSetup-17.1.0.590-windows.exe	2/22/2018 8:19 PM	Application	
> 👆 Downloads		🐝 QuartusLiteSetup-17.1.0.590-windows.exe	2/22/2018 8:07 PM	Application	
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Save as <u>t</u> ype:	Appli	cation (*.exe)			~
∧ Hide Folders			<u>S</u> ave	Cancel	

7

- VirtualBox
  - Traverse to your downloads folder
  - Select the VirtualBox...executable

۰ 🦊 ծ Th	is PC > Downloads		~	Ū
led_Syste ^	Name Name	~	Date modified	Тур
	VirtualBox-6.0.4-128413-Win.exe CCS8.2.0.00007_win32.zip vlc-3.0.2-win64.exe		2/12/2019 6:24 PM 10/21/2018 4:28 PM 5/15/2018 8:05 PM	Apr Cor Apr

Select Next

VirtualBox

#### 🖟 Oracle VM VirtualBox 6.0.4 Setup



#### Welcome to the Oracle VM VirtualBox 6.0.4 Setup Wizard

The Setup Wizard will install Oracle VM VirtualBox 6.0.4 on your computer. Click Next to continue or Cancel to exit the Setup Wizard.

#### ×

#### Real Oracle VM VirtualBox 6.0.4 Setup

#### Custom Setup

Select the way you want features to be installed.

Click on the icons in the tree below to change the way features will be installed.



×

• VirtualBox

Oracle VM VirtualBox 6.0.4 Setup	×	🖟 Oracle VM VirtualBox 6.0.4	
Custom Setup			
Select the way you want features to be installed.			Warning:
			Network Interfaces
Please choose from the options below:			Installing the Oracle VM VirtualBox 6.0.4 Networking feature
			will reset your network connection and temporarily disconnect you from the network.
Create start menu entries			
Create a shortcut on the desktop			Proceed with installation now?
Create a shortcut in the Quick Launch Bar			
Register file associations			
Version 6.0.4 < Back Next >	Cancel	Version 6.0.4	Yes No
Select Next			Select Yes

• VirtualBox

P Oracle vivi virtualbox 0.0.4 Setup	Oracle VIVI VIITUAIBOX 0.0.4 Setup
Ready to Install The Setup Wizard is ready to begin the Custom installation.	Oracle VM VirtualBox 6.0.4
Click Install to begin the installation. If you want to review or change installation settings, click Back. Click Cancel to exit the wizard.	e any of your Please wait while the Setup Wizard installs Oracle VM VirtualBox 6.0.4. This may take several minutes. Status:
Version 6.0.4 < Back Insta	all Cancel Version 6.0.4 < Back Next > Can
Version 6.0.4 < Back Insta Select Install	Image: Cancel     Version 6.0.4     < Back
Version 6.0.4 < Back Insta Select Install	Image: Cancel     Version 6.0.4     < Back

#### • VirtualBox

🚽 Oracle VM VirtualBox 6.0.4	4 Setup	×		
	Oracle VM VirtualBox 6.0.4 installation is complete.		La rea	
	Click the Finish button to exit the Setup Wizard.			
	Start Oracle VM VirtualBox 6.0.4 after installation			
Version 6.0.4	< <u>B</u> ack <b>Finish</b> <u>C</u> ance	2		
	Finish			

- Linux
  - www.ubuntu.com
  - Download



- Linux
  - Ubuntu Desktop



#### Ubuntu Desktop >

Download Ubuntu desktop and replace your current operating system whether it's Windows or Mac OS, or, run Ubuntu alongside it.



#### Ubuntu Server >

The most popular server Linux in the cloud and data centre, you can rely on Ubuntu Server and its five years of guaranteed free upgrades.



Use the traditional installer

#### Ubuntu for IoT >

Are you a developer who wants to try snappy Ubuntu Core or classic Ubuntu on an IoT board?

Raspberry Pi 2 or 3 Raspberry Pi Compute Module 3 Intel NUC

#### Ubuntu Clou

Use Ubuntu optimi: certified server ima major clouds.

Get started on Ama Microsoft Azure, Go Platform and more Download cloud im development and t

• Linux

• Save the iso file in the downloads folder

Save As					×
	his PC > Downloads >	~ Ū	Search Download	ds	Q
Organize 🔻 New fol	der			•== •	?
🖌 Class_Notes \land	Name	[	Date modified	Туре	
🗾 Embedded_Syste	nolatch	4	4/8/2018 4:54 PM	File folder	
finance	ount count	4	4/8/2018 4:52 PM	File folder	
🗾 Labs	gray_counter_vhd	4	4/8/2018 4:48 PM	File folder	
a OneDrive	MathWorks	3	8/29/2018 11:25 AM	File folder	
💻 This PC					
🗊 3D Objects					
E Desktop					
Documents					
👆 Downloads 🗸 🗸	<				>
File <u>n</u> ame: ubu	ntu-18.04.1-desktop-amd64.iso				~
Save as <u>t</u> ype: Disc	Image File (*.iso)				~
∧ Hide Folders			<u>S</u> ave	Cancel	
	15				

- VirtualBox
  - Open Oracle VM VirtualBox
    - Should be on your desktop





- VirtualBox
  - Select New



- VirtualBox
  - Provide a name
  - Default location
  - Linux
  - Ubuntu(64bit)

Create Virtual Machine

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#### Name and operating system

Please choose a descriptive name and destination folder for the new virtual machine and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox to identify this machine.

?

×

Name:	VboxUbuntu	
Machine Folder:	C:\Users\Tim\VirtualBox VMs ~	
<u>Type</u> :	Linux 🔻 🋀	
Version:	Ubuntu (64-bit)	
	Expert Mode Next Cancel	

- VirtualBox
  - Select 4GB (4096 MB)

? Х ← Create Virtual Machine Memory size Select the amount of memory (RAM) in megabytes to be allocated to the virtual machine. The recommended memory size is 1024 MB. **•** 4096 MB 4 MB 16384 MB Next Cancel

- VirtualBox
  - Select Create a virtual hard disk now
  - Create

EE 4981

Create Virtual Machine

#### Hard disk

Empty

If you wish you can add a virtual hard disk to the new machine. You can either create a new hard disk file or select one from the list or from another location using the folder icon.

?

Cancel

Create

 $\times$ 

If you need a more complex storage set-up you can skip this step and make the changes to the machine settings once the machine is created.

20

The recommended size of the hard disk is 10.00 GB.

- Do not add a virtual hard disk
- <u>Create a virtual hard disk now</u>
- Use an existing virtual hard disk file

- VirtualBox
  - Select VDI
  - Next

×

Cancel

?

Create Virtual Hard Disk

#### Hard disk file type

Please choose the type of file that you would like to use for the new virtual hard disk. If you do not need to use it with other virtualization software you can leave this setting unchanged.





VMDK (Virtual Machine Disk)

Expert Mode Next

- VirtualBox
  - Select Dynamically allocated
  - Next

 $\times$ 

?

Create Virtual Hard Disk

#### Storage on physical hard disk

Please choose whether the new virtual hard disk file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).

A **dynamically allocated** hard disk file will only use space on your physical hard disk as it fills up (up to a maximum **fixed size**), although it will not shrink again automatically when space on it is freed.

A **fixed size** hard disk file may take longer to create on some systems but is often faster to use.



Eixed size

- VirtualBox
  - Leave the defaults
  - Create

			?	×
← Create Virtual Hard Disk				
File location and size				
Please type the name of the ne on the folder icon to select a dif	w virtual hard disk file fferent folder to creat	into the l te the file	box belo in.	w or click
VboxUbuntu				
Select the size of the virtual has amount of file data that a virtua	rd disk in megabytes. al machine will be able	This size i to store o	s the limi on the ha	t on the ard disk.
		, , L		10.00 GB
4.00 MB	2	2.00 TB		
		$\frown$		
		Create	¢	ancel
	23			

- VirtualBox
  - Your Virtual machine is now visible single click it
  - Select Start



- VirtualBox
  - Navigate to the downloads folder
  - Select the iso file you downloaded earlier
  - Select Start

 $\times$ 

Cancel

?

Select start-up disk

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.

ubuntu-18.04.1-desktop-amd64.iso (1.82 GB)

Start

- VirtualBox
  - Select Install Ubuntu



- VirtualBox
  - English
  - Continue

	Wed 02:26 👫 🐠 🙆 🔫
Keyboard layout	
Choose your keyboard layout: Dzongkha English (Australian) English (Cameroon) English (Ghana) English (Nigeria) English (South Africa) English (UK) English (UK) English (US) Esperanto Type here to test your keyboard	English (US) - Cherokee English (US) - English (Colemak) English (US) - English (Dvorak) English (US) - English (Dvorak, alt. intl.) English (US) - English (Dvorak, alt., with dead keys) English (US) - English (Dvorak, intl., with dead keys) English (US) - English (Dvorak, left-handed) English (US) - English (Dvorak, right-handed) English (US) - English (Macintosh)
Detect Keyboard Layout	Quit Back Continue

- VirtualBox
  - Normal Installation
  - Download updates
  - Continue

	Wed 02:27		<b>₽</b> •0) € -
Updates and other so	ftware		
What apps would you like to insta	ll to start with?		
Normal installation			]
web browser, utilities, office software,	games, and media players.		
O Minimal installation			
Web browser and basic utilities.			
other options			
🛛 Download updates while installin	g Ubuntu		
This saves time after installation.			
🗆 Install third-party software for gr	aphics and Wi-Fi hardware	and additional media for	rmats
This software is subject to license terms	s included with its documentation	n. Some is proprietary.	
		Quit	Back Continue
		• •	
		Seal hell	

- VirtualBox
  - Erase disk and install Ubuntu
  - Install Now

#### This is VERY SCARY Don't worry – this is safe It is erasing the virtual disk you created earlier – not your Windows disk(s)

Install Now

#### Installation type

This computer currently has no detected operating systems. What would you like to do?

O Erase	disk	and	install	Ubunt
---------	------	-----	---------	-------

Warning: This will delete all your programs, documents, photos, music, and any other files in all operating systems.

- Encrypt the new Ubuntu installation for security You will choose a security key in the next step.
- Use LVM with the new Ubuntu installation
   This will set up Logical Volume Management. It allows taking snapshots and easier partition resizing.
- Something else

You can create or resize partitions yourself, or choose multiple partitions for Ubuntu.

Quit	Back
	1

. . . . . . .

- VirtualBox
  - Continue



- VirtualBox
  - Select your time zone
  - Continue



- VirtualBox
  - Choose a name
  - Set the password
  - Continue

Tue 20:35 Who are you?	This is the name and password you will use to login to Ubuntu	
Your name: Joe Student Your computer's name: joe-VirtualBox The name it uses when it t Pick a username: joe Choose a password: ••••••••••••••••••••••••••••••••••••	Image: strong password   Image: strong password   Image: strong password   Image: strong password   Image: strong password	
	Back Continue	

VirtualBox



- VirtualBox
  - Restart restarts the VM, not your computer



- VirtualBox
  - Delete the iso file in downloads when prompted

- VirtualBox
  - Select your name and enter your password



- VirtualBox
  - Cycle through the start windows
  - Install updates if prompted



- VirtualBox
  - Exit
  - Restart

- VirtualBox
  - In Ubuntu open a new terminal (ctrl+alt+t)
  - Type the following (note uname is the user name you gave yourself) (You will be asked to login) sudo apt-get install linux-headers-\$(uname -r) sudo apt-get install build-essential sudo apt-get install dkms
  - Reboot

VirtualBox

#### Select Devices →Insert Guest Additions CD Image



- VirtualBox
  - Run



- VirtualBox
  - Authenticate using your password

- VirtualBox
  - You now have a fully functioning Ubuntu virtual machine
  - Exit out of Ubuntu
  - Exit out of VirtualBox

- Starting Ubuntu
  - To start the machine first start Oracle VM VirtualBox



- Starting Ubuntu
  - Double click on your machine

💱 Oracle VM VirtualBox Manager		- 0 ×
<u>File Machine Help</u>		
and the second second	New Settings Discard Start	
Vbox, ubuntu O Powered Off	General Nme: Vbox_ubuntu Verating System: Ubuntu (64-bit) Settings File Location: C:\Users\ohnsortimoj\VirtualBox VMs\Vbox_ubuntu	Preview
	System	
Contract	Base Memory: 4096 MB Boot Order: Floppy, Optical, Hard Dick Acceleration: VT-x/AMD-V, Nested Paging, KVM Paravirtualization	
	E Display	
	Video Memory: 16 MB Scale-factor: 1.50 Graphics Controller: VMSVGA Remote Desktop Server: Disabled Recording: Disabled	
	Storage	
	Controller: IDE IDE Secondary Master: [Optical Drive] VBoxGuestAdditions.lso (81.94 MB) Controller: SATA SATA Port 0: Vbox_ubuntu.vdi (Normal, 10.00 GB)	
	🕪 Audio	
	Host Driver: Windows DirectSound Controller: ICH AC97	
	📑 Network	
	Adapter 1: Intel PRO/1000 MT Desktop (NAT)	
	🤌 USB	
	USB Controller: OHCI Device Filters: 0 (0 active)	
	Shared folders	
	Shared Folders: 1	
	Description	
	None	

- Starting Ubuntu
  - Login

