## Get VirtualBox

Go to www.virtualbox.org and select Downloads.

Download the current release of VirtualBox for the OS on which you will install VirtualBox. In these notes, that's Windows 7.

Download the VirtualBox Extension Pack.



## Begin the VirtualBox Installation

Run the VirtualBox installer. The first few screens are typical and probably do not require any changes:



lick on the icons in the tree below to change the way features will be installed.
VirtualBox Application     Orade VM VirtualBox 4.2.6
Virtuallox view lownorking     Virtuallox view lownorking

Custom Setup	
Select the way you want fea	atures to be installed.
Please choose from the optic	ons below:
Create a shortcut on the	desktop
Create a shortcut in the	Quick Launch Bar
	Ν
	45
	Carrel Next Carrel



Ready to Install	
The Setup Wizard is ready to begin	the Custom installation.
Click Install to begin the installation installation settings, click Back. Clic	. If you want to review or change any of your Cancel to exit the wizard.
	6

Oracle VM VirtualBox 4.2	6
Please wait while the Setu take several minutes. Status: Validating instal	up Wizard installs Oracle VM VirtualBox 4.2.6. This may
	L <sub>2</sub>



#### **Computer Organization I**

## Starting VirtualBox

When the installation completes, you can run VirtualBox for the first time:



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## Creating a Virtual Machine

Give the new VM a descriptive name.

VirtualBox should auto-detect the proper OS type and version:

Ivallie a	nd operating system
Please cho	oose a descriptive name for the new virtual machine and select t
type of op will be use	erating system you intend to install on it. The name you choose d throughout VirtualBox to identify this machine.
Name: U	Jbuntu 12-32
Type:	inux 🔻 🧟
Version:	Jbuntu 🔻
Version:	Ibuntu 👻
	Ν



# Configuring Memory for the VM

Specify the amount of memory you'll give the VM.

In this case, I'm installing on a host machine with 8GB of RAM; with less, I'd probably given the VM 1GB.

### VirtualBox/Ubuntu Setup 5

Memory size	
Select the amount of me	mory (RAM) in megabytes to be allocated to the
The recommended mem	ory size is 512 MB.
	2048 ME
4 MB	8192 MB
	<b>A</b>



# Configuring a Virtual Hard Disk

In the next dialog, select the option to create a new virtual hard drive now.

Take the default hard drive file type in the next dialog unless you're concerned about being compatible with some other virtualization tool like VMWare.

? X	? ×	2 X
<ul> <li>Create Virtual Machine</li> <li>Hard drive</li> <li>If you wish you can add a virtual hard drive to the new machine. You can either create a new hard drive file or select one from the list or from another location using the folder icon.</li> <li>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.</li> <li>The recommended size of the hard drive is 8.00 GB.</li> <li>Do not add a virtual hard drive</li> <li>Create a virtual hard drive now</li> <li>Use an existing virtual hard drive file</li> <li>Ubuntu64.vdi (Normal, 32.00 GB)</li> <li>Create</li> </ul>	Create Virtual Hard Drive  Hard drive file type  Please choose the type of file that you would like to use for the new virtual hard drive. If you do not need to use it with other virtualization software you can leave this setting unchanged.  VDI (VirtualBox Disk Image)  VMDK (Virtual Machine Disk)  VHD (Virtual Machine Disk)  DHDD (Parallels Hard Disk)  QED (QEMU enhanced disk)  QCOW (QEMU Copy-On-Write)	<ul> <li>Create Virtual Hard Drive</li> <li>Storage on physical hard drive</li> <li>Please choose whether the new virtual hard drive file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).</li> <li>A dynamically allocated hard drive file will only use space on your physical hard drive as it fills up (up to a maximum fixed size), although it will not shrink again automatically when space on it is freed.</li> <li>A fixed size hard drive file may take longer to create on some systems but is often faster to use.</li> <li>Dynamically allocated</li> <li>Fixed size</li> </ul>
	Hide Description Next Cancel	Next Cancel

Next, I recommend choosing a fixed-size hard disk.



# Configuring a Virtual Hard Disk

I generally make this 32GB, but make it smaller if you're short on space.



🧊 Create Virtual	Hard Drive: Creating fixed medium storage unit 'C:\User	s\in\VirtualBox VMs\Ubu
	Creating fixed medium storage unit 'C:\Users\in\VirtualBox V 3 minutes remaining	Ms\Ubuntu 12-32\Ubuntu 12-32.vdi' 4%



**Computer Organization I** 

# An Empty VM

Now, you have an empty virtual machine.

That is, a formatted (virtual) hard disk and no OS.





**Computer Organization I** 

## Install the VirtualBox Extensions

Find the file for the VirtualBox Extensions you downloaded earlier.

It should be associated with VirtualBox now.

Double-click on it and the Extensions should be installed.





Choose a Linux distribution to install. I recommend Ubuntu, but any distribution should do.

You'll have to select a 32-bit or a 64-bit version.

A 64-bit version gives you a few more options, but either will be sufficient for most of the assignments in CS 2505.

If you install a 32-bit version, you won't be able to run any 64-bit code on it.

If you install a 64-bit version, you won't be able to build any 32-bit executables on it unless you install some additional packages.

Whatever you choose, download an ISO file (CD or DVD). You don't need to burn a physical disk.

**Disclaimer:** the following notes illustrate one session installing a particular distribution of Linux on VirtualBox 4.2.6, running on Windows 7 Enterprise, on a particular underlying hardware system. YMMV. Mine certainly has...



## Beginning the Installation

VirtualBox/Ubuntu Setup 11

Select the VM and click Start:





**Computer Organization I** 

## **Selecting Installation Media**

VirtualBox will recognize the empty system and prompt you to select an installation disk.

Click the folder icon and select your ISO file.





#### **Computer Organization I**

## Running the Installation Code

The remaining screen shots will vary considerably depending on which distro you chose to install, but the general procedure will be similar.



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## **Initial Options**

Ubuntu 12.10 gives a few options up front.

I chose to download updates during the installation; you can always run the system update tool later.

1 C P	
or best	results, please ensure that this computer:
🖌 h	as at least 4.8 GB available drive space
🧹 is	s connected to the Internet
Dow	nload updates while installing
Jbuntu u vi-fi haro ts docui	uses third-party software to play Flash, MP3 and other media, and to work with some graphics a dware. Some of this software is proprietary. The software is subject to license terms included w mentation.
🗌 Insta	Ill this third-party software
-	do MP3 plugin includes MPEC Laver-3 audio decoding technology licensed from Erauphofer IIS and Technicolog SA

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# **Initial Options**

You're installing on the virtual drive, not your actual hard drive, so don't be alarmed by the first choice in this dialog.

Logical volume management is probably superfluous.

Encrypt the installation if you like (I haven't tested that).



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## **Basic Settings**

Select your time zone and keyboard layout; the defaults are probably correct.



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## Account Settings

#### Choose settings for your user account.

#### Install Who are you? 2 Your name: William D McQuain Your computer's name: BigDog-Ubuntu12-32 The name it uses when it talks to other computers. Pick a username: wdm Choose a password: Fair password Confirm your password: 2 2 O Log in automatically Require my password to log in Encrypt my home folder Back Continue Almost finished copying files...



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### VirtualBox/Ubuntu Setup 17

# Continuing the Installation

Things should proceed automatically until a restart is needed:





**Computer Organization I** 

## Restarting

Restarting seems to present some issues... if you're lucky, you won't see them.

You need to unmount the ISO:



In some cases, you may have to shut down the VM through the VirtualBox front end, and then restart it... several times perhaps... but it will sort out.



**Computer Organization I** 

## Booting up the VM

### VirtualBox/Ubuntu Setup 20

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	Gu	iest Ses	sion														
	Re	mote L	oain							k							
*																	
	DUNC	U~ 12	.10														



**Computer Organization I** 

## Ubuntu's Unity Desktop

Newer versions of Ubuntu default to the Unity desktop (love it or hate it):





**Computer Organization I** 

# **OS** Updates

I recommend running any OS updates next.

You can select the update tool from the Unity toolbar:

It is likely that a lot of updates will be offered. It's probably OK to just accept all of them.

De	tails of updates
	Javascript engine library for GTK+ libjavascriptcoregtk-3.0-0 (Size: 1.6 MB)
	libraries for nautilus components - runtime version libnautilus-extension1a (Size: 52 kB)
	Visual rendering toolkit for real-time applications - shared lib libnux-3.0-0 (Size: 979 kB)
	Visual rendering toolkit for real-time applications - common files libnux-3.0-common (Size: 63 kB)
	PAM module to unlock the GNOME keyring upon login libpam-gnome-keyring (Size: 39 kB)
	PDF rendering library (GLib-based shared library) libpoppler-glib8 (Size: 97 kB)
	PDF rendering library



**Computer Organization I** 



## VirtualBox Guest Additions

The VirtualBox Guest Additions provide additional functionality for your VM.



One note: if you run the system updater or install other software on your VM, you may have to reinstall the Guest Additions.



**Computer Organization I** 

## VirtualBox Guest Additions

Pay attention to the console window during the installation.

If there are error messages, the Guest Addition may not have been installed.





## **Applying Video Acceleration**

Most Linux guests seem to benefit from enabling 3D acceleration.

Shut the VM down, right-click on it and go to Settings:

General	Display	
🔝 System		
Display	Video Remote Display	
<ul> <li>Storage</li> <li>Audio</li> <li>Network</li> <li>Serial Ports</li> <li>USB</li> <li>Shared Folders</li> </ul>	Video Memory: 1 MB 1 MB 1 MB 1 MB 1 28 MB Monitor Count: 1 64 Extended Features: I Enable 3D Acceleration Enable 2D Video Acceleration	12
	Select a settings category from the list on the left-hand side and move the mouse over a item to get more information.	settings

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