TUS

Data Modelling Tools

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Licence

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Topic 1
Build Ubuntu Linux on VirtualBox

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Learning objectives

Install an Ubuntu Linux platform

- Download Ubuntu Desktop Linux
- Installation Medium
- Install Ubuntu Desktop
- Post installation

Prepare to install Ubuntu Linux

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VirtualBox

- A powerful x86 and AMD64/Intel64 Opensource Virtualisation solution
- VirtualBox runs on Linux, Microsoft Windows, Apple Macintosh, and OpenSolaris hosts and supports a large number of guest operating systems
- The software can be downloaded from:
  - **`https://www.virtualbox.org/wiki/Downloads`**

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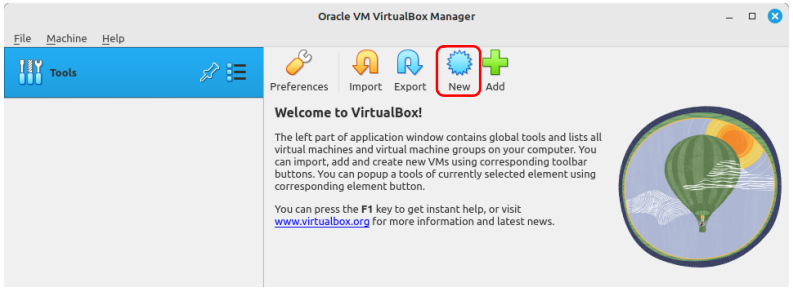
VirtualBox

- VirtualBox 7.0 with no VMs installed
- Select **`New`**



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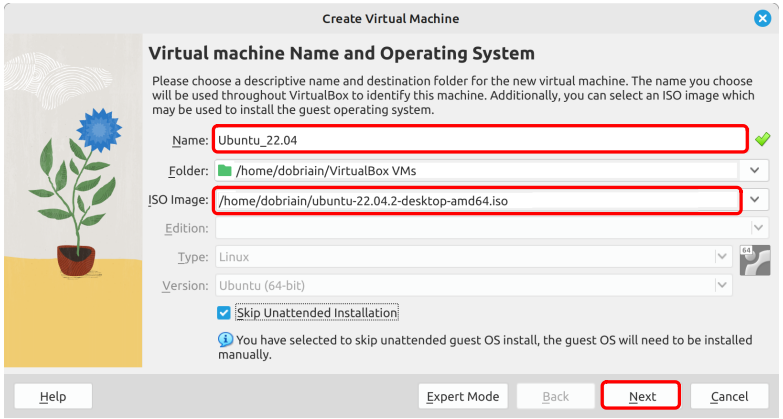
Prepare for Ubuntu on VirtualBox



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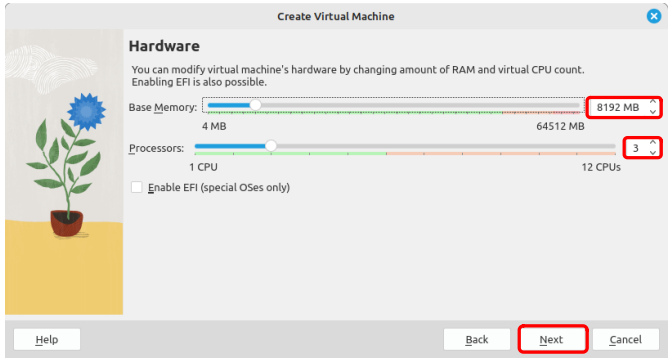
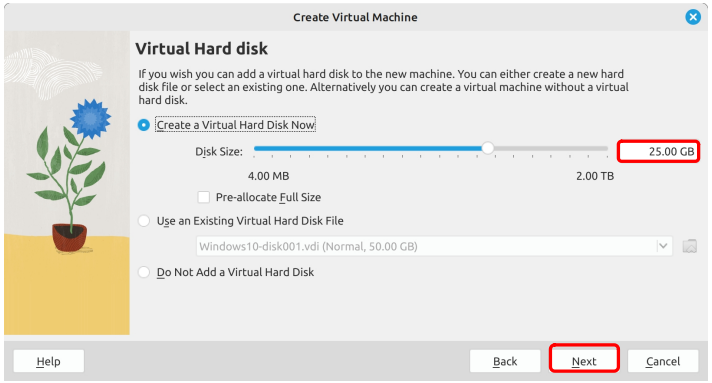
Prepare for Ubuntu on VirtualBox

- Memory and CPUs

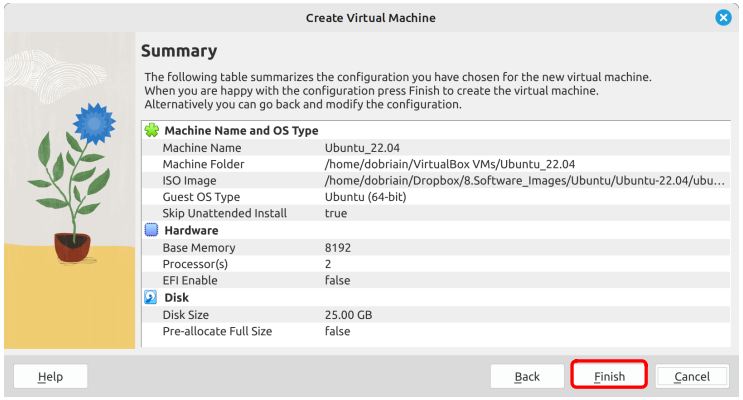


Prepare for Ubuntu on VirtualBox

- Create a virtual hard disk

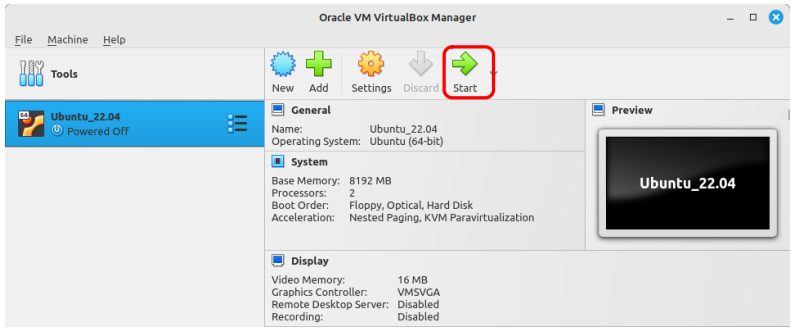


Prepare for Ubuntu on VirtualBox



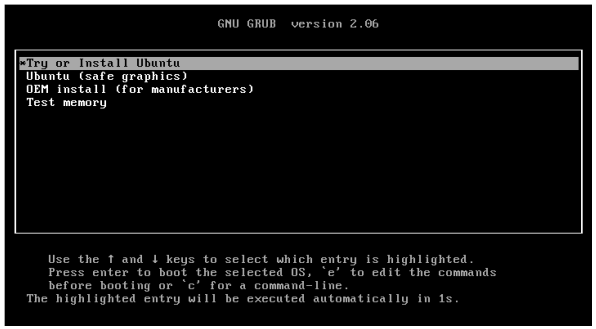
Prepare for Ubuntu on VirtualBox

- Start the VM for the first time



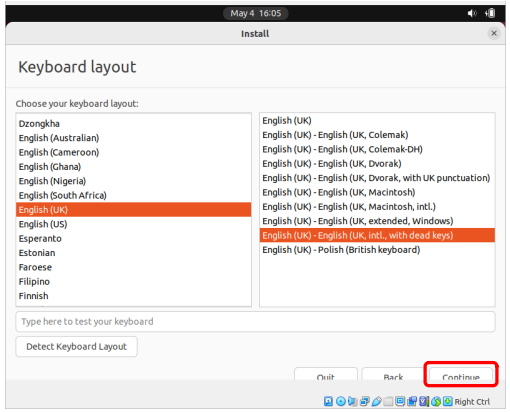
Prepare for Ubuntu on VirtualBox

- Install Ubuntu Operating System

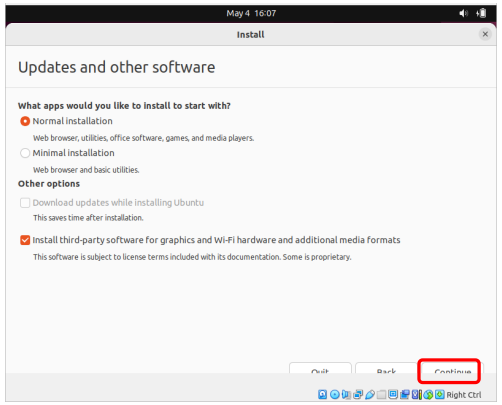


Install Ubuntu Linux

Keyboard layout



Updates and other software



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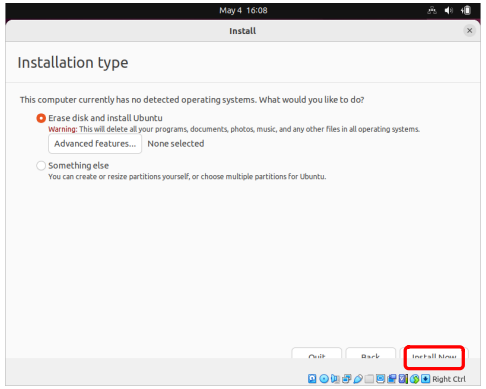
Installation type



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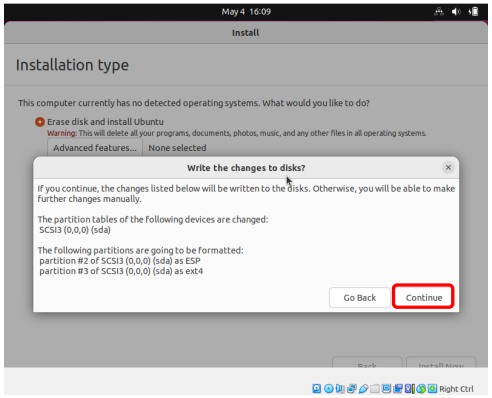
Write changes to disks



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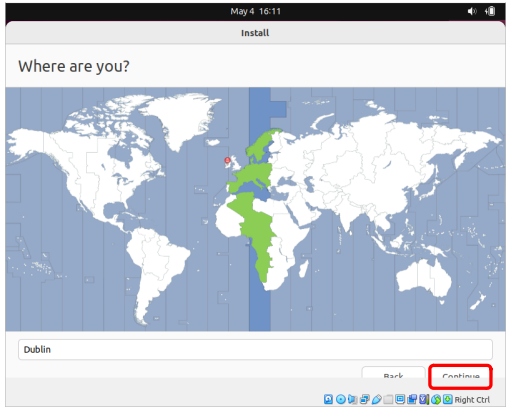
Where are you?



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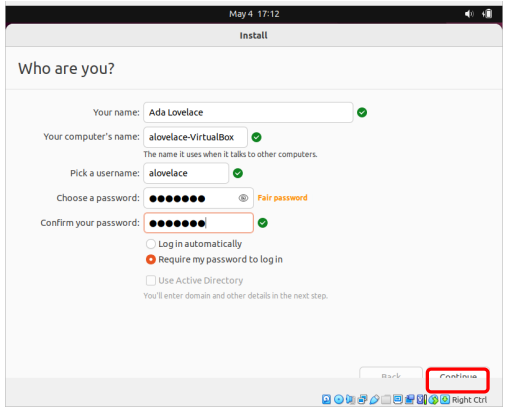
Who are you?

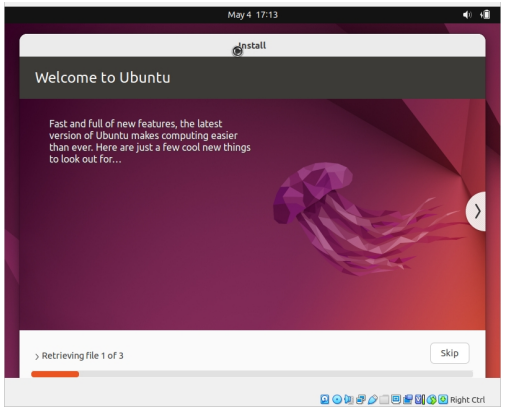
- Your name: **Ada Lovelace**
- Your computer's name: ada-**VirtualBox**
- Pick a username: **ada**
- Choose a password: **ada_secret**
- Confirm your password: **ada_secret**
  - ◘ Log in automatically
  - ◙ Require my password to log in
  - □ Use Active Directory
- **Continue**

** Extensible Firmware Interface (SFI) System Partition (ESP)

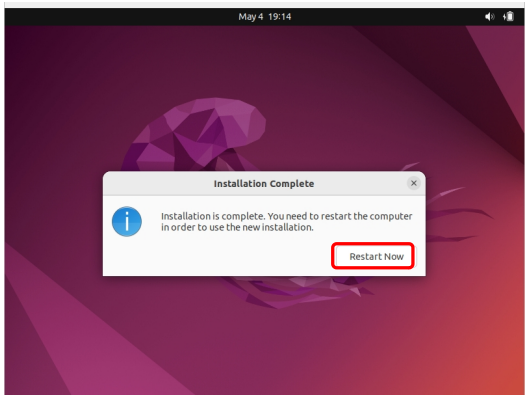
Who are you?



The install



Restart at the end of the installation process



Post Install Ubuntu Linux

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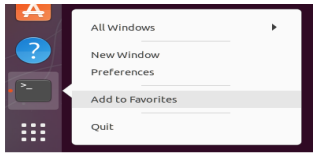
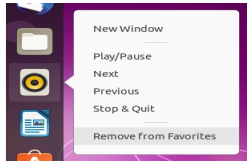
Post install activity

- Add terminal to Favourites pane
  - Alt-F2 and type **`gnome-terminal`** in the window

- Add the terminal to the Favourites



- Remove unnecessary applications from Favourites



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Update the Operating System

- Update to the latest version of packages

```
ada:~$ sudo apt update
Fetched 369 kB in 1s (382 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.

ada:~$ sudo apt -y upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

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TUS 27

Add some essential packages

- Install **`GCC`**, **`make`** and the **`openSSH`** Server

```
ada:~$ sudo apt -y install gcc make openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  gcc-multilib autoconf automake libtool flex bison gcc-doc make-doc
  molly-guard monkeysphere ssh-askpass
The following NEW packages will be installed:
  gcc make openssh-server
0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded.
Need to get 550 kB of archives.
After this operation, 1,991 kB of additional disk space will be used.
Preconfiguring packages …
Setting up openssh-server (1:8.3p1-1) ...
Setting up gcc (4:10.2.0-1ubuntu1) ...
Setting up make (4.3-4ubuntu1) ...
Processing triggers for systemd (246.6-1ubuntu1) ...
Processing triggers for man-db (2.9.3-2) ...
Processing triggers for ufw (0.36-7) ...
```

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TUS 28

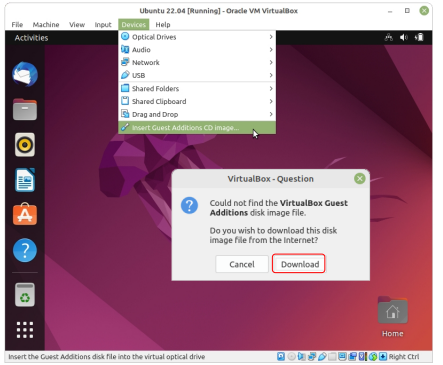
SSH keys

- Generate SSH keys

```
ada:~$ ssh-keygen -t rsa -b 4096
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ada/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ada/.ssh/id_rsa
Your public key has been saved in /home/ada/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:Pm4KoPJHgvlnVsJ9AuBpjVNDLMoA5o7HBHkQBkiH6gI ub-g3-20-04@ubuntu
The key's randomart image is:
+---[RSA 4096]----+
|@B.+.            |
|Bo= +            |
|+=.B .           |
|E+* o            |
|+=+o o  S        |
|++..+ +..        |
|+. o.o oo        |
|... =. ...       |
|  .=   .o.       |
+----[SHA256]-----+
```


VirtualBox

- If the install is on VirtualBox
  - Insert the Guest Additions CD image by selecting the option under “**Devices**” in the menu
  - That will then mount in **`/media/ada`** on the filesystem



VirtualBox

- If the install is on VirtualBox, Add the mounted Guest Additions

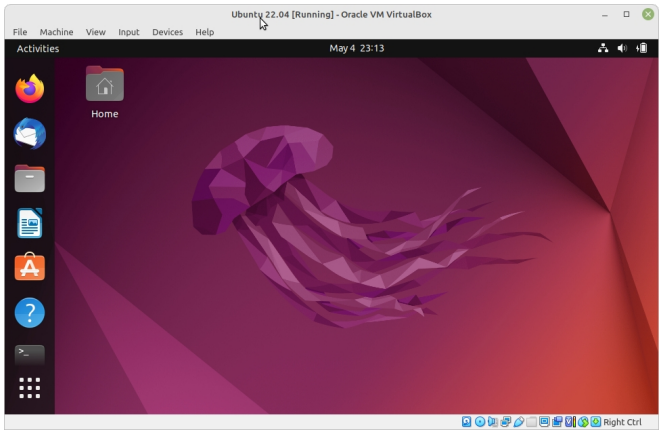
```
ada:~$ cd /media/ada/Vbox_Gas_6.1.32
ada:/media/ada/Vbox_Gas_6.1.10~$ sudo ./VBoxLinuxAdditions.run
Verifying archive integrity... All good.
Uncompressing VirtualBox 6.1.32 Guest Additions for Linux........
VirtualBox Guest Additions installer
Removing installed version 6.1.32 of VirtualBox Guest Additions...
Copying additional installer modules ...
Installing additional modules ...
VirtualBox Guest Additions: Starting.
VirtualBox Guest Additions: Building the VirtualBox Guest Additions kernel
modules.  This may take a while.
VirtualBox Guest Additions: To build modules for other installed kernels, run
VirtualBox Guest Additions:   /sbin/rcvboxadd quicksetup <version>
VirtualBox Guest Additions: or
VirtualBox Guest Additions:   /sbin/rcvboxadd quicksetup all
VirtualBox Guest Additions: Building the modules for kernel 5.8.0-36-generic.
VirtualBox Guest Additions: Running kernel modules will not be replaced until
the system is restarted
Press Return to close this window...
```


VirtualBox

- Add the user to the **`vboxsf`** group so shared files can be accessed.
- Reboot the system to activate the installed guest additions.

```
ada:~$ sudo usermod -a -G vboxsf ada
ada:~$ sudo reboot now
```

Running Ubuntu Linux Desktop



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Laboratory 1

Install Ubuntu Linux

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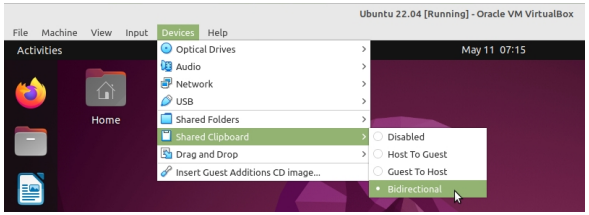
Exercise #1

- Install Ubuntu Desktop version 22.04, Jammy Jellyfish, in a VirtualBox Virtual Machine as described.
  - Add the Gnome **`text-editor`** and **`calculator`** to the **Dock**
  - Set the VirtualBox **Shared Clipboard** to **Bidirectional** **
  - Set the VirtualBox **Drag and Drop** to **Bidirectional** **
  - What do these additions do?



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Learning outcomes

Ubuntu Linux Installation platform

- Download Ubuntu Desktop Linux ✓
- Installation Medium ✓
- Install Ubuntu Desktop ✓
- Post installation ✓

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CEng, FIEI
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Thank you

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