

1. Setup a Linux computer for everyday use

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1.1. Introduction

Linux is an open source operating system. It allows users to use, create, and modify the system without any restriction. Ubuntu is popular linux distribution. It is so light and easy to use that anyone can run this in a virtual machine. A virtual machine allows user to use other operating system inside another OS, where the

virtual machine is. Ubuntu is so light and error-proofed that sometimes it is more powerful than the host machine. It is freely available for casual and professional users. Today we are going to learn about how to setup linux (ubuntu) in a virtual machine.

1.2. Machine Specs (Requirements)

In order to install ubuntu, we need to download the Ubuntu ISO file and instal a virtual machine. We are using the Oracle VM VirtualBox 6.1. You can download the latest version of VM ViirtualBox from here: [VirtualbBox](#). You can also download the Ubuntu ISO from [here](#). **Also, we have some hardware requirements.**

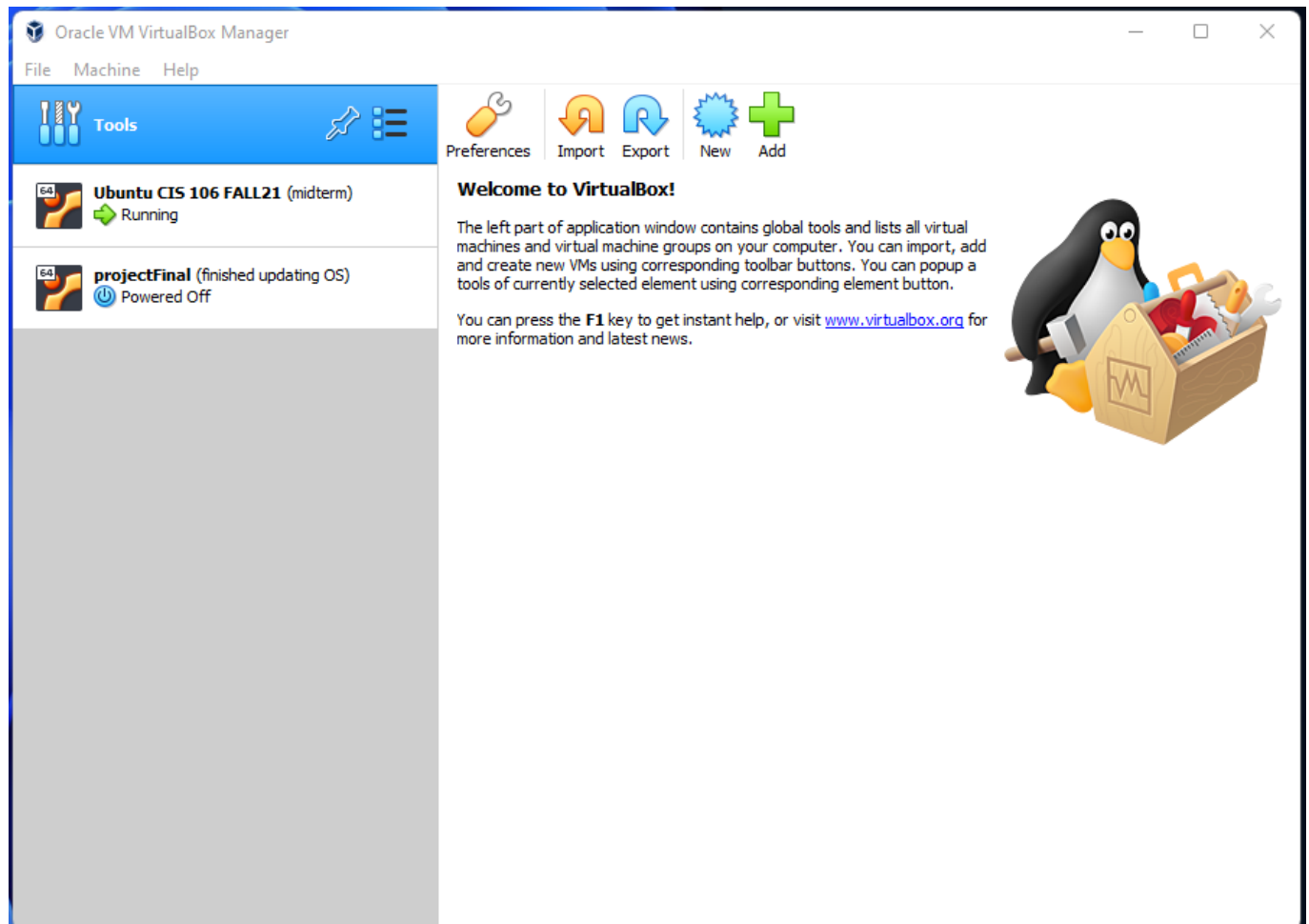
- HDD: 50 gb (min 40 gb)
- RAM: 2 gb (if the computer has more than 8 gb, than 4gb preferable)
- CPU: 2 cores (or more)
- Video graphics: 128 MB
- Network Card: 1 NAT Card
- Monitor
- Mouse and keyboard to input commands.

We are going to install Ubuntu 20.04 version using the ISO files already downloaded in the pc. If you want to download it from a cd, then you will need a CD-Drive

1.3. Part 1

Open Oracle VM VirtualBox Manager

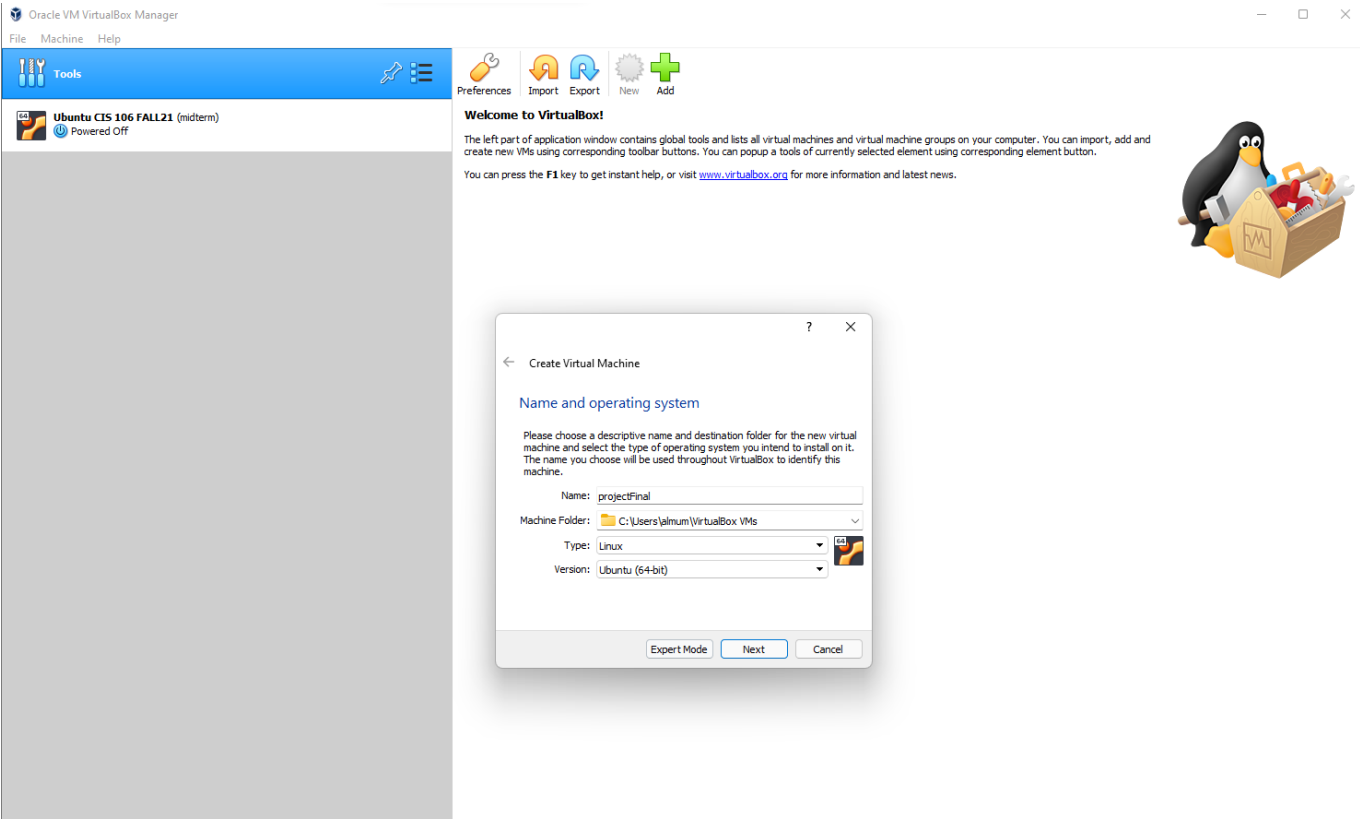
The VM Virtual machine interface has lot of options to modify. From Tools, select *New*



Follow the instructions on the screen and drag the installer into the applications folder

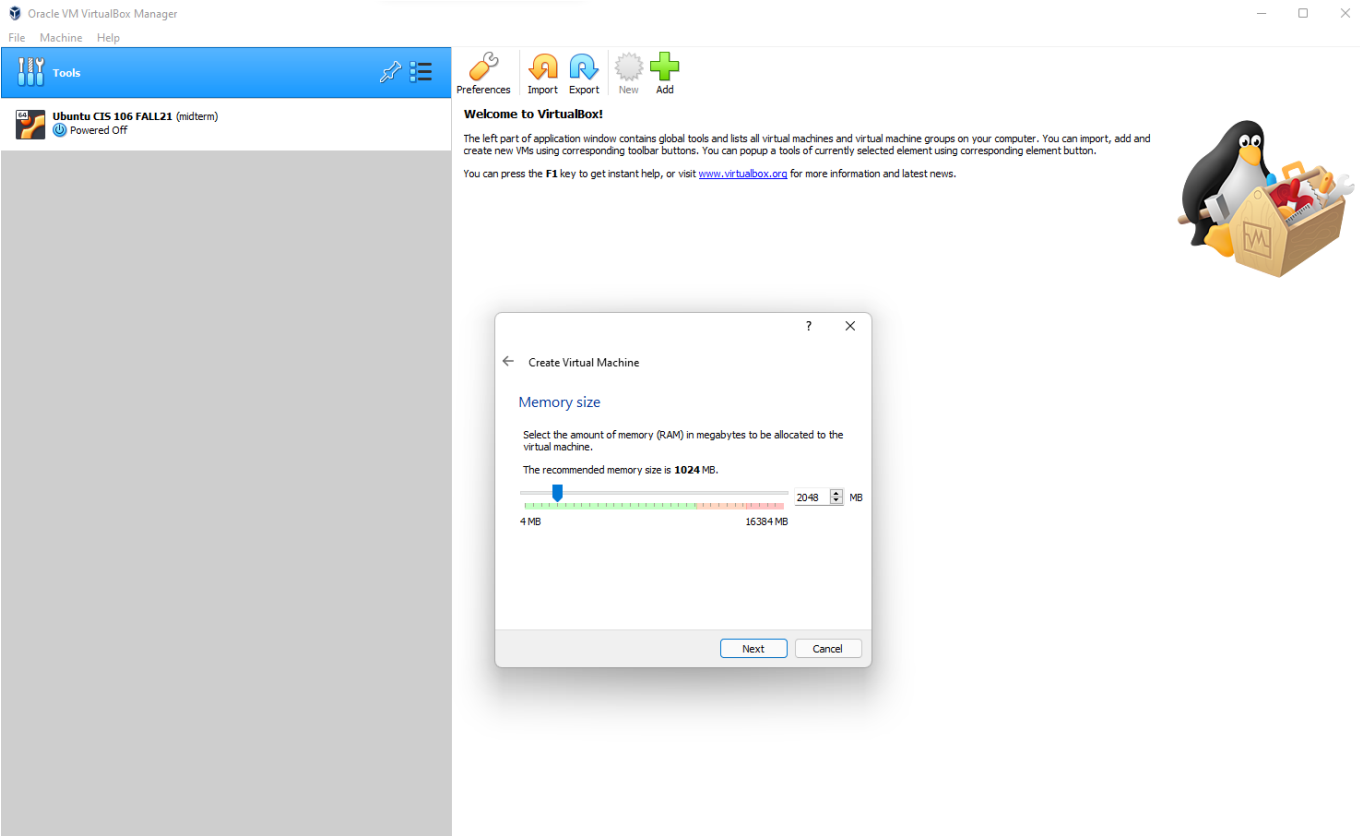
Set Name and OS version

The *Name and operating system* window, select a preferable name. *Machine Folder* is the location the ubuntu system will be stored. Select **Linux** in *Type* and **Ubuntu (64-bit)** (we downloaded the version) in *Version*.



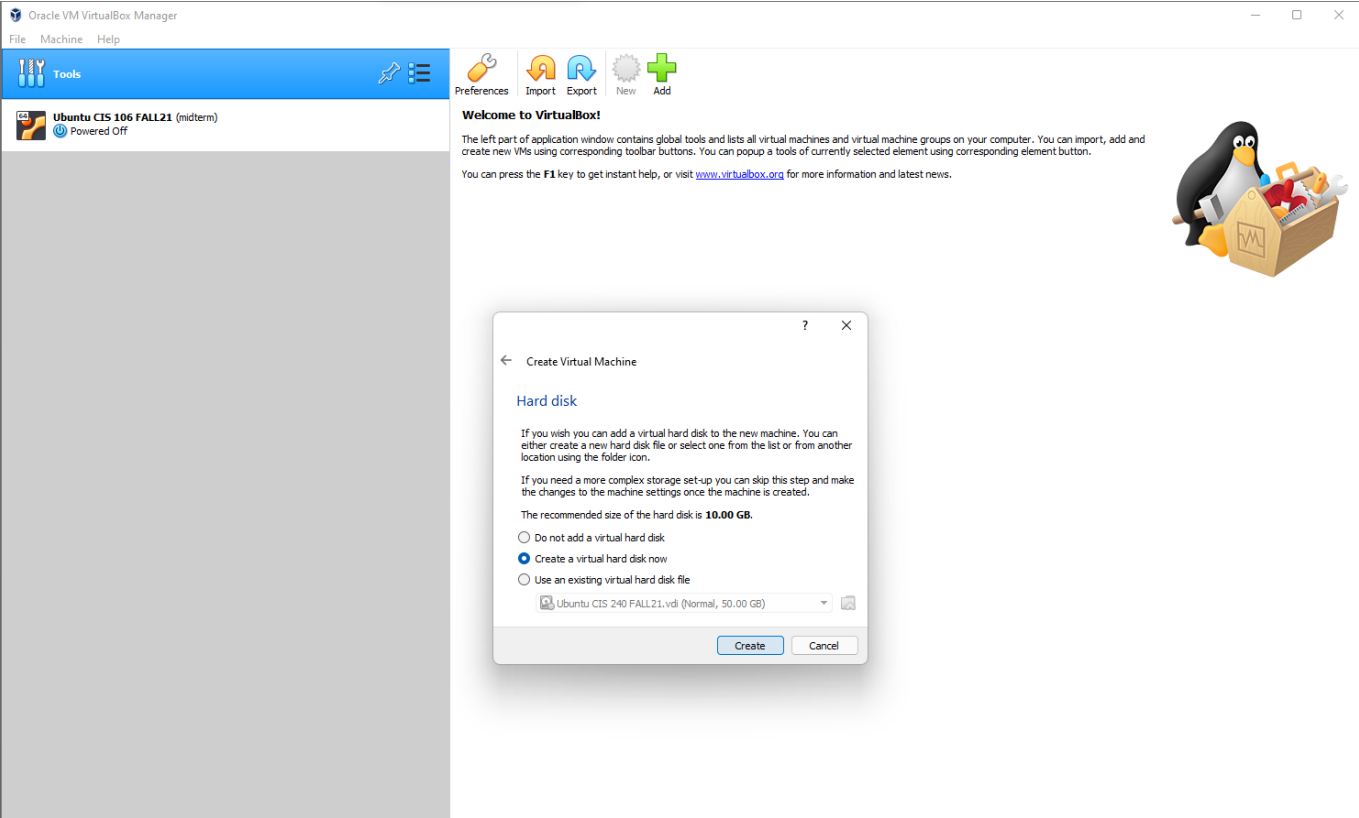
Memory Size

Select the size of the RAM 2048 MB (or more). If your computer has more than 8 GB RAM, than increase the size there.



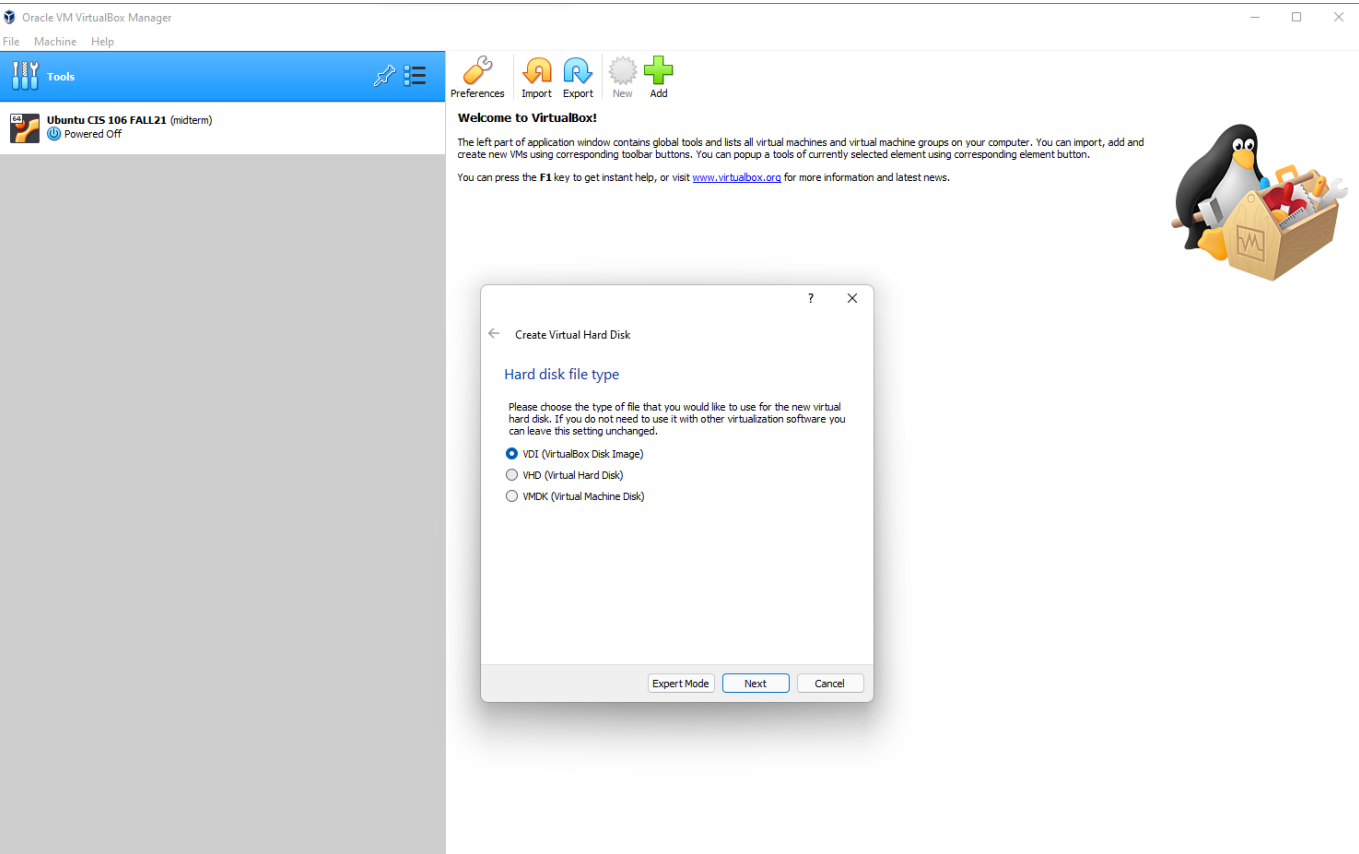
Virtual Hard Disk

There are 2 options. First options allows you to create the vm without a disk. Second options allows to create a virtual hard-disk of any size. Third one allows you to use the already existed virtual hard-disk. Chose what you prefer.



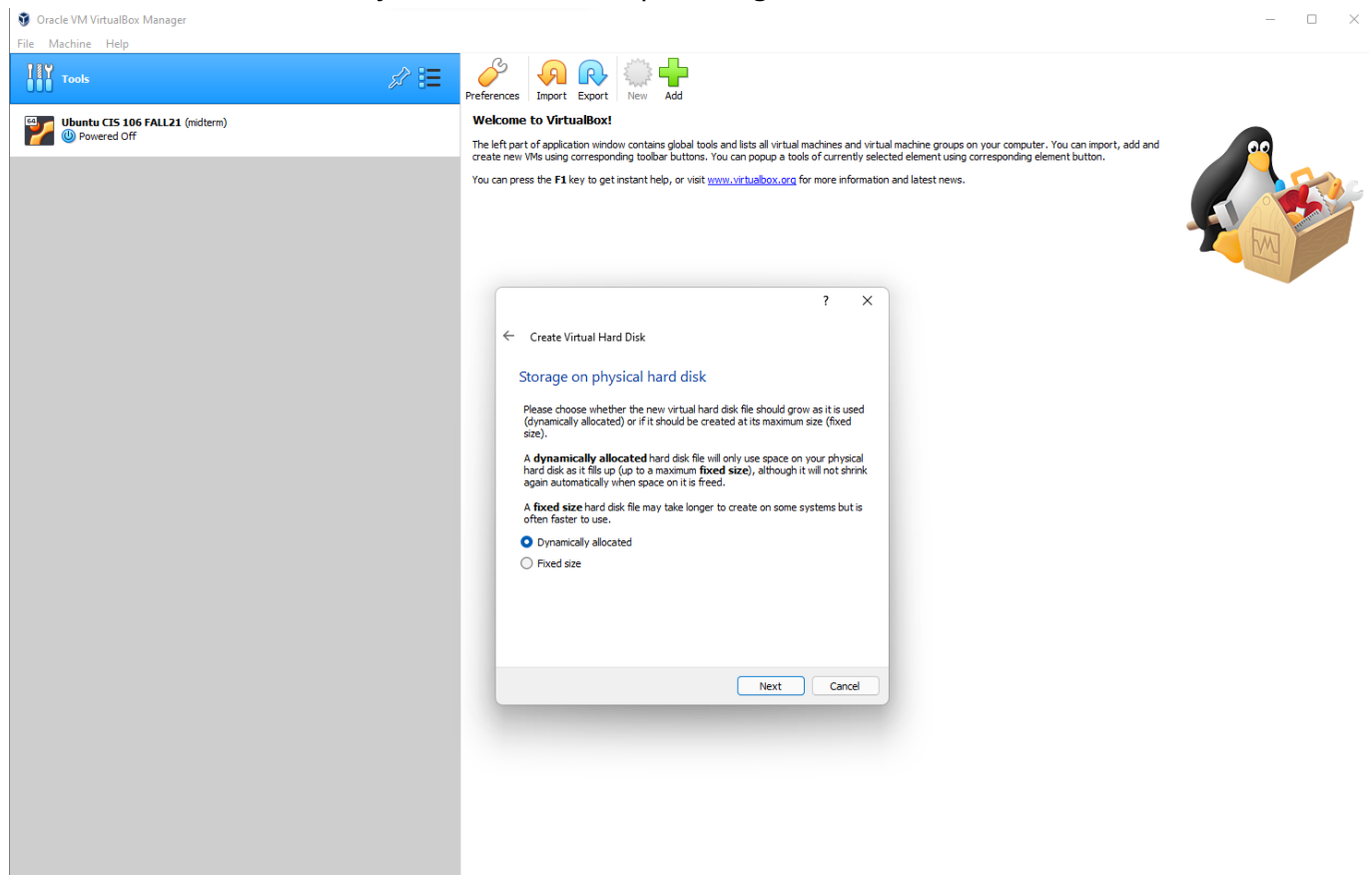
Hard Disk File Type

These are the three popular disk format. We are going to use the VDI (Virtual Disk Image) as our ISO file in the same hard disk.



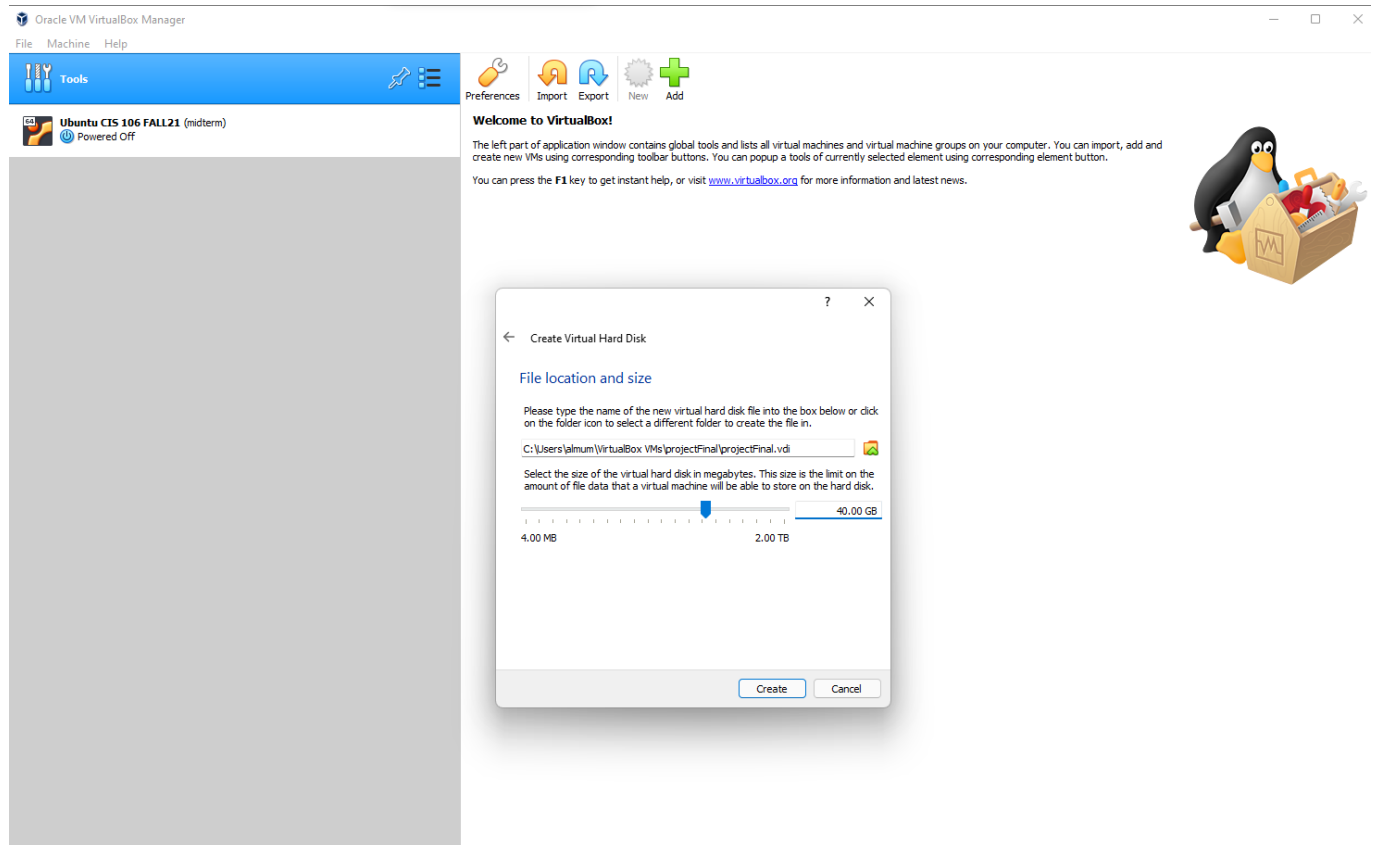
Storage on physical hard disk

Dynamically allocated option uses very small portion of disk space but it will increase accordingly if the file size increases. **Fixed size** just take the whole space assigned to it. We will chose the first one here.



HDD Size

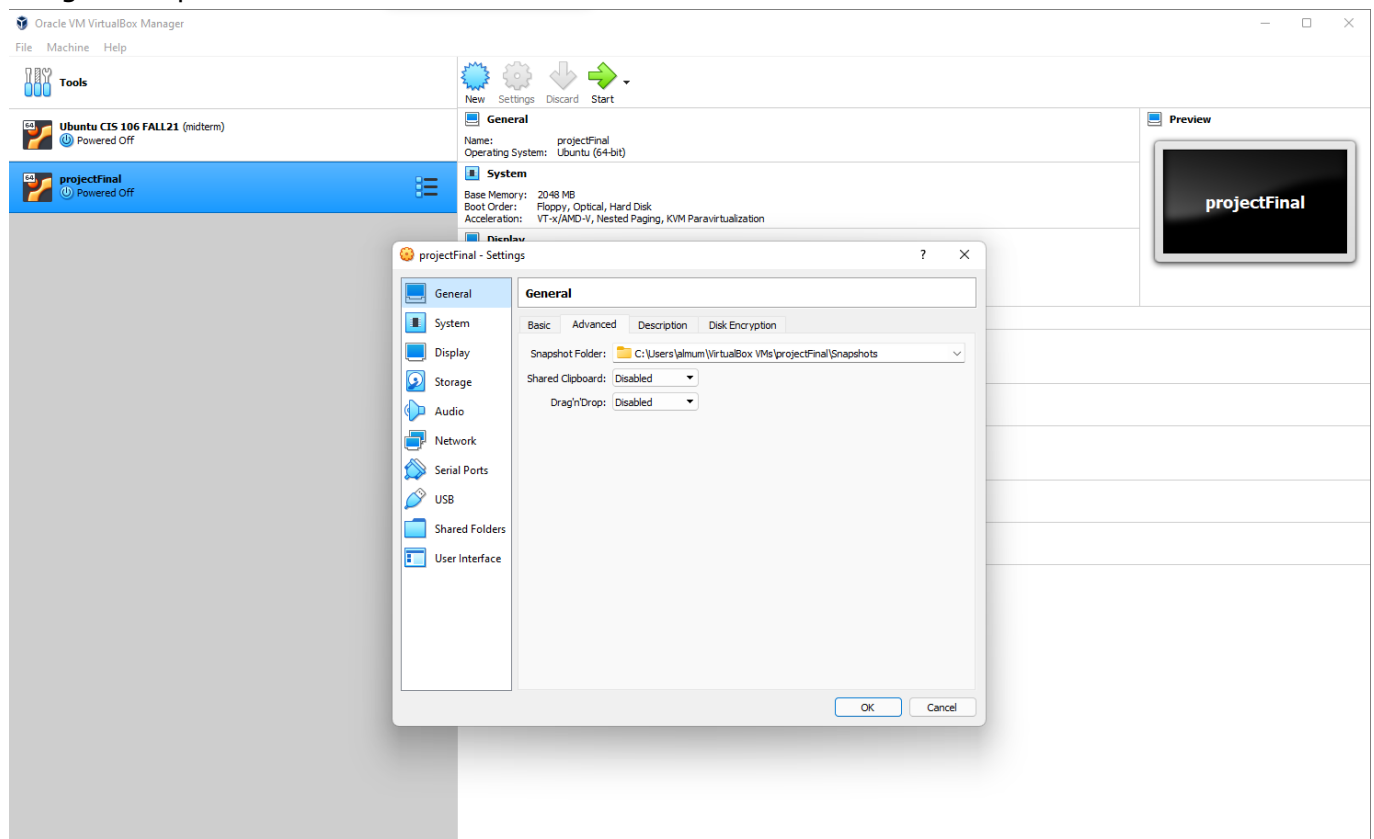
Ubuntu takes 25 GB of hard disk. So, in order to run properly, a virtual machine needs at least 40 gb of the hdd, as you will install more softwares later. Increase the size if you have more in your pc. Click *Create*



1.4. Part 2

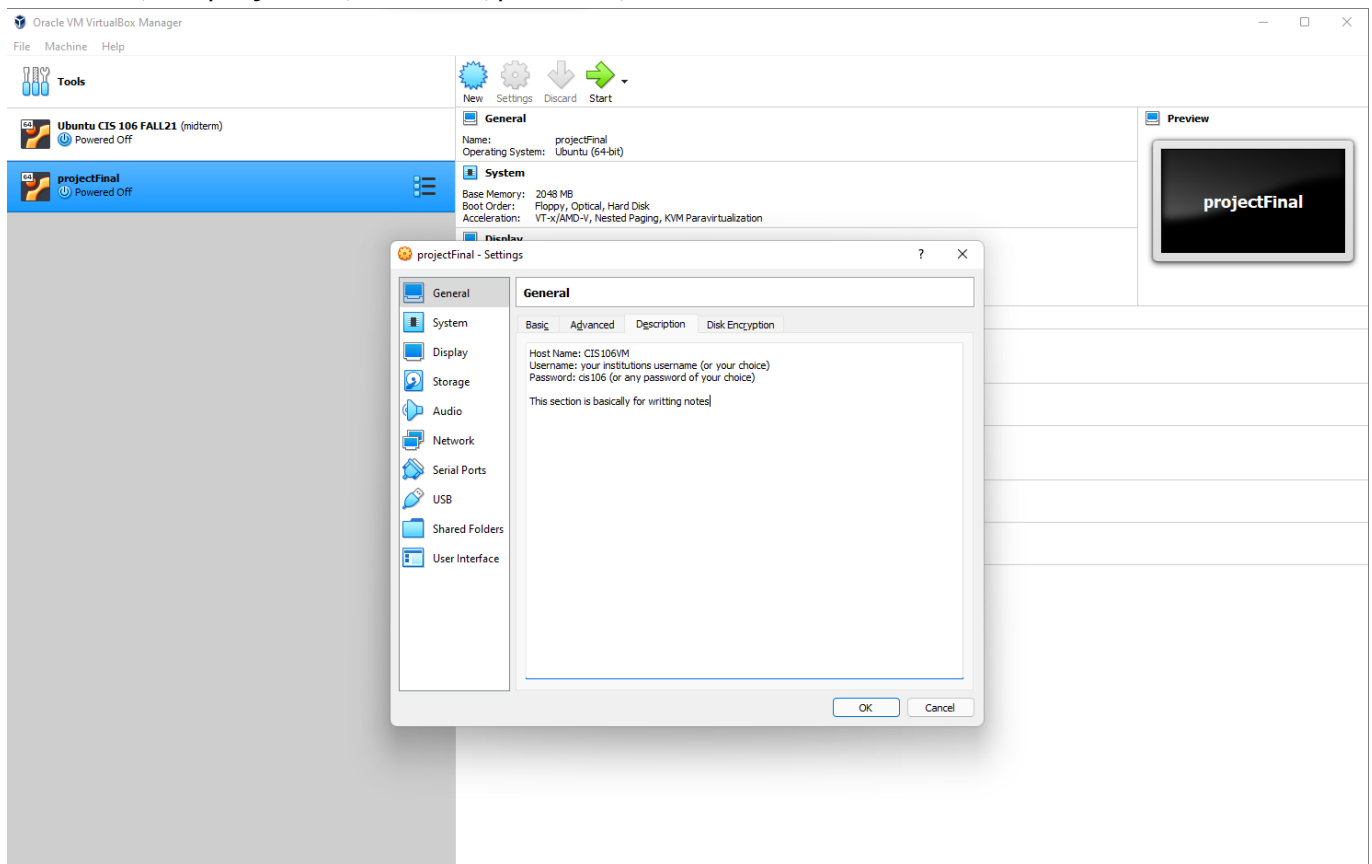
Move to the VirtualBox Settings

From **General**, select **Advanced** and make both **Shared Clipboard** and **Drag'n'Drop** **Bidirectional** using the dropdown.



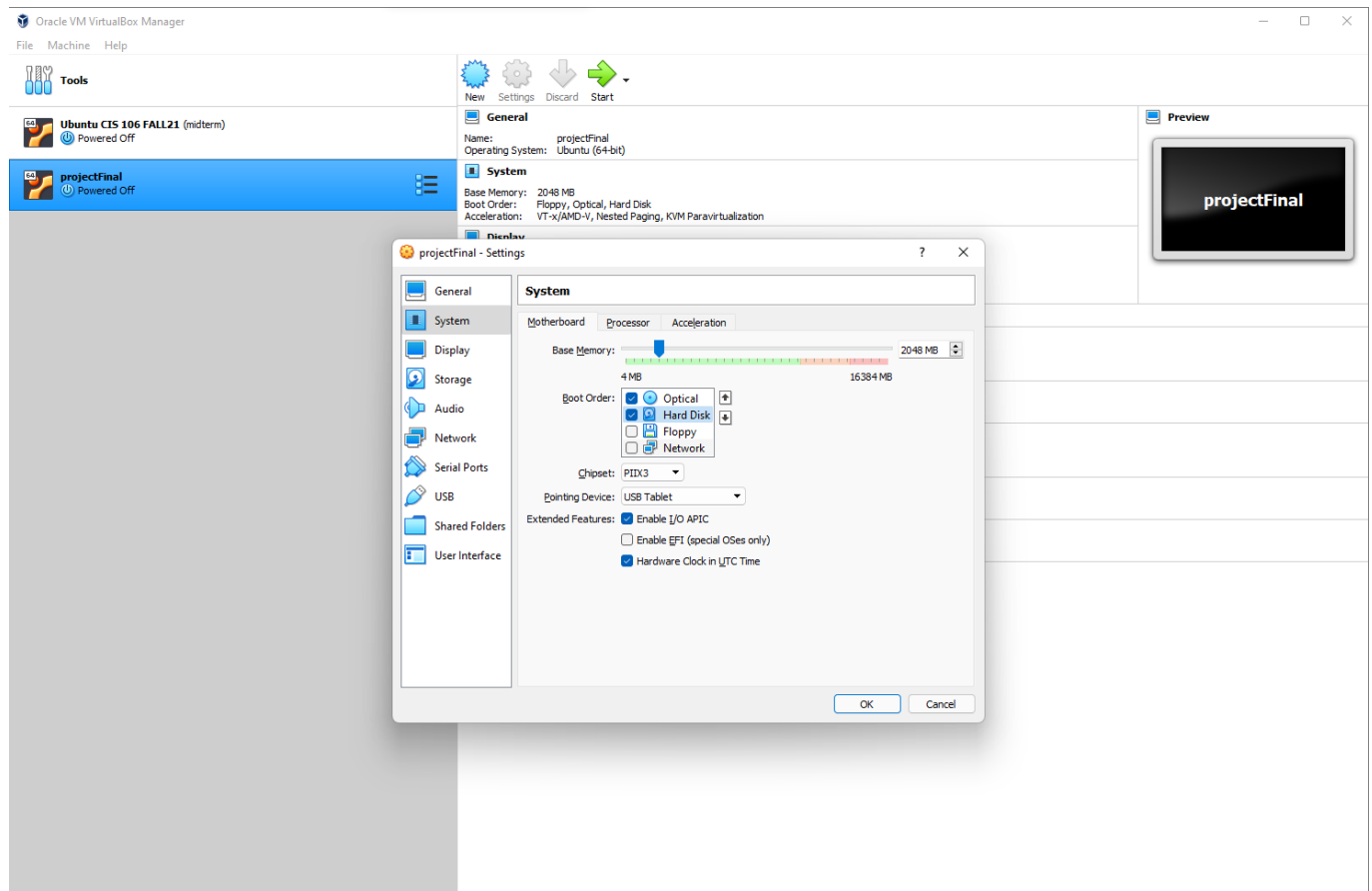
Write Description

It is a section to write down notes or information about something you might need later. For example: your host name, company name, username, password, etc.

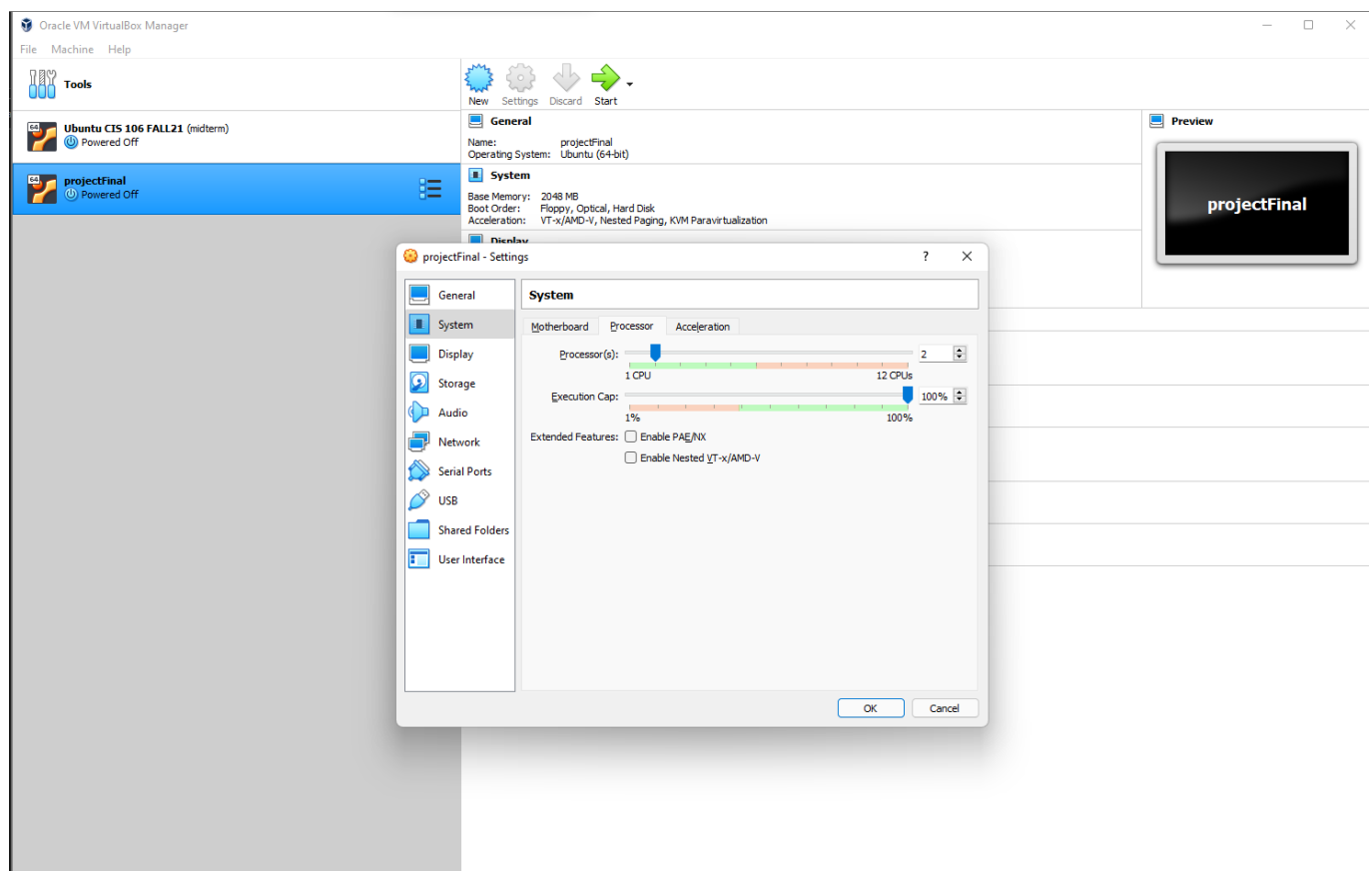


System setting

Select **System** from the left menu. In **Motherboard** section, base memory should be at least 2048 MB. Uncheck **Floppy** and **Network** from the **Boot Order** Section.

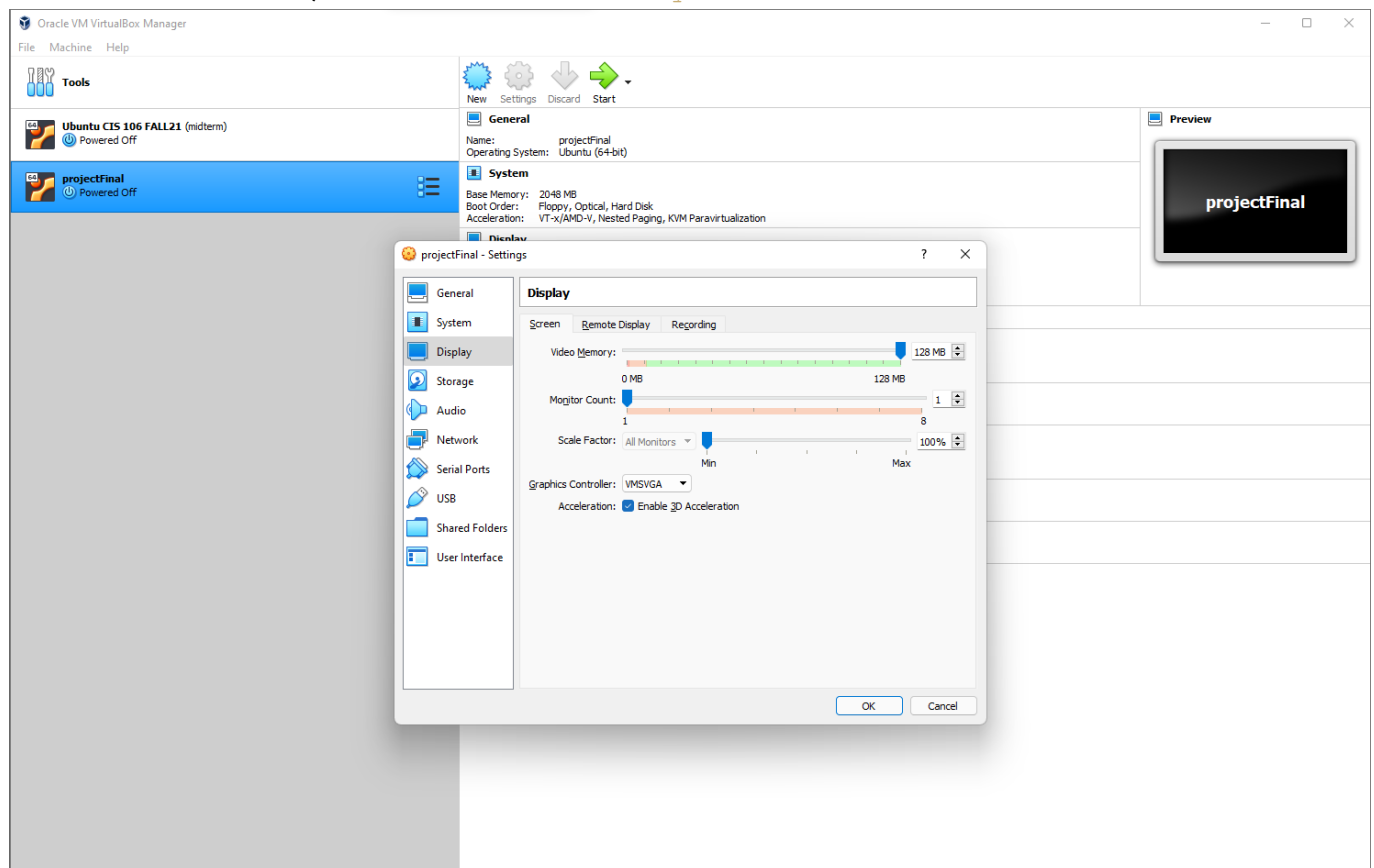


Select *Processor*. Make the *Processor*'s 2 or more if available. Uncheck *Enable PAE/NX* if your system is not 64 bit.



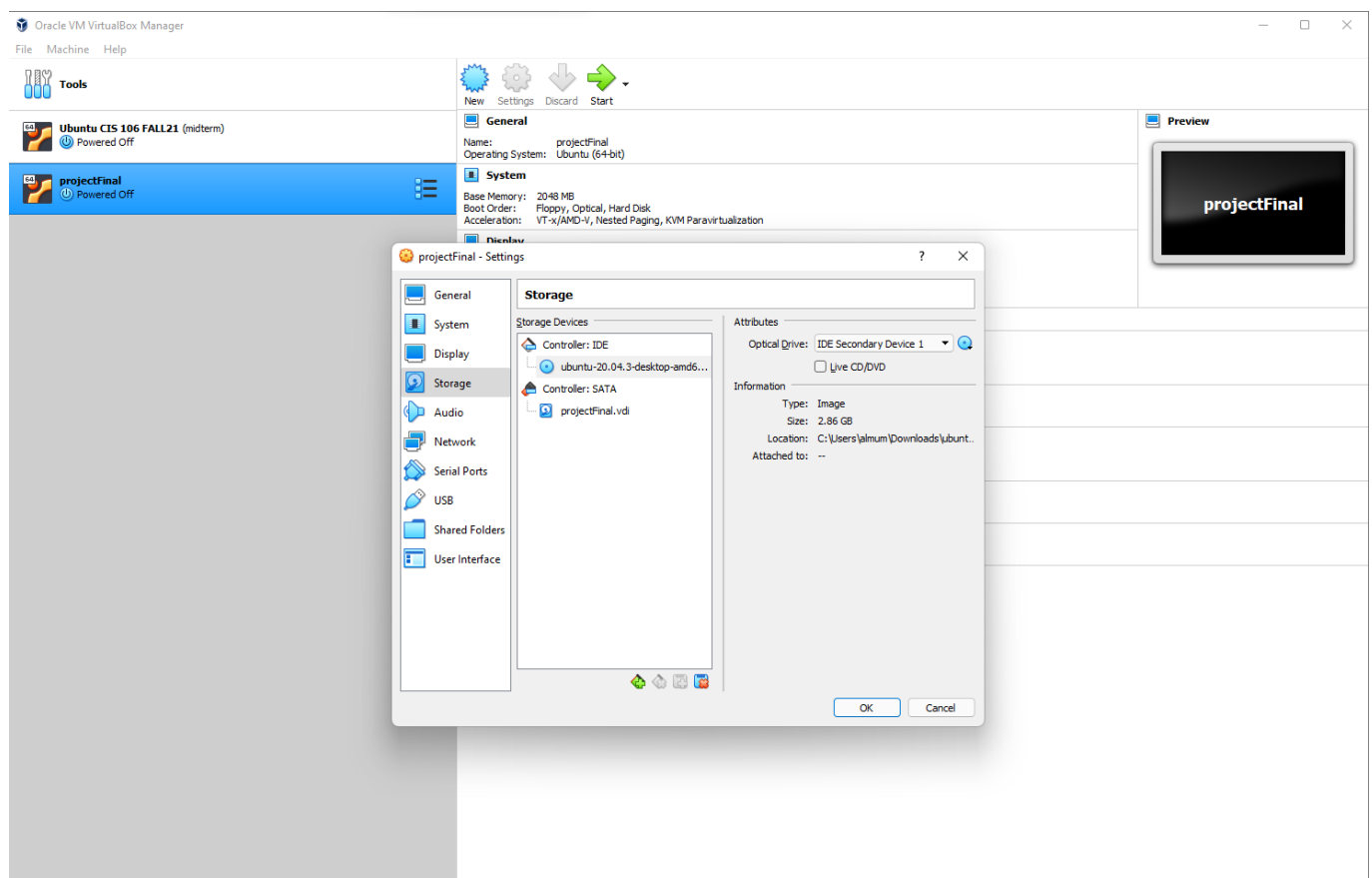
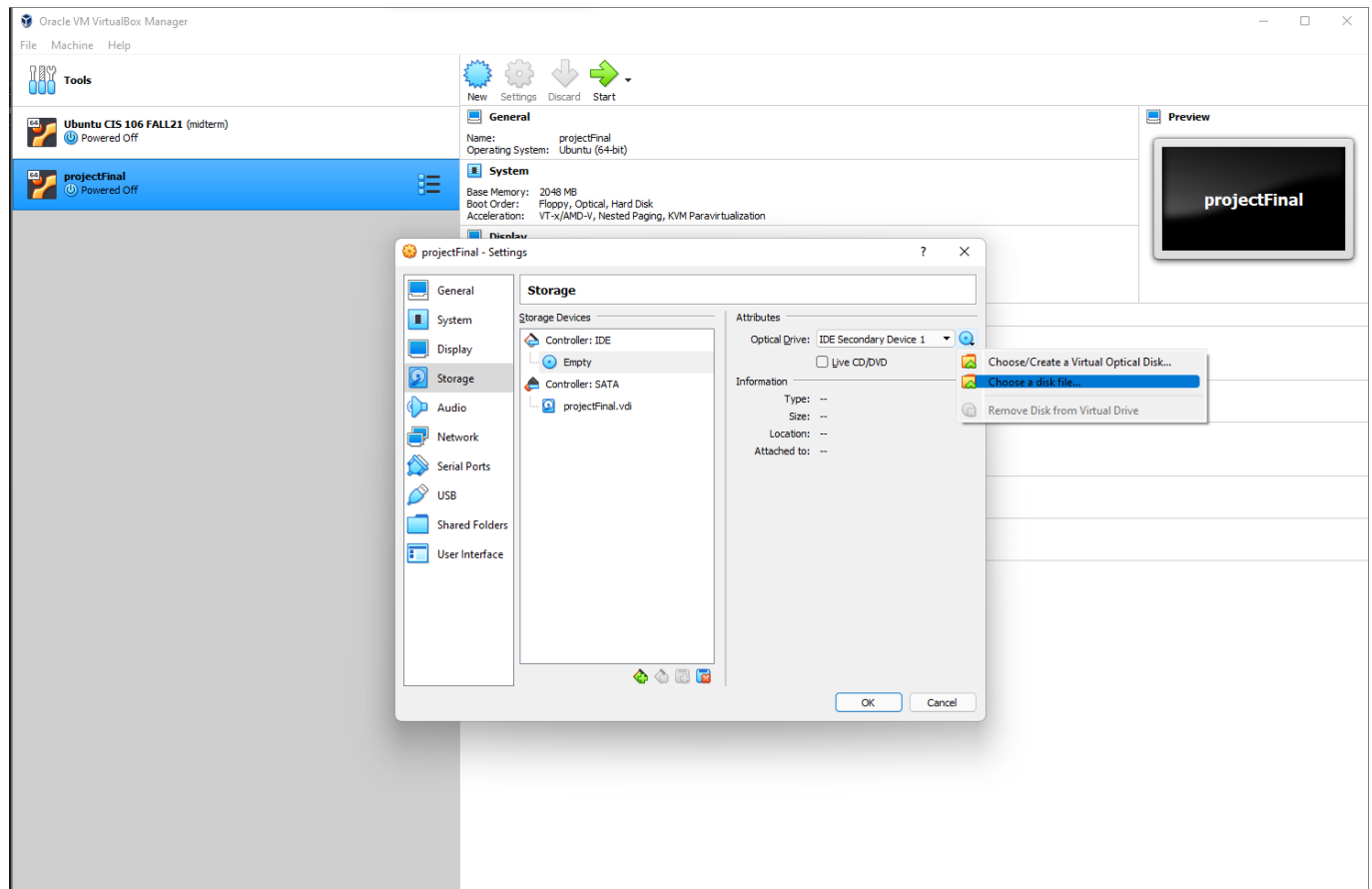
Display Settings

From the *Screen* section, increase the **Video Memory** to 128 MB. Check **Enable 3D Acceleration**.



Storage Settings

From the *Storage* section, click on **Controller: IDE** under the *Storage device* section. In the *Attributes* section, select the disk drive the ISO file is on. Then click on disk icon > chose from file. Look for the Ubuntu-***.ISO file and select it. Click **ok**.



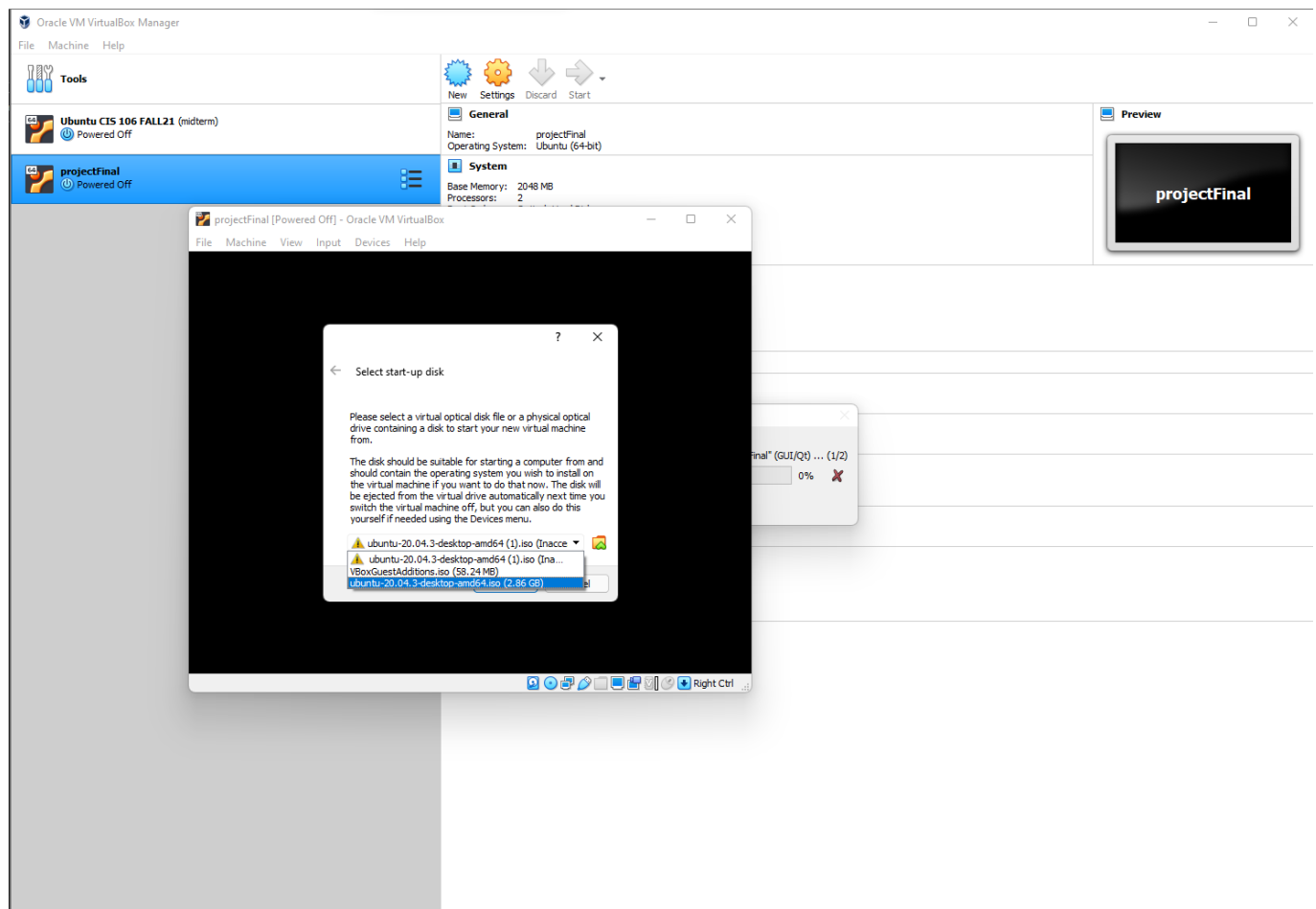
Audio Settings

From Audio settings, uncheck **Enable Audio** as some mac user could face problem for a bug in the code.

1.5. Part 3

Start the VirtualBox machine

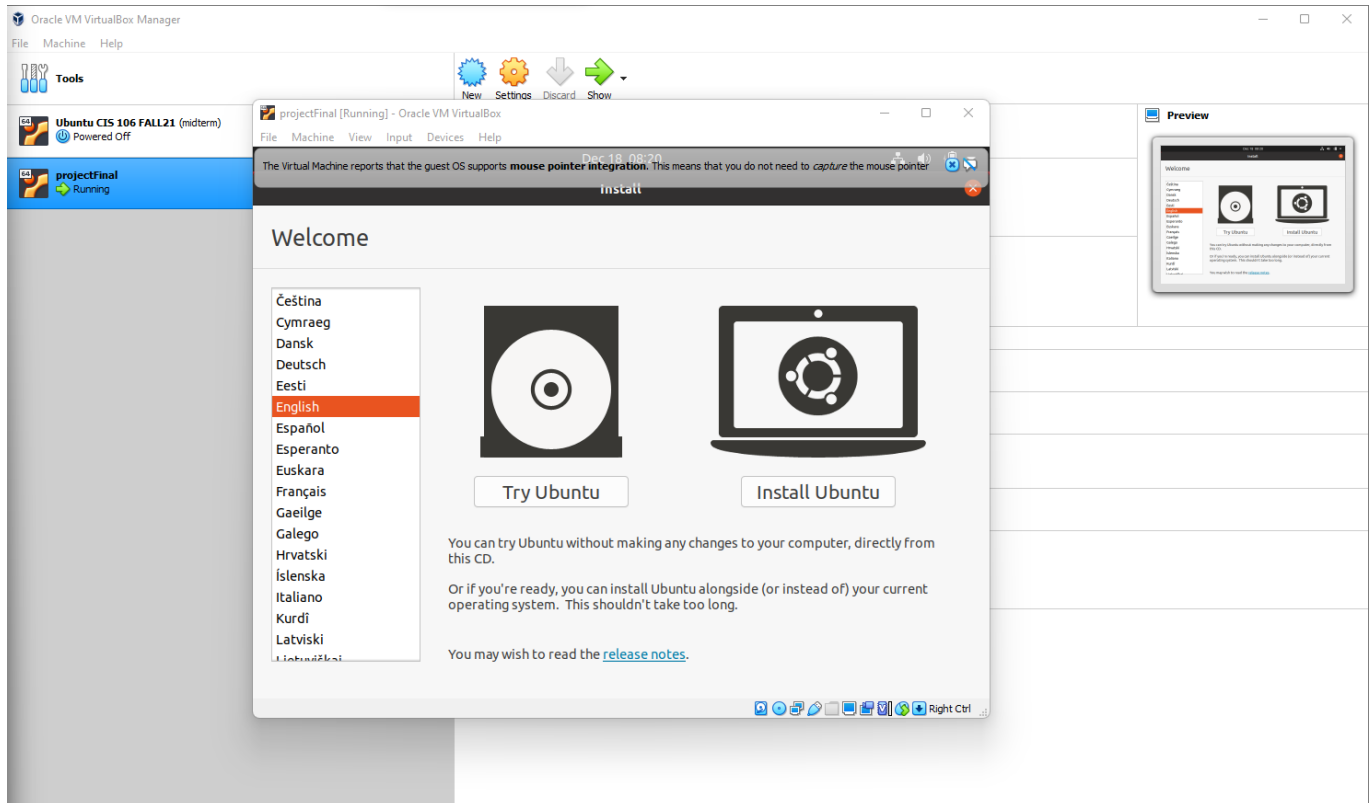
Click **Start** while selecting the machine. It will ask you to select the start-up disk. This is where your Ubuntu ISO file should be. Select that from the drop-down menu and click on **Start**.



Ubuntu will start checking if the system has any errors.

Select Installation Type

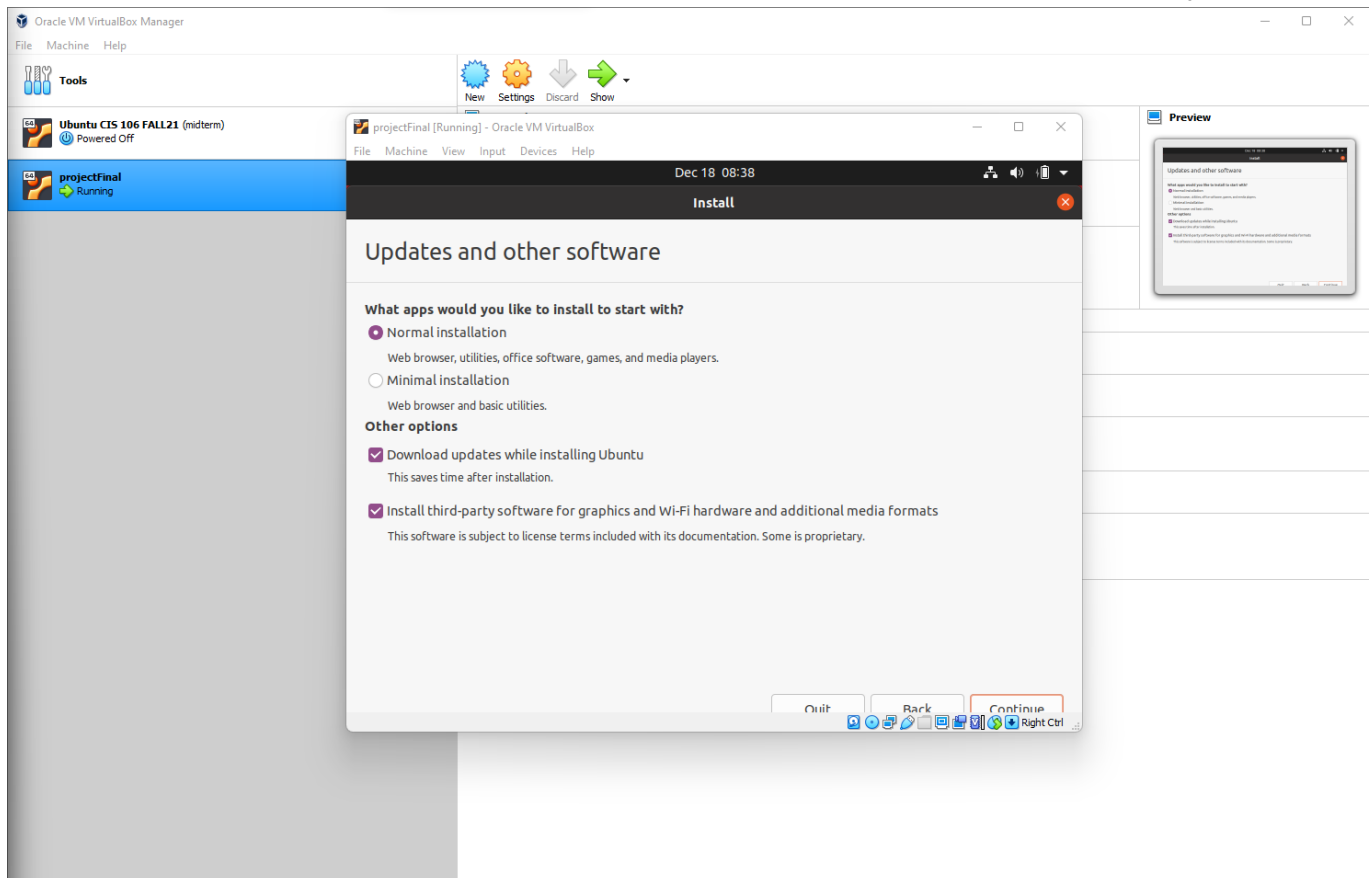
Ubuntu will ask if you want to try a live version of it before installing it. We are installing the full system so click on **Install Ubuntu**.



Select the preferred language.

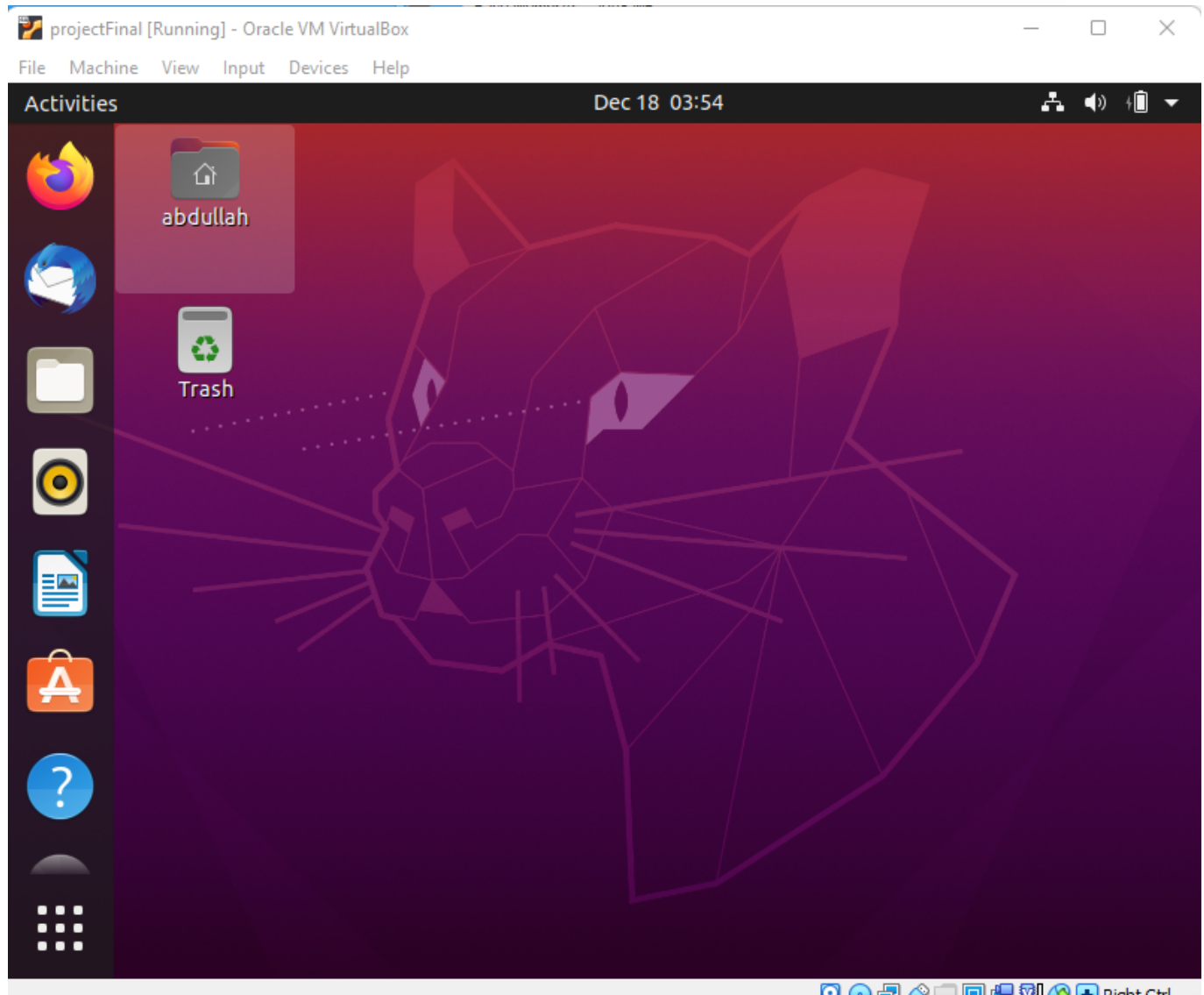
Software Update

It will ask you to whether you want normal installation, or minimal installation. Also, if you want ubuntu to download add ons and stuffs. Check **Normal Installation** and check both for the **Other Options**.



You can also update ubuntu using terminal.

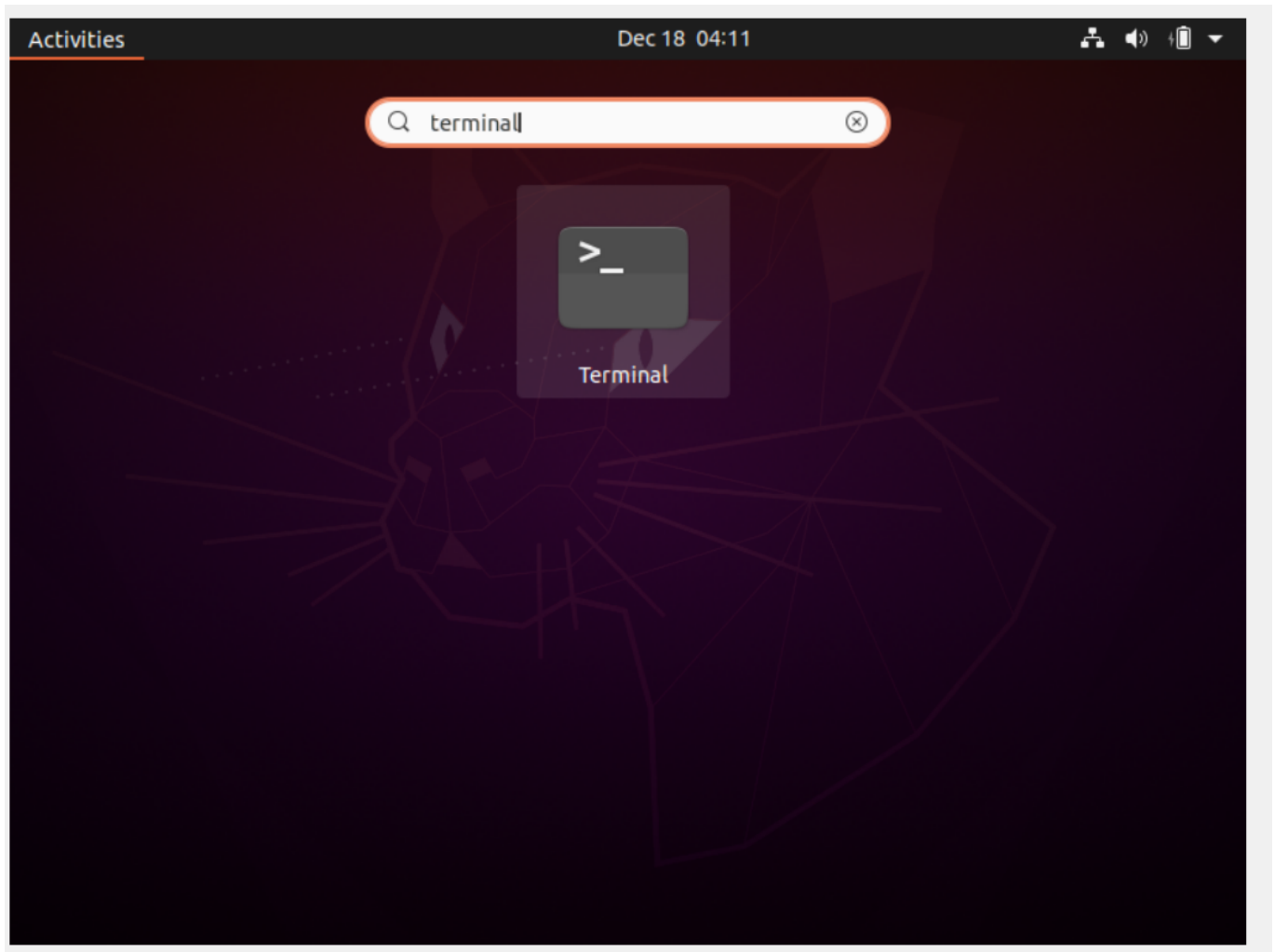
Ubuntu finish software install and update and start shortly with a beautiful simple home screen.



- There are a lot of resources on how to setup ubuntu. You can check this [Youtube](#) video on [How to Install Ubuntu in a Virtual Machine](#)

1.6. Ubuntu Terminal

The best thing about ubuntu is we can do pretty much everything using the terminal. Open by clicking on the left-bottom corner icon, or from the **Application** section.



Some useful commands to use in terminal

Commands	What they do	Example
pwd	Shows the current location	pwd
ls	list all the files and directories	ls Documents/
tac	Display the content of a file in reverse order	tac file1.txt
touch	create files	touch file2.txt
mkdir	create directories	mkdir newFolder
cd	get inside a directory	cd Documents/
rm	delete files and directories	rm file2.txt
cp	copy files and directories	cp file1 file2
head	Display first 5 lines of a file	head file1.txt
tail	Display last 5 lines of a file	tail file1.txt

Follow the link for more examples: [Linux Commands](#)

Type: `sudo apt install screenfetch -y` to install screenfetch

Internet browsing

Ubuntu should have already pre-installed firefox for browsing the internet. In not, you can easily using the graphical application center or the terminal. Here are few web browser's download command lines you can try:

Install firefox

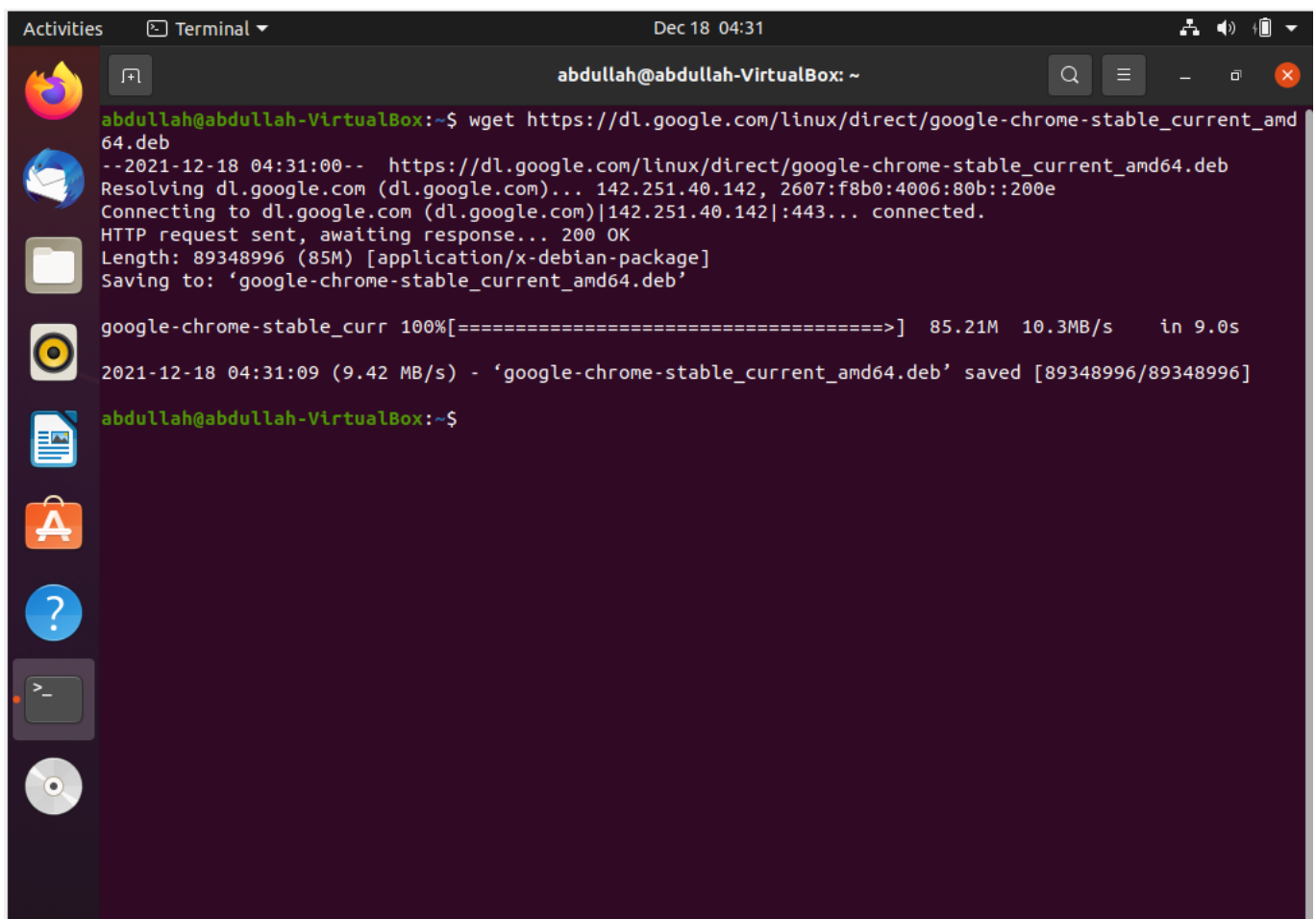
You can browse, download, upload, basically experience the world of web using firefox. Just put the url of a website in the address bar and you can access the content of that site. `sudo apt install firefox`

If you do not like firefox, and want to use other web browser, you can just search for it in terminal using ``search apt "web browser"`.

Install Google Chrome

Google is not open source but it is one of the most popular web browser out there. Navigation system is almost same as firefox or most of the browser. First, we will download the developer package to install google chrome. Type the command:

```
wget https://dl.google.com/linux/direct/google-chrome-stable_current_amd64.deb
```

A screenshot of a terminal window titled 'abduallah@abduallah-VirtualBox: ~'. The terminal shows the execution of the command `wget https://dl.google.com/linux/direct/google-chrome-stable_current_amd64.deb`. The output indicates that the file was successfully downloaded from dl.google.com. The progress bar shows 100% completion with a speed of 10.3MB/s in 9.0s. The final output is `2021-12-18 04:31:09 (9.42 MB/s) - 'google-chrome-stable_current_amd64.deb' saved [89348996/89348996]`. The prompt `abduallah@abduallah-VirtualBox:~$` is visible at the bottom.

Now install using it from your local folder using the command:

```
`sudo apt install ./google-chrome-stable_current_amd64.deb`
```



```

Transitional package for xserver-xorg-video-openchrome-hwe-18.04
yabasic/focal 1:2.86.6-1 amd64
Yet Another BASIC interpreter

abdullah@abdullah-VirtualBox:~$ sudo apt install ./google-chrome-stable_current_amd64.deb
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'google-chrome-stable' instead of './google-chrome-stable_current_amd64.deb'
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  google-chrome-stable
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 0 B/89.3 MB of archives.
After this operation, 283 MB of additional disk space will be used.
Get:1 /home/abdullah/google-chrome-stable_current_amd64.deb google-chrome-stable amd64 96.0.4664.110-1 [
89.3 MB]
Selecting previously unselected package google-chrome-stable.
(Reading database ... 185200 files and directories currently installed.)
Preparing to unpack .../google-chrome-stable_current_amd64.deb ...
Unpacking google-chrome-stable (96.0.4664.110-1) ...
Setting up google-chrome-stable (96.0.4664.110-1) ...
update-alternatives: using /usr/bin/google-chrome-stable to provide /usr/bin/x-www-browser (x-www-browse
r) in auto mode
update-alternatives: using /usr/bin/google-chrome-stable to provide /usr/bin/gnome-www-browser (gnome-ww
w-browser) in auto mode
update-alternatives: using /usr/bin/google-chrome-stable to provide /usr/bin/google-chrome (google-chrom
e) in auto mode
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for desktop-file-utils (0.24-1ubuntu3) ...
abdullah@abdullah-VirtualBox:~$

```

After the installation is done, you can find it in the **application>internet** from the top left corner

School Work

Install Libre Office

Libre Office is an open source version of Microsoft Office. We can create text documents, presentations and calculation sheets just like Word, powerpoint and excel with libreoffice.

Note: There are plenty other word documents software out there. You can search using the say way of searching web browser.

First, We have to update the cache in order to install the libreoffice. Type: `sudo apt update`

After updating the cache we will install libre office for that we will insert the following command Type:

```
sudo apt install libreoffcie
```

```

abd007@cis240-fall21: ~
abd007@cis240-fall21:~$ sudo apt update
[sudo] password for abd007:
Hit:1 http://us.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://us.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [277 kB]
Get:6 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [35.7 kB]
Get:7 http://us.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [363 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [66.2 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 DEP-11 Metadata [2,464 B]
Get:10 http://us.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 DEP-11 Metadata [940 B]
Get:11 http://us.archive.ubuntu.com/ubuntu focal-backports/main amd64 DEP-11 Metadata [7,992 B]
Get:12 http://us.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [11.3 kB]
Fetched 1,101 kB in 1s (1,408 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
58 packages can be upgraded. Run 'apt list --upgradable' to see them.
abd007@cis240-fall21:~$ sudo apt install libreoffice
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  apt-symptoms guile-2.2-libs libevent-2.1-7 libgc1c2
  libgnome-games-support-1-3 libgnome-games-support-common libnatpmp1
  libqqwing2v5 linux-headers-5.11.0-37-generic
  linux-hwe-5.11-headers-5.11.0-37 linux-image-5.11.0-37-generic
  linux-modules-5.11.0-37-generic linux-modules-extra-5.11.0-37-generic
  python3-systemd
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  ca-certificates-java default-jre default-jre-headless firebird3.0-common
  firebird3.0-common-doc firebird3.0-server-core firebird3.0-utils
  fonts-crosextra-caladea fonts-crosextra-carlito fonts-dejavu
  fonts-dejavu-extra fonts-linuxlibertine fonts-noto-core fonts-noto-extra
  fonts-noto-ui-core fonts-sil-gentium fonts-sil-gentium-basic java-common
  libapache-pom-java libatk-wrapper-java libatk-wrapper-java-jni libbsh-java
  libcommons-logging-java libcommons-parent-java libel-api-java libfbclient2

```

Press 'Y' to continue

After the installation is complete, you can find it in application.

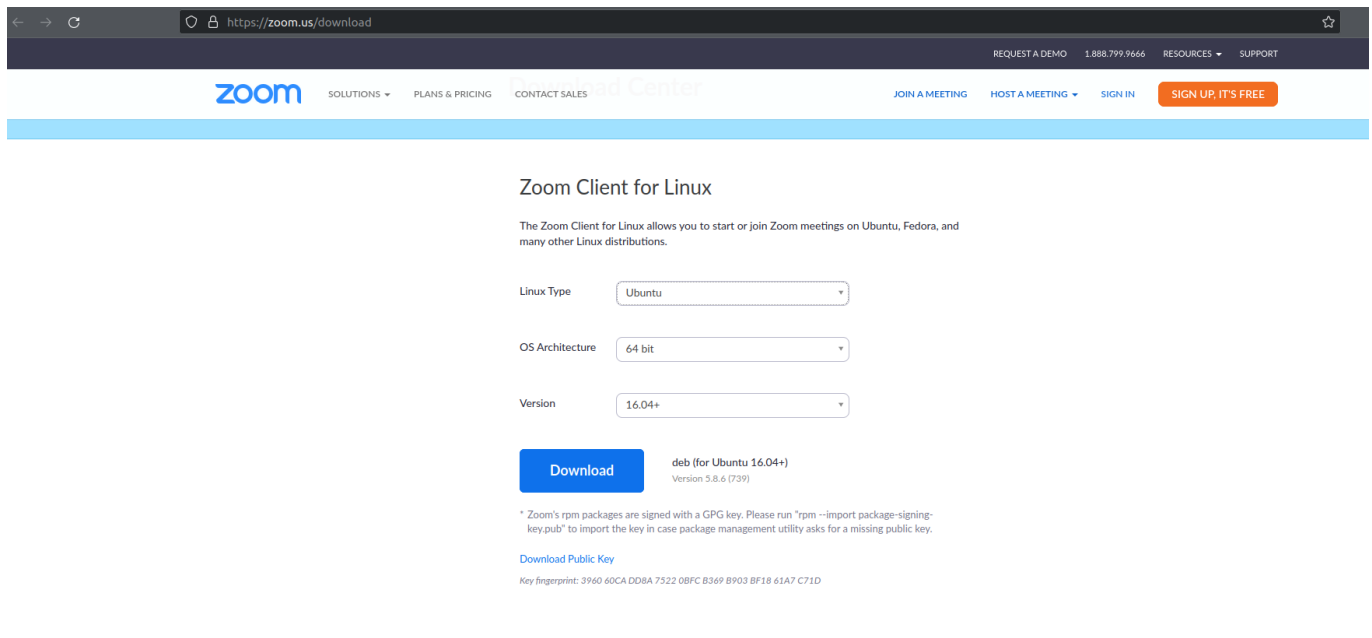
Install Discord

Discord is a multipurpose online streaming platform. You can stream yourself, watch other streamer, chat with people (audio/video/text). It is is great way of file sharing too. All you have to do is create an account using your email and password. Than find channel to subscribe or stream yourself live. Download the file from here: <https://discord.com/download> to download the package ![download discord](./vmSetup/discord.png)

Install it from the local disk using the command from your home directory: `sudo apt install /Downloads/discord-0.0.14.deb` insert the password and press y

Install Zoom

Zoom is an online video calling/meeting application. People around the world use it for online meeting, particularly in schools, colleges, and offices. Multiple people can join in a audio or video conference using zoom. It allows users to share there computer/mobile screen to other people in the meeting. Download zoom from here: <https://zoom.us/download> Select the package you want. we are downloading Ubuntu 16.04 version.



The screenshot shows the Zoom Linux Client download page. At the top, there's a navigation bar with the Zoom logo, links for SOLUTIONS, PLANS & PRICING, CONTACT SALES, and a 'Download Center' header. On the right, there are links for REQUEST A DEMO, 1.888.799.9666, RESOURCES, and SUPPORT. Below the navigation bar, there's a section for 'Zoom Client for Linux'. It includes a description: 'The Zoom Client for Linux allows you to start or join Zoom meetings on Ubuntu, Fedora, and many other Linux distributions.' There are three dropdown menus for 'Linux Type' (set to Ubuntu), 'OS Architecture' (set to 64 bit), and 'Version' (set to 16.04+). A blue 'Download' button is present, with a note: 'deb (for Ubuntu 16.04+) Version 5.8.6 (739)'. Below this, there's a warning about GPG keys and a link to 'Download Public Key' with a fingerprint: 3960 60CA DD8A 7522 0BFC B369 B903 BF18 61A7 C71D.

Zoom Extension for Browsers

The Zoom Extension for Browsers allows you to start or schedule your Zoom meeting with a single click from your browser or within Google calendar.

Now install it from your home directory using the command: `sudo apt install /Downloads/zoom_amd64.deb` Give your password and press Y in next steps to finish installation.

After installation is complete, sign-in or create an account with your email. Join other meeting using meeting-id or create your own meeting and share the id with the targeted participant. You can make the meeting closed or public to matter of your security concern.

TroubleShoot

- Use the `man --help` command to open help functions.

```

abd007@cis240-fall21: ~
abd007@cis240-fall21:~$ man --help
Usage: man [OPTION...] [SECTION] PAGE...

  -C, --config-file=FILE      use this user configuration file
  -d, --debug                  emit debugging messages
  -D, --default                reset all options to their default values
  --warnings[=WARNINGS]      enable warnings from groff

Main modes of operation:
  -f, --whatis                 equivalent to whatis
  -k, --apropos                equivalent to apropos
  -K, --global-apropos        search for text in all pages
  -l, --local-file             interpret PAGE argument(s) as local filename(s)
  -w, --where, --path, --location
                               print physical location of man page(s)
  -W, --where-cat, --location-cat
                               print physical location of cat file(s)

  -c, --catman                 used by catman to reformat out of date cat pages
  -R, --recode=ENCODING        output source page encoded in ENCODING

Finding manual pages:
  -L, --locale=LOCALE          define the locale for this particular man search
  -m, --systems=SYSTEM         use manual pages from other systems
  -M, --manpath=PATH           set search path for manual pages to PATH

  -S, -s, --sections=LIST      use colon separated section list

  -e, --extension=EXTENSION    limit search to extension type EXTENSION

  -i, --ignore-case            look for pages case-insensitively (default)
  -I, --match-case             look for pages case-sensitively

  --regex                      show all pages matching regex
  --wildcard                   show all pages matching wildcard

  --names-only                 make --regex and --wildcard match page names only,
                               not descriptions

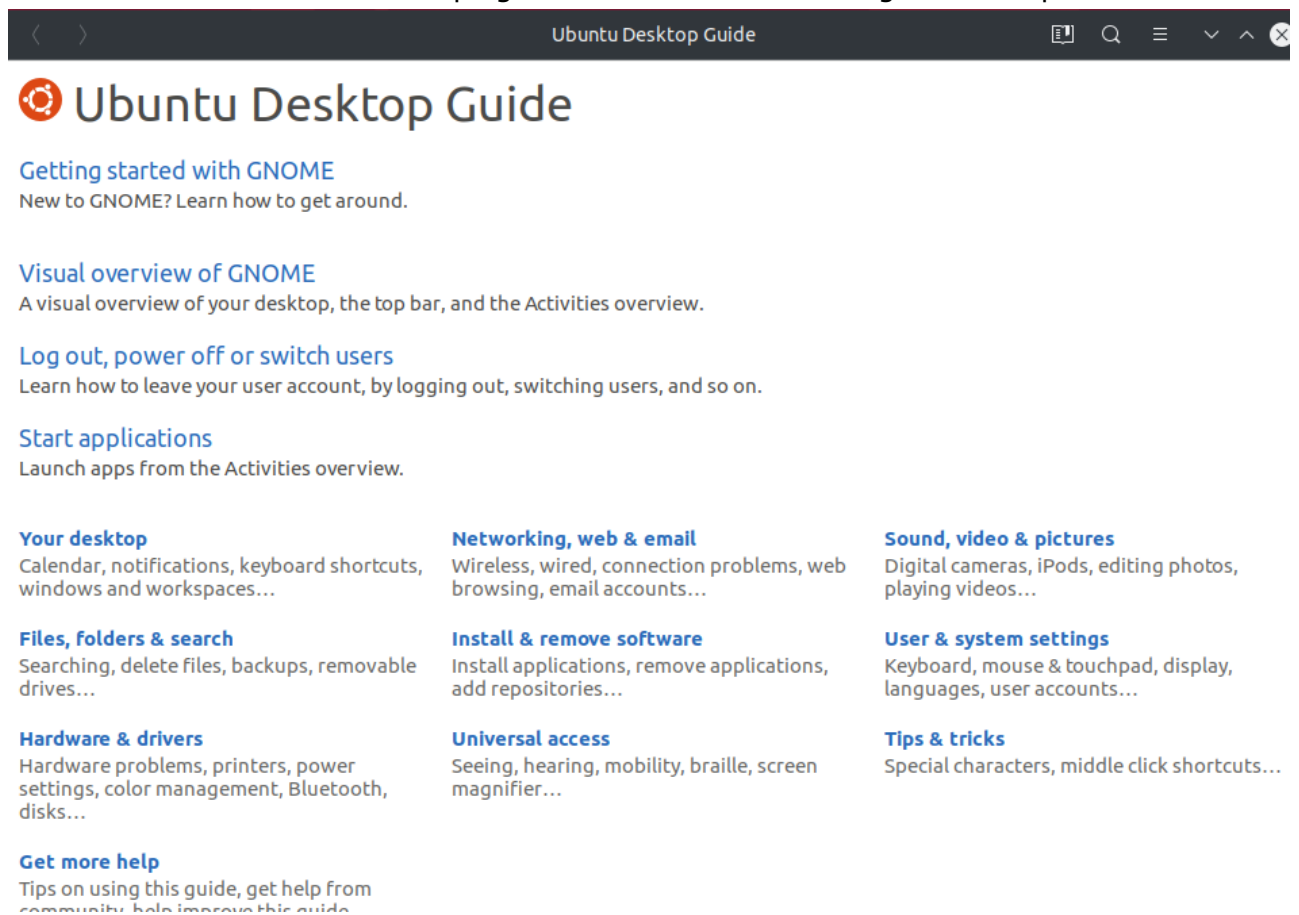
  -a, --all                    find all matching manual pages
  -u, --update                  force a cache consistency check

  --no-subpages                don't try subpages, e.g. 'man foo bar' => 'man
                               foo-bar'

Controlling formatted output:
  -P, --pager=PAGER            use program PAGER to display output

```

- Hover on the monitor icon in the top-right corner of the menu bar to get more help.



- Searching online: There are plenty of resources in the web.

Work Cited

ProgrammingKnowledge. "How to Install Ubuntu 20.04 LTS on VirtualBox in Windows 10." YouTube, YouTube, 24 Apr. 2020, <https://www.youtube.com/watch?v=x5MhydiJWmc>.

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