Configuring Esp32c6 with Ubuntu via VirtualBox

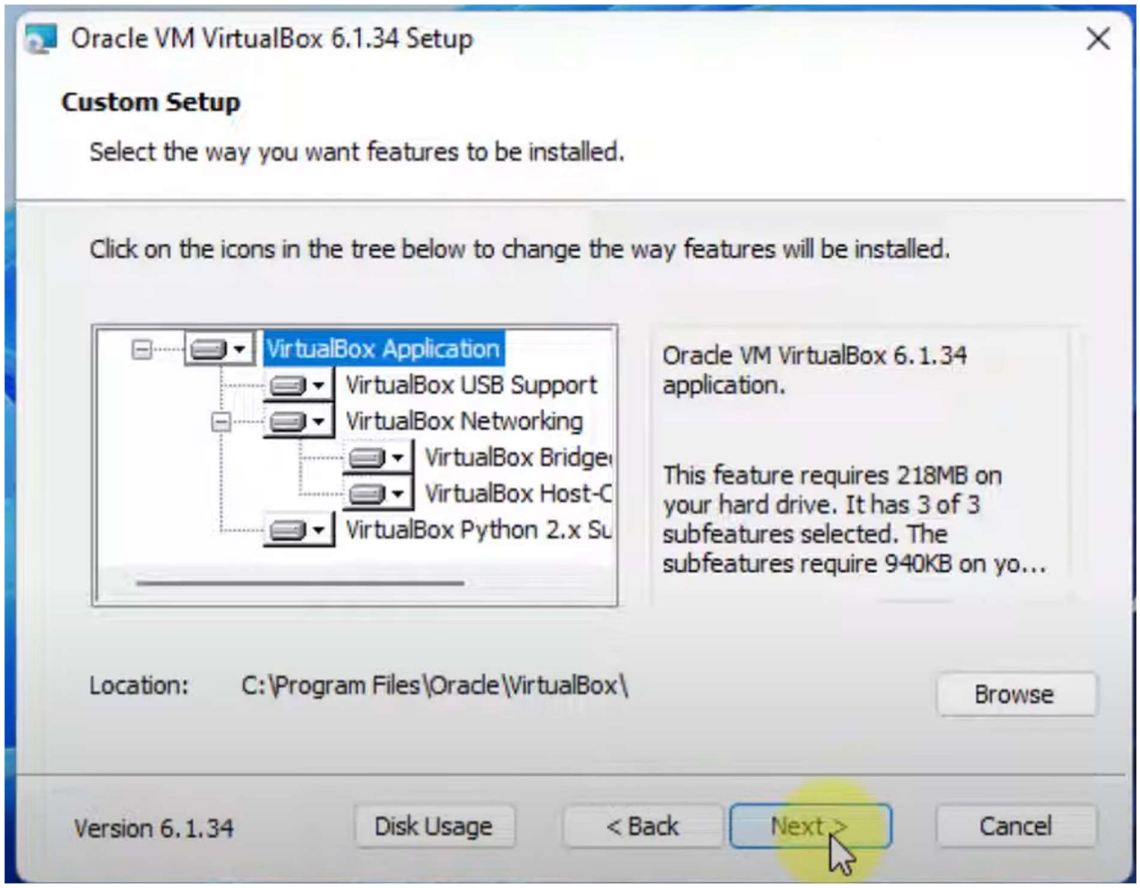
1. Installing Virtual Box:

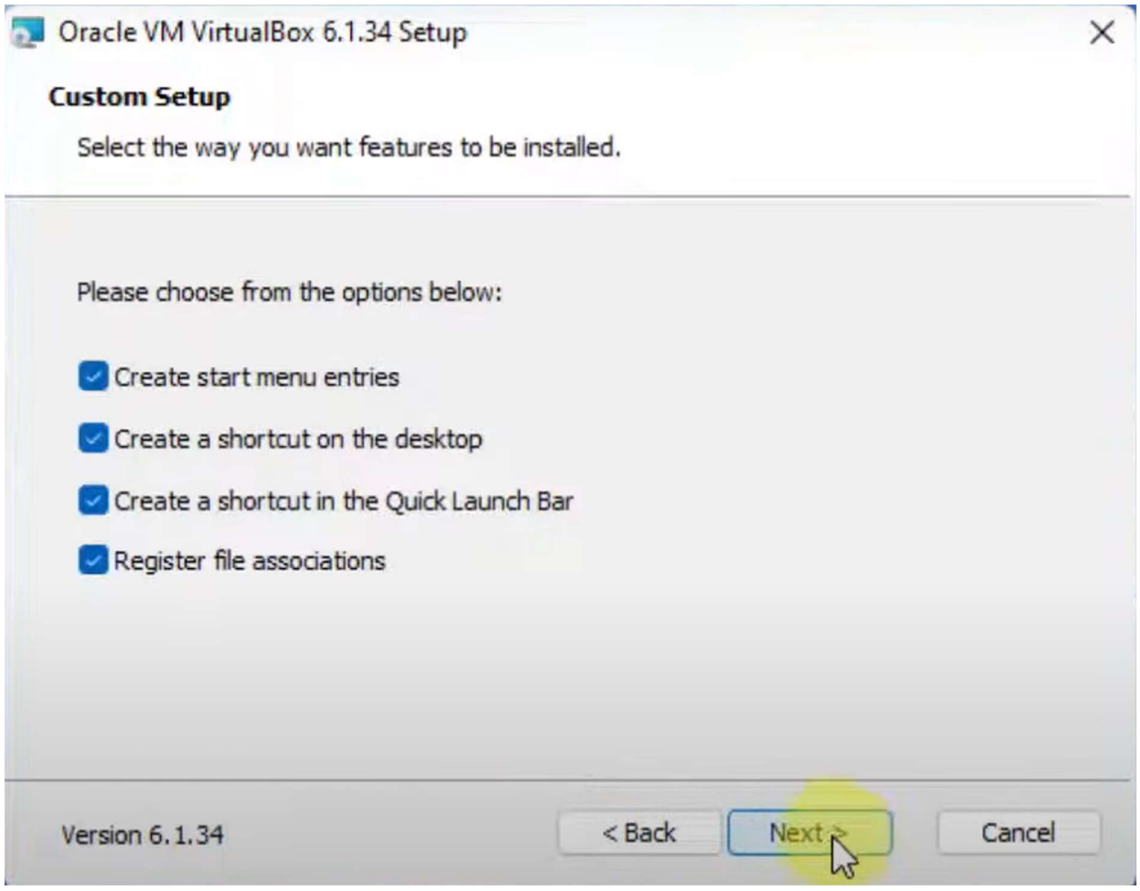
Visit https://www.virtualbox.org/wiki/Downloads

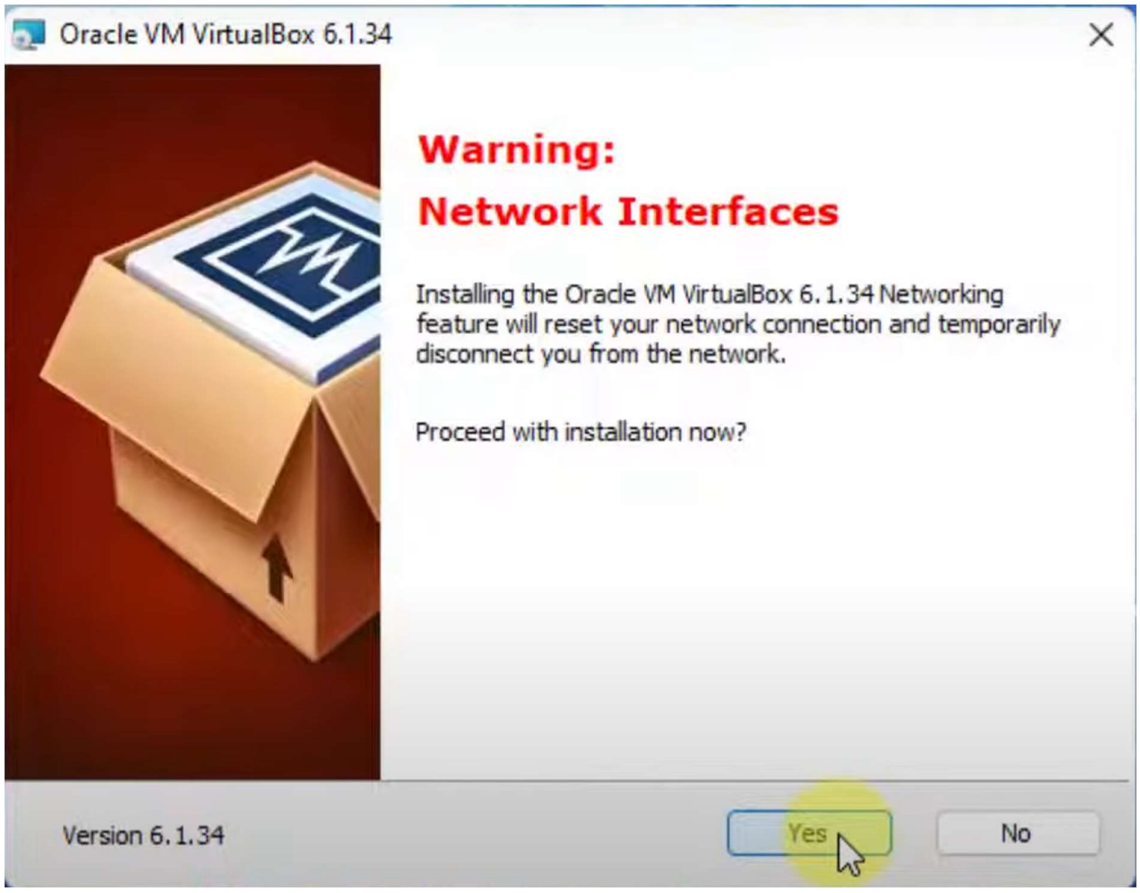
Here click on Windows host if you are using VB in an windows host environment. Click on MacOS host for Mac environment.

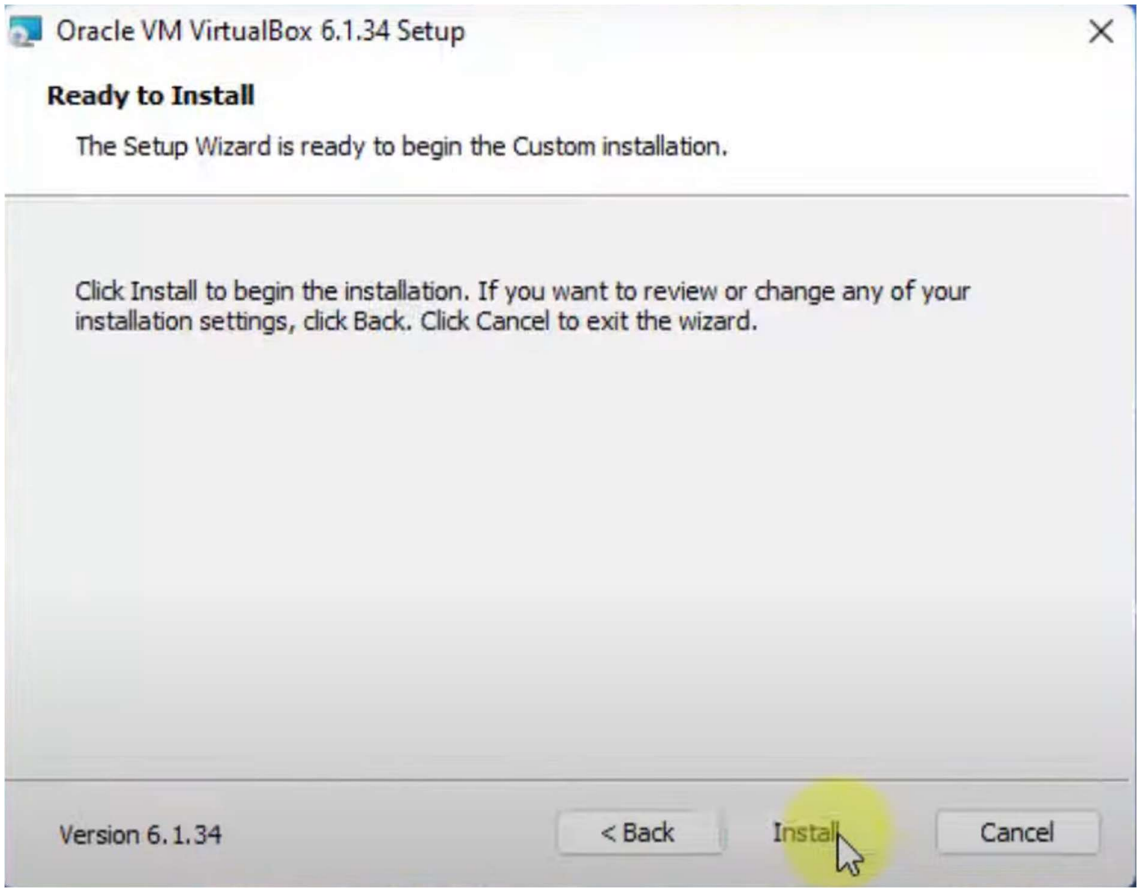
Once downloaded run the .exe file

A dialogue like this appears. Continue with the default settings.

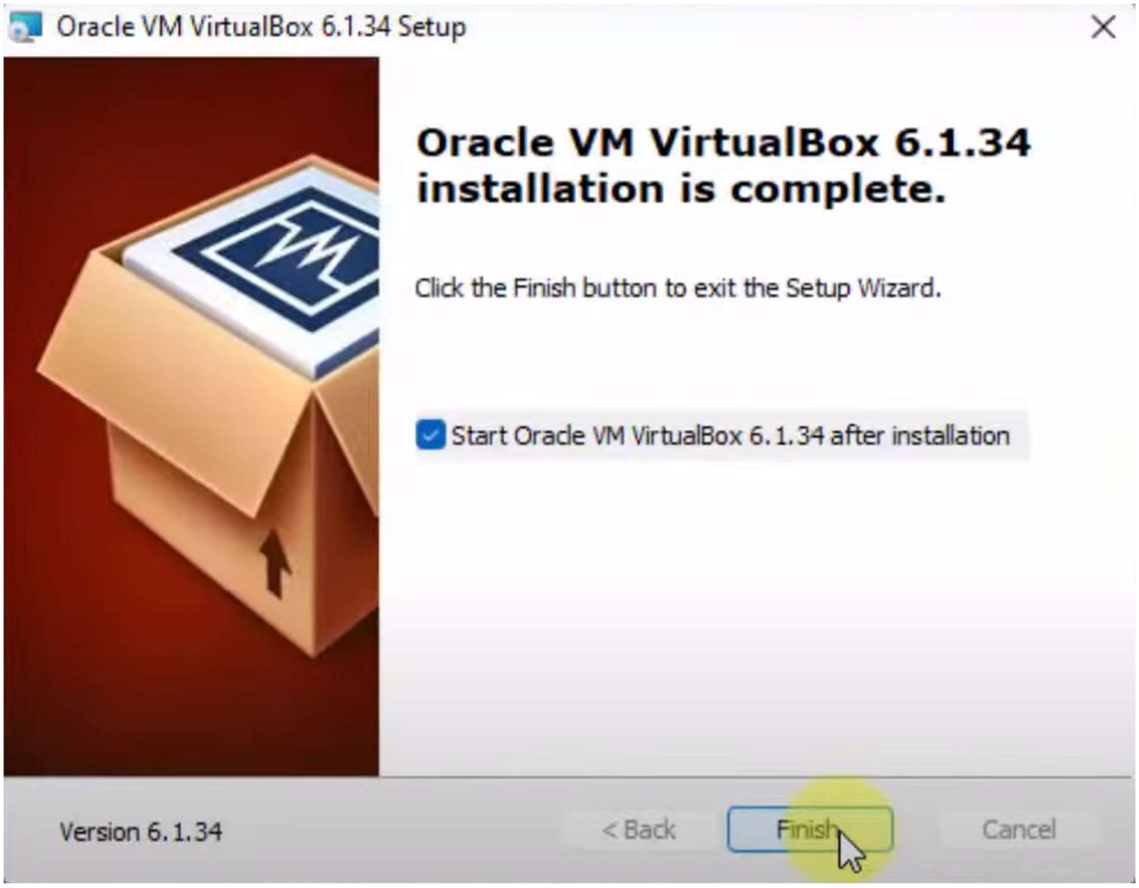

Oracle VM VirtualBox 6.1.34 Setup
Custom Setup
Select the way you want features to be installed.
Click on the icons in the tree below to change the way features will be installed.
VirtualBox Application
VirtualBox USB Support
VirtualBox Networking
VirtualBox Bridge
VirtualBox Host-C
VirtualBox Python 2.x Su
Oracle VM VirtualBox 6.1.34 application.
This feature requires 218MB on your hard drive. It has 3 of 3 subfeatures selected. The subfeatures require 940KB on yo...
Location:
C:\Program Files\Oracle\VirtualBox\
Browse
Version 6.1.34
Disk Usage
< Back
Next >
Cancel


Oracle VM VirtualBox 6.1.34 Setup
Custom Setup
Select the way you want features to be installed.
Please choose from the options below:
Create start menu entries
Create a shortcut on the desktop
Create a shortcut in the Quick Launch Bar
Register file associations
Version 6.1.34
< Back
Next >
Cancel


Oracle VM VirtualBox 6.1.34
Warning:
Network Interfaces
Installing the Oracle VM VirtualBox 6.1.34 Networking feature will reset your network connection and temporarily disconnect you from the network.
Proceed with installation now?
Version 6.1.34
Yes
No



After Successful installation the following screen appears

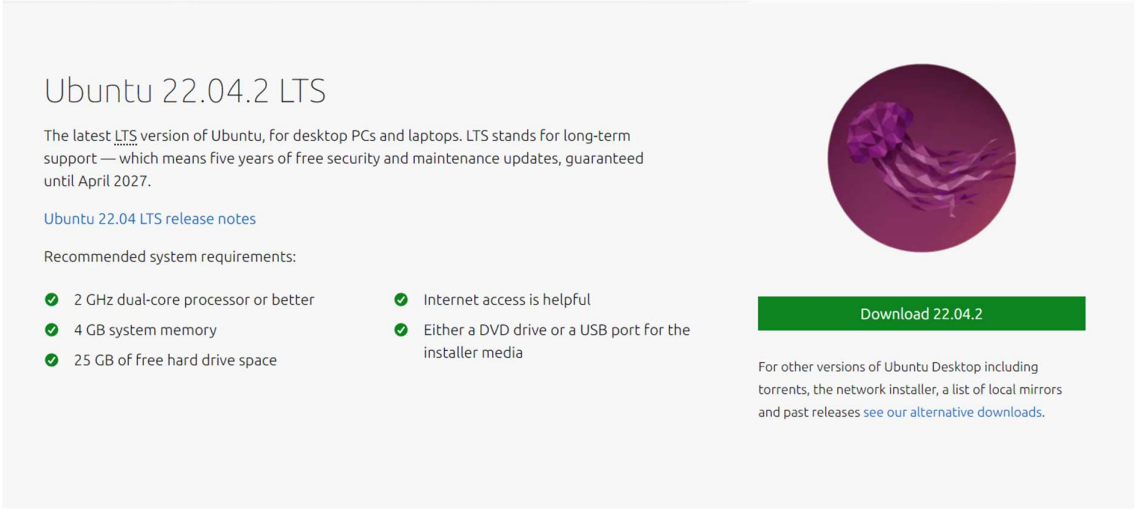


You will also find a desktop icon of virtual box created on your desktop screen.

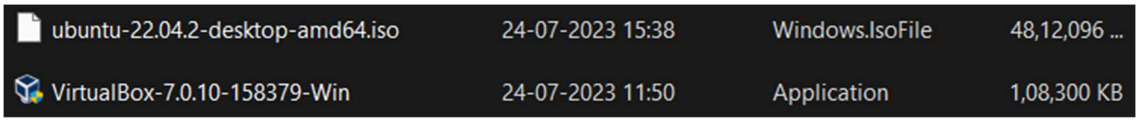
2. Installing Ubuntu

Visit https://ubuntu.com/download/desktop

Scroll down and download the version written with LTS



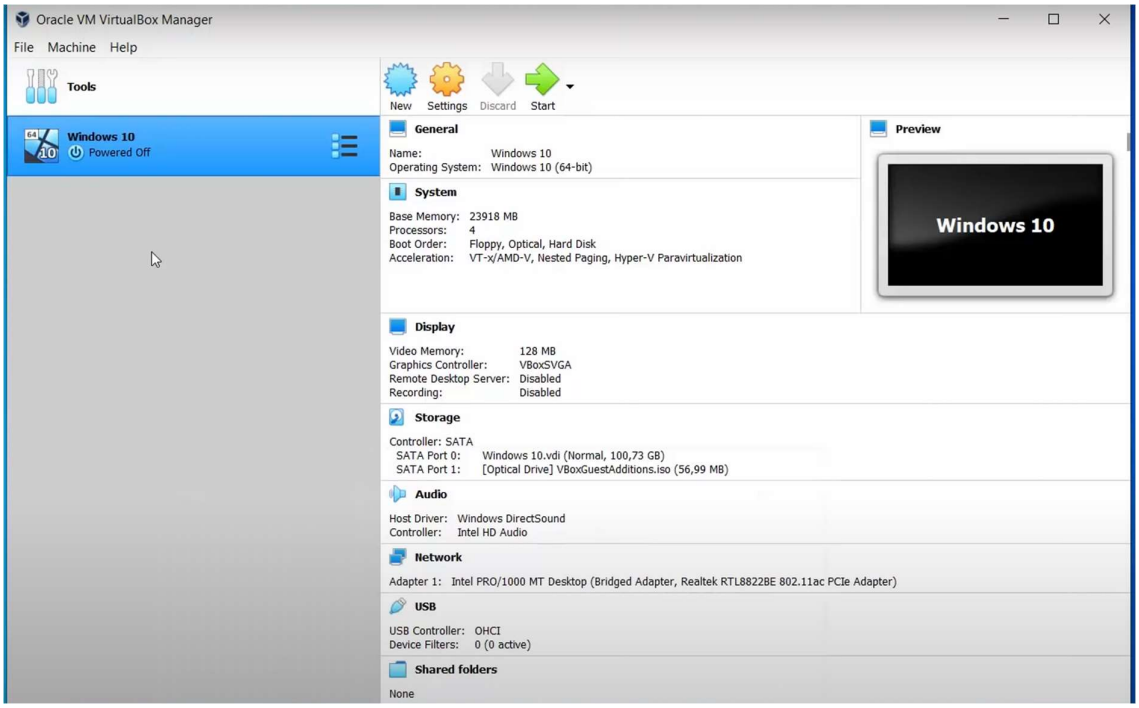
After downloading check for it in your download source destination



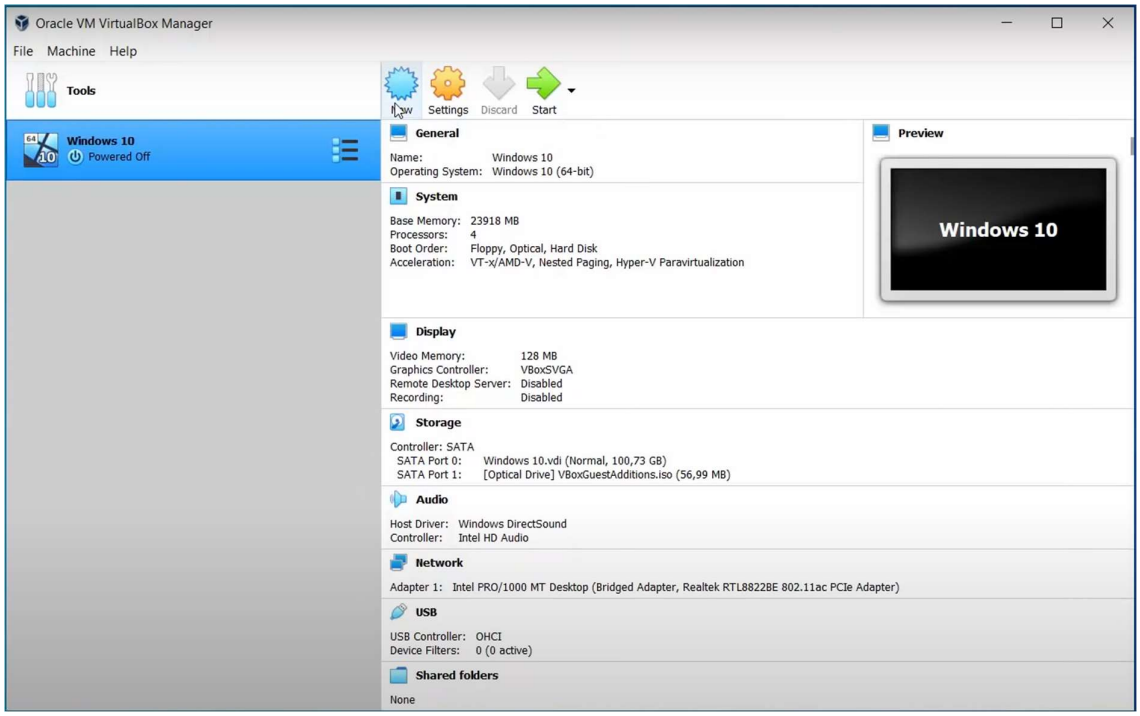
It should be an .iso file

3. Creating a virtual machine

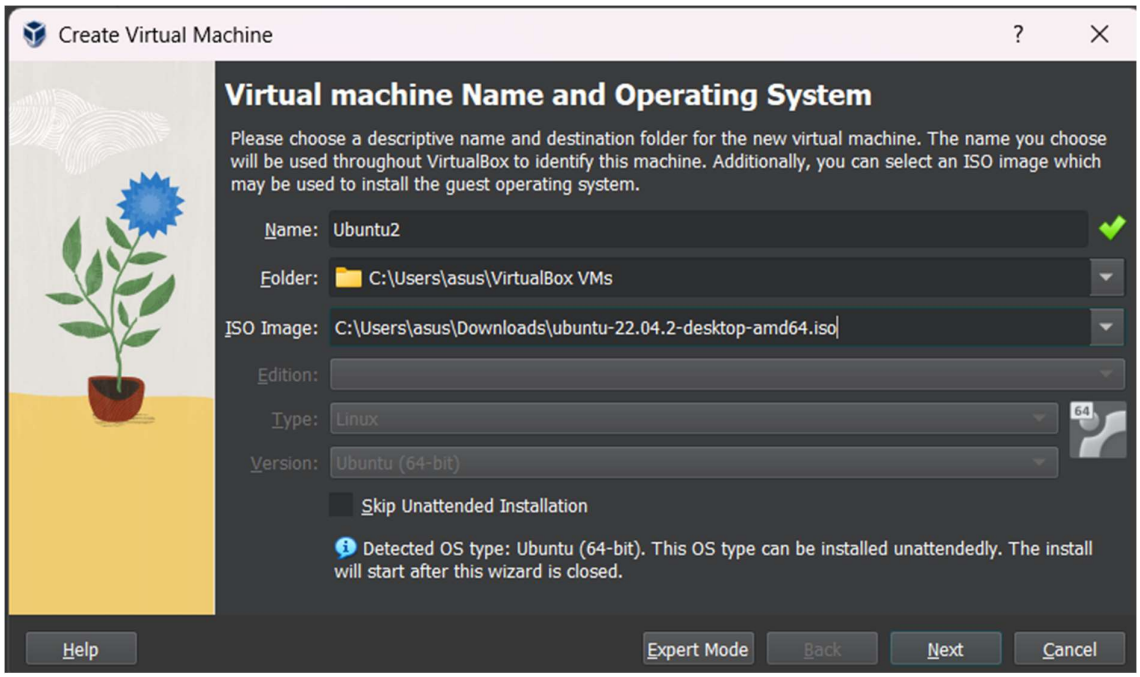
Open Virtual Box



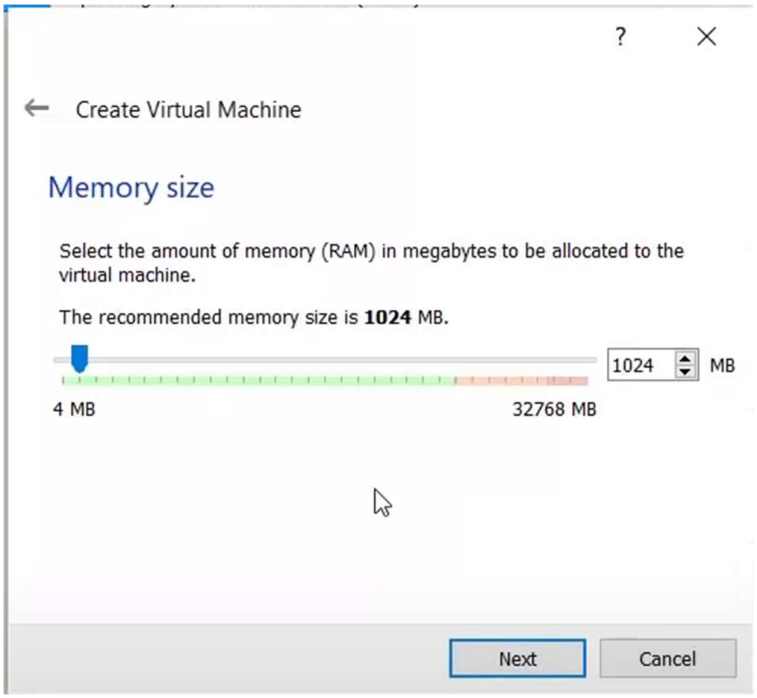
Click on new



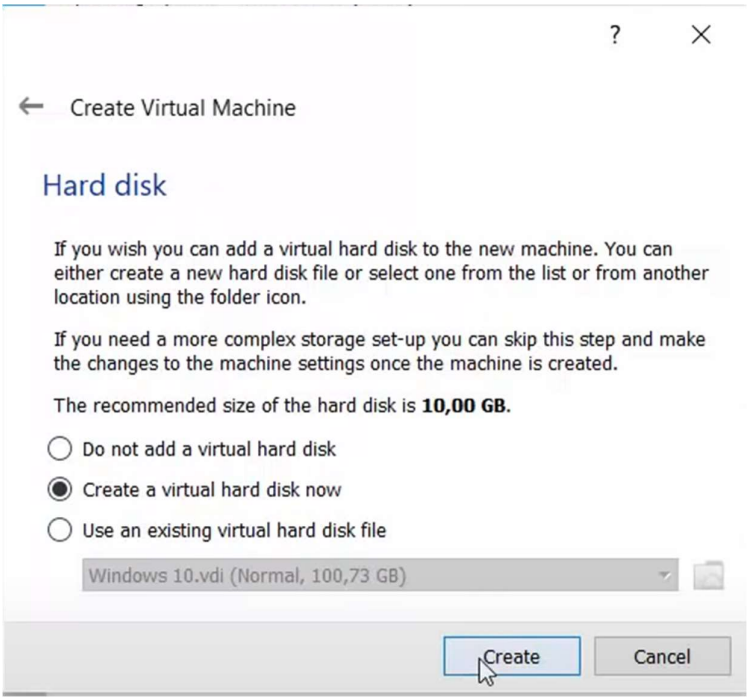
Type a name for your machine. It can be any name of your choice. Then click on the dropdown on the iso image section .Click on other and go to the place where you have downloaded ubuntu. Click on the .iso file . Then select Linux as type and choose the version of ubuntu you have downloaded from the version dropdown. After everything it should look like this

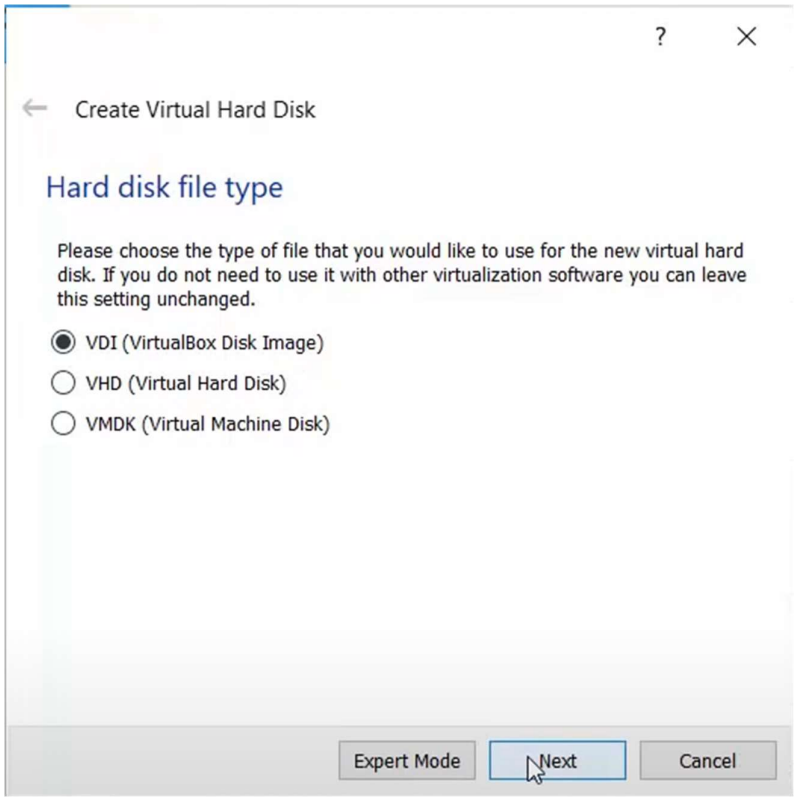


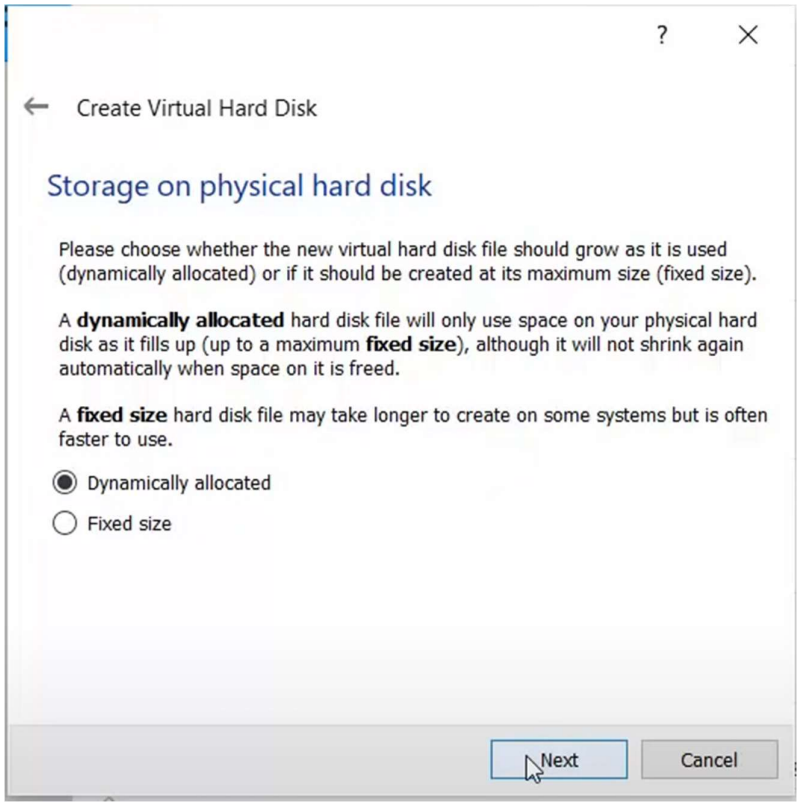
Then you need to allocate the memory size(RAM).The more RAM you allocate the better and faster it works.

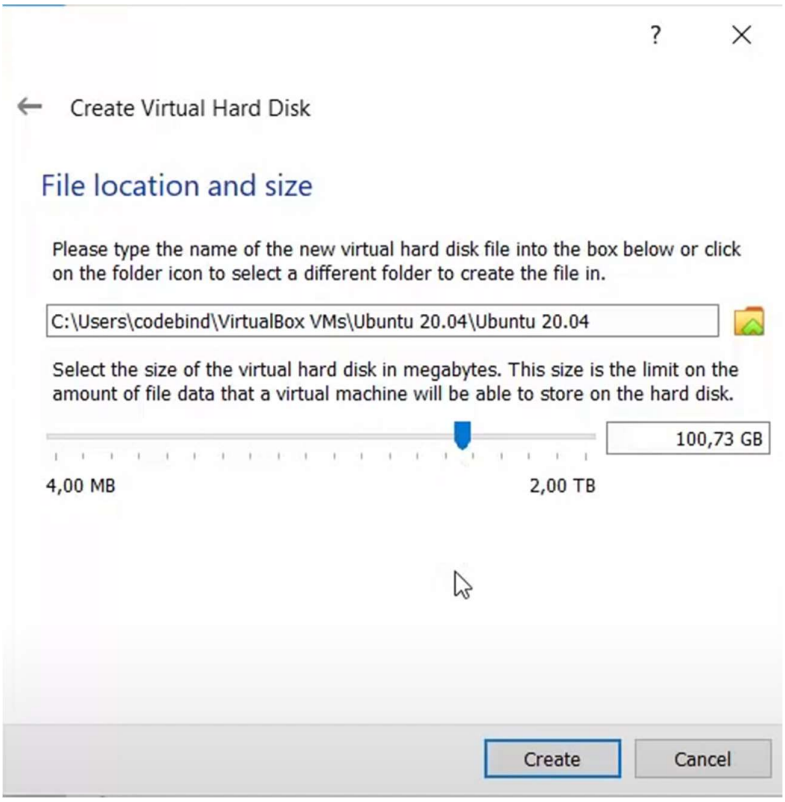


Then proceed with the defaults.




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.
VDI (VirtualBox Disk Image)
VHD (Virtual Hard Disk)
VMDK (Virtual Machine Disk)
Expert Mode
Next
Cancel

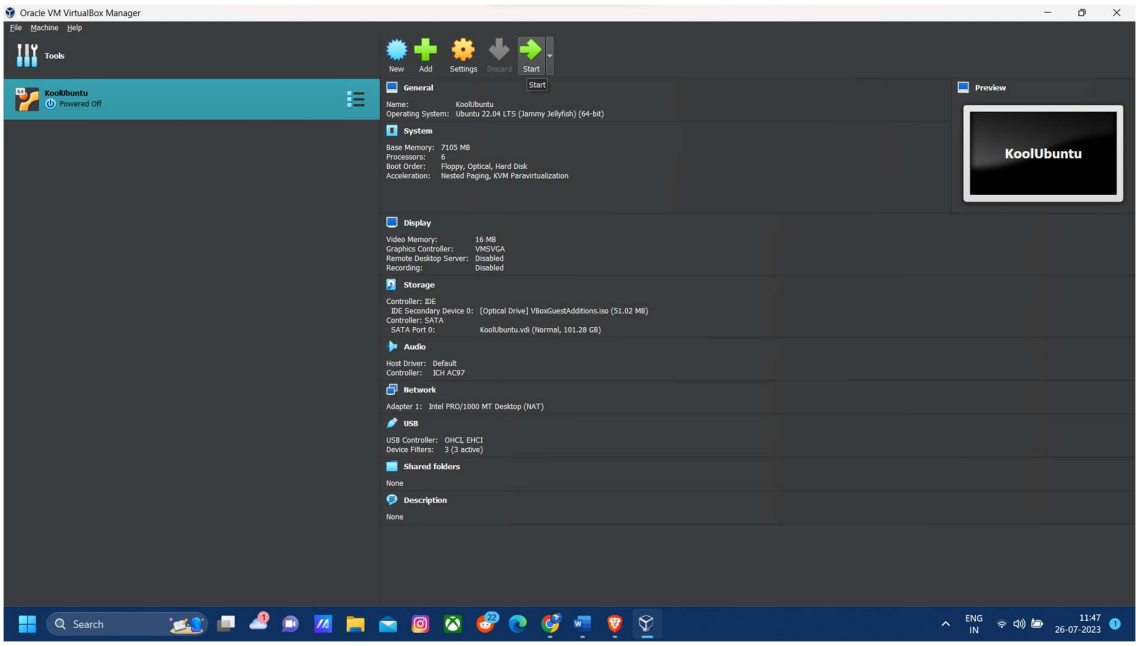

Create Virtual Hard Disk
Storage on physical hard disk
Please choose whether the new virtual hard disk file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).
A dynamically allocated hard disk file will only use space on your physical hard disk 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.
Dynamically allocated
Fixed size
Next
Cancel

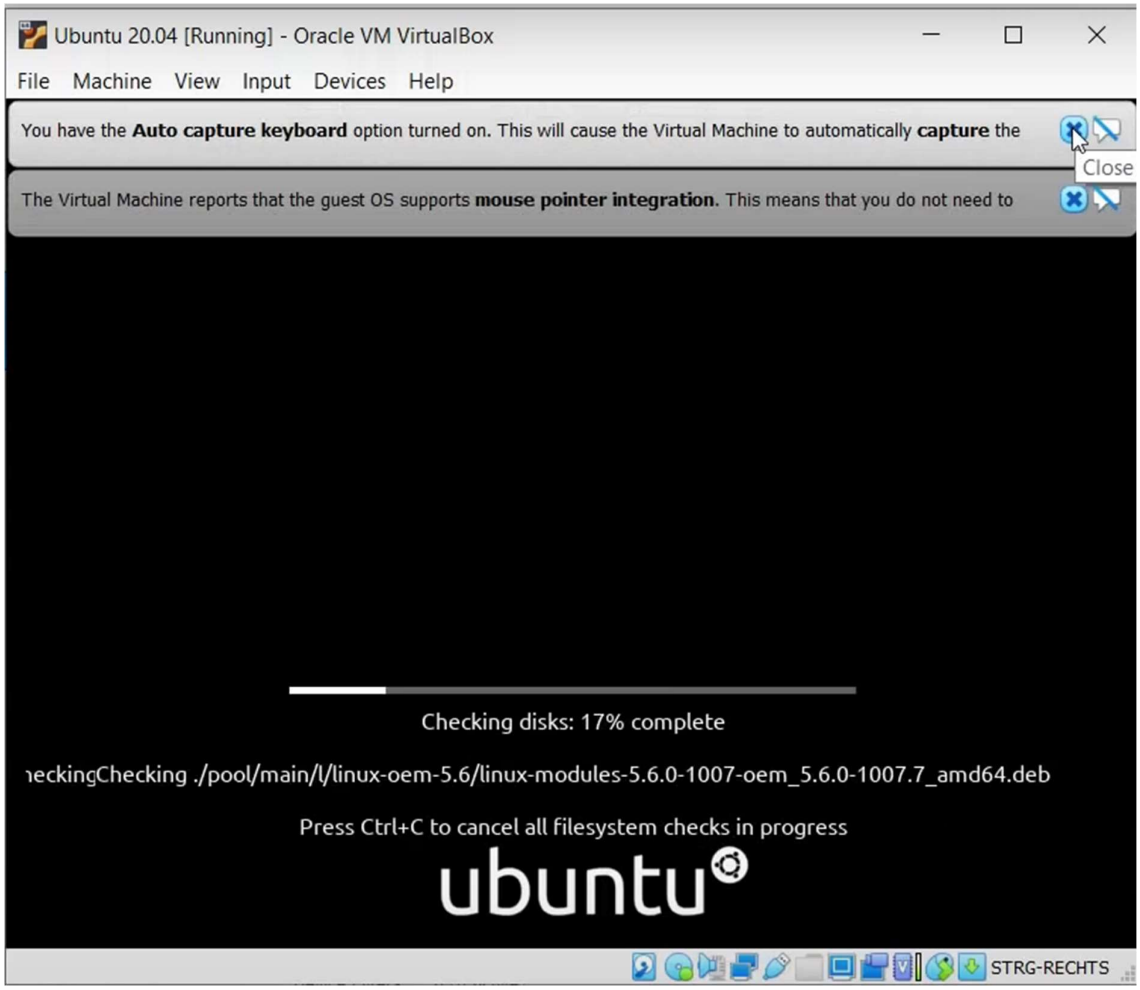


It is recommended to allocate at least 100GB for better performance. Click on create and you can see the machine with the Ubuntu OS being created.

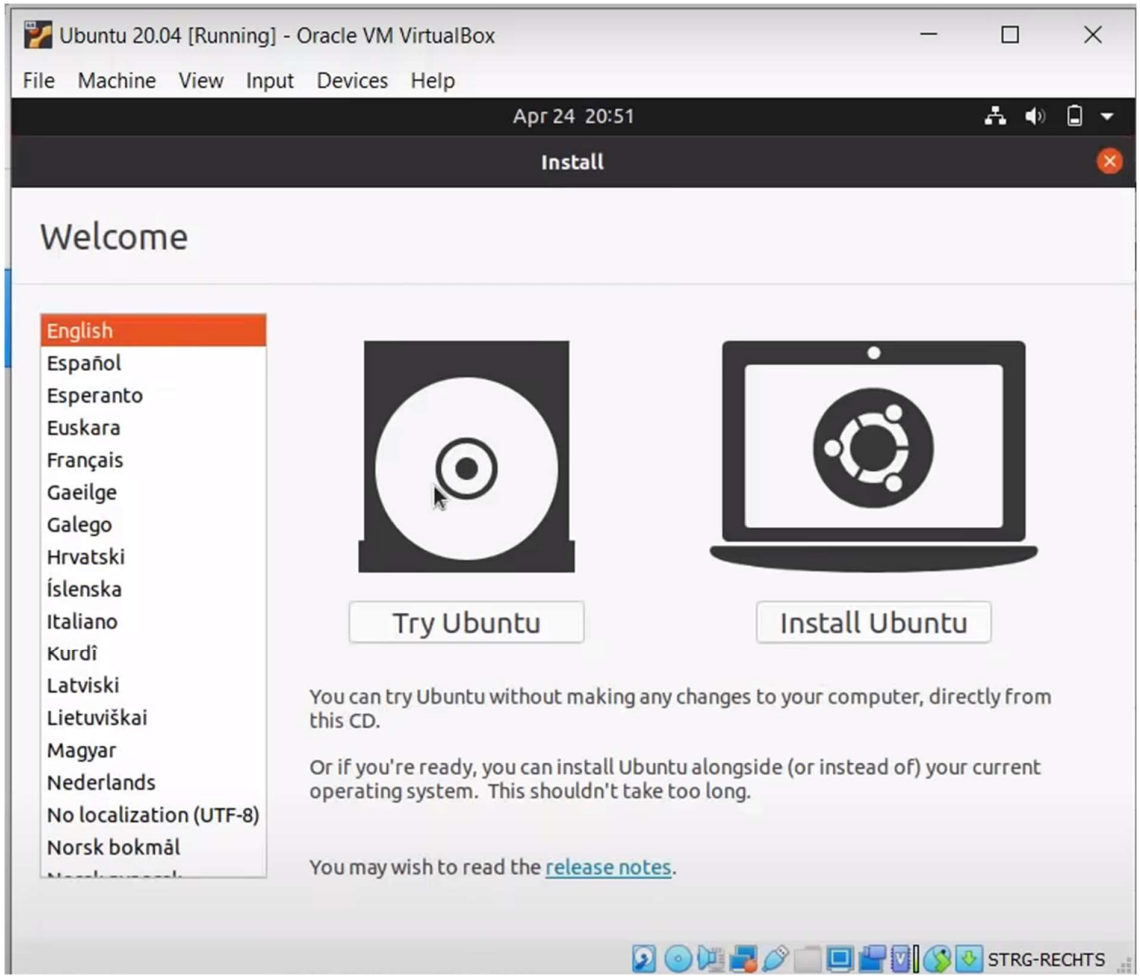
4. Setting up ubuntu on your virtual machine

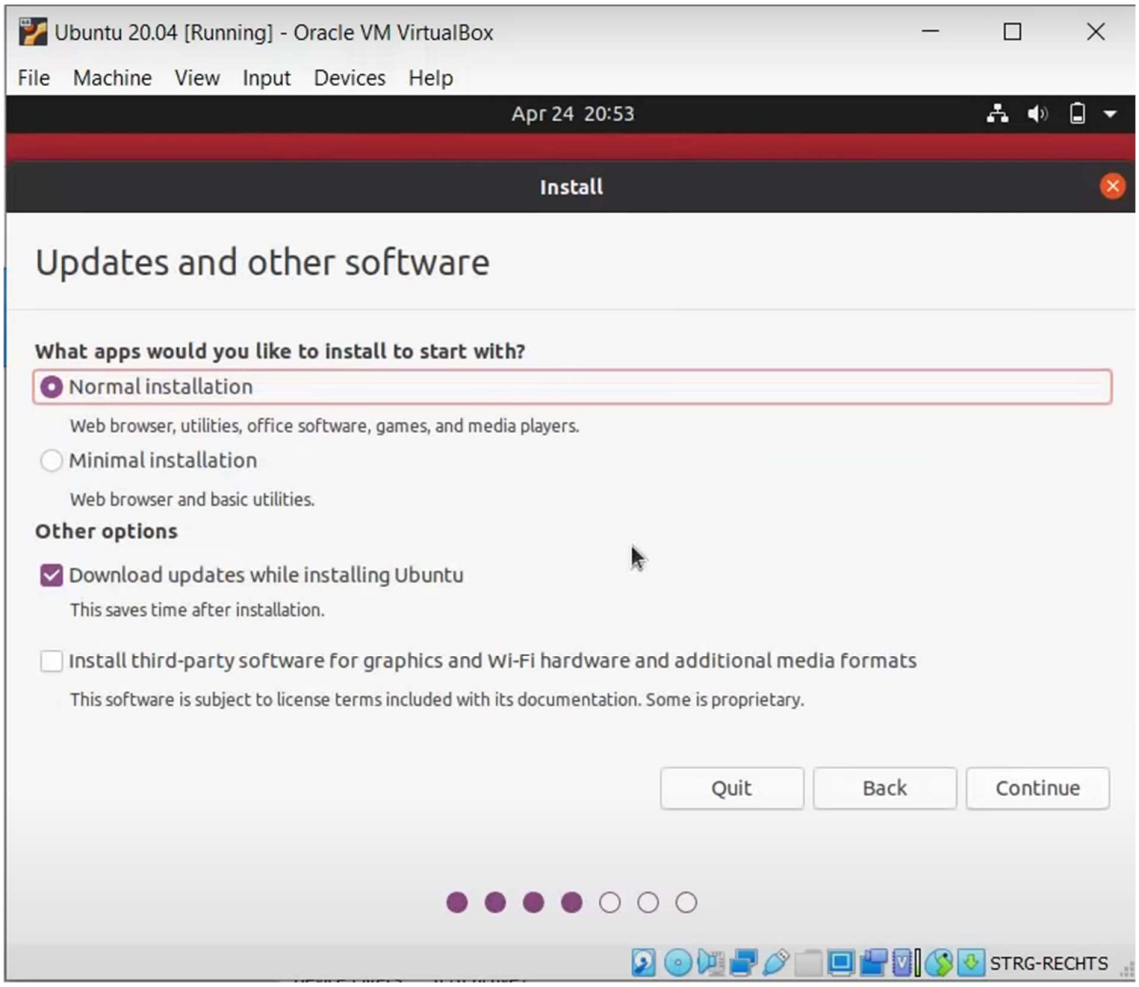
Open virtual box, select the virtual machine you have created and click on start

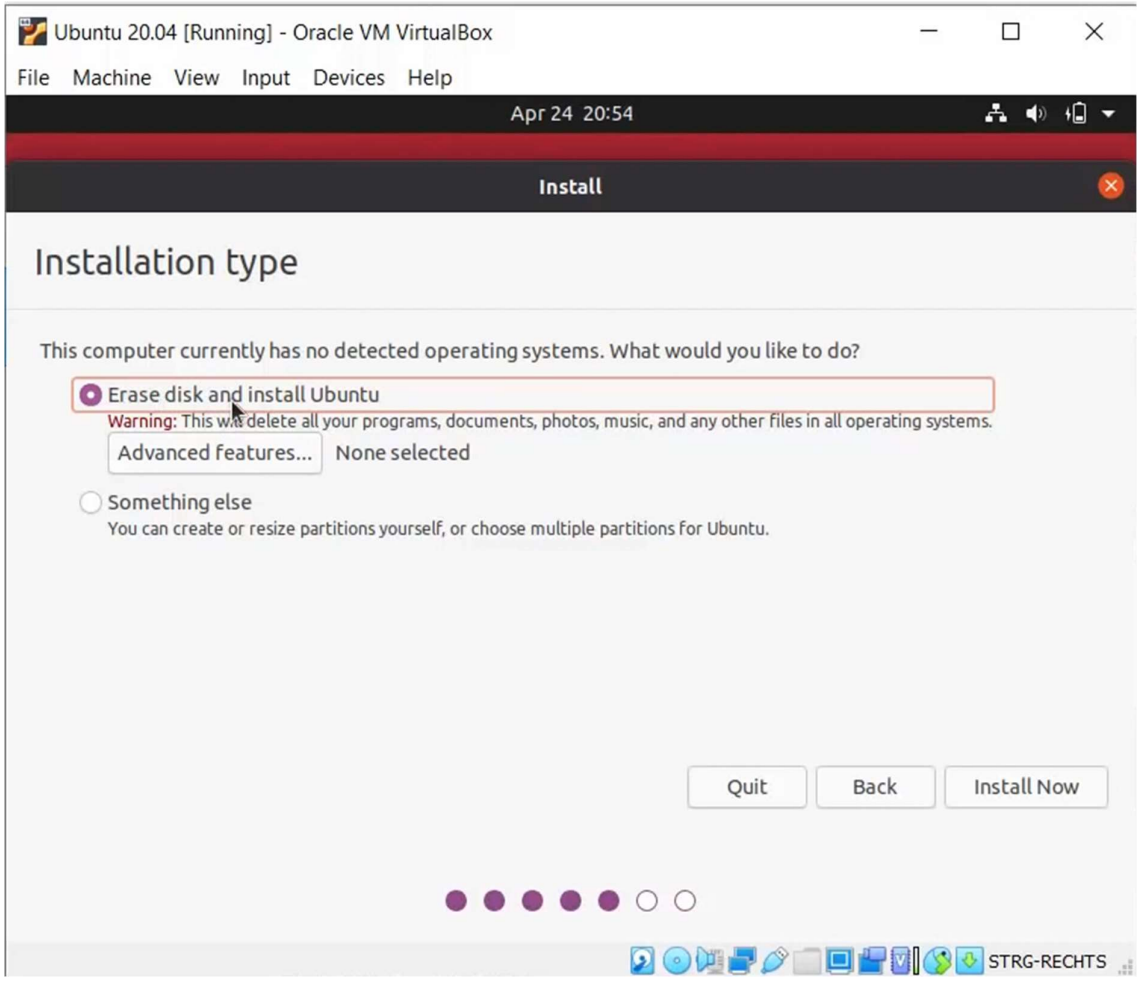




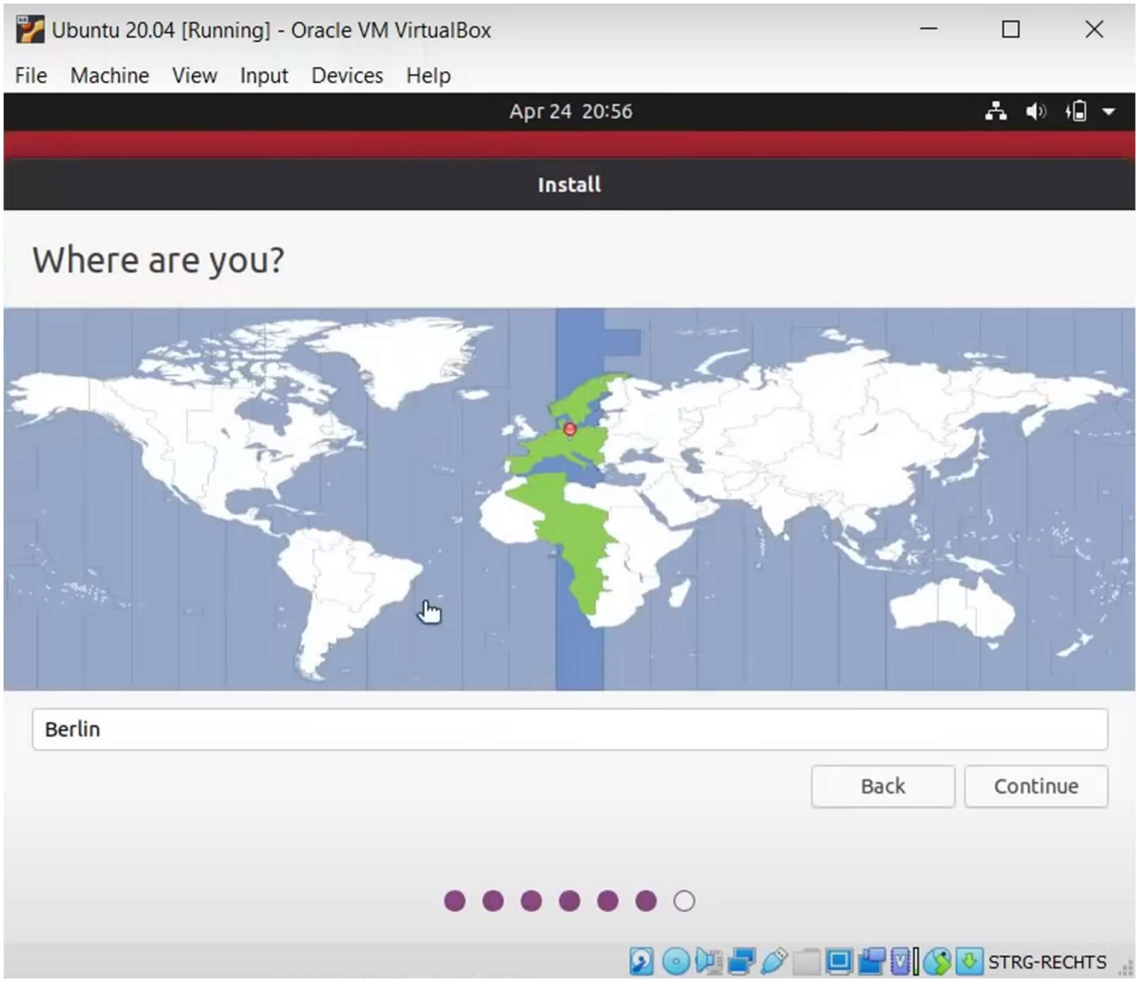
Select the language and click on install Ubuntu. Proceed with defaults.


Ubuntu 20.04 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Apr 24 20:51
Install
Welcome
English
Español
Esperanto
Euskara
Français
Gaeilge
Galego
Hrvatski
Íslenska
Italiano
Kurdî
Latviski
Lietuviškai
Magyar
Nederlands
No localization (UTF-8)
Norsk bokmål
Try Ubuntu
Install Ubuntu
You can try Ubuntu without making any changes to your computer, directly from this CD.
Or if you're ready, you can install Ubuntu alongside (or instead of) your current operating system. This shouldn't take too long.
You may wish to read the release notes.
STRG-RECHTS

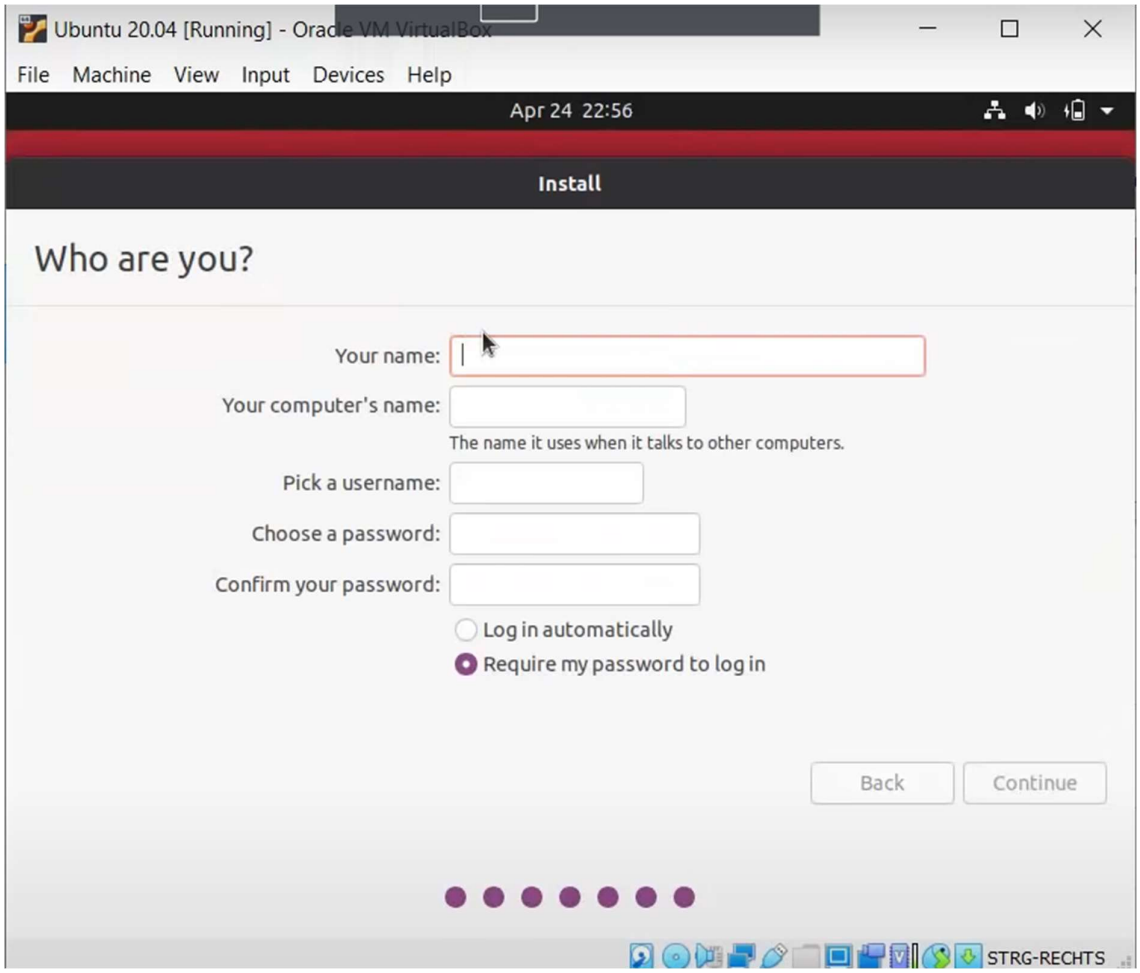

Ubuntu 20.04 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Apr 24 20:53
Install
Updates and other software
What apps would you like to install to start with?
Normal installation
Web browser, utilities, office software, games, and media players.
Minimal installation
Web browser and basic utilities.
Other options
Download updates while installing Ubuntu
This saves time after installation.
Install third-party software for graphics and Wi-Fi hardware and additional media formats
This software is subject to license terms included with its documentation. Some is proprietary.
Quit
Back
Continue
STRG-RECHTS

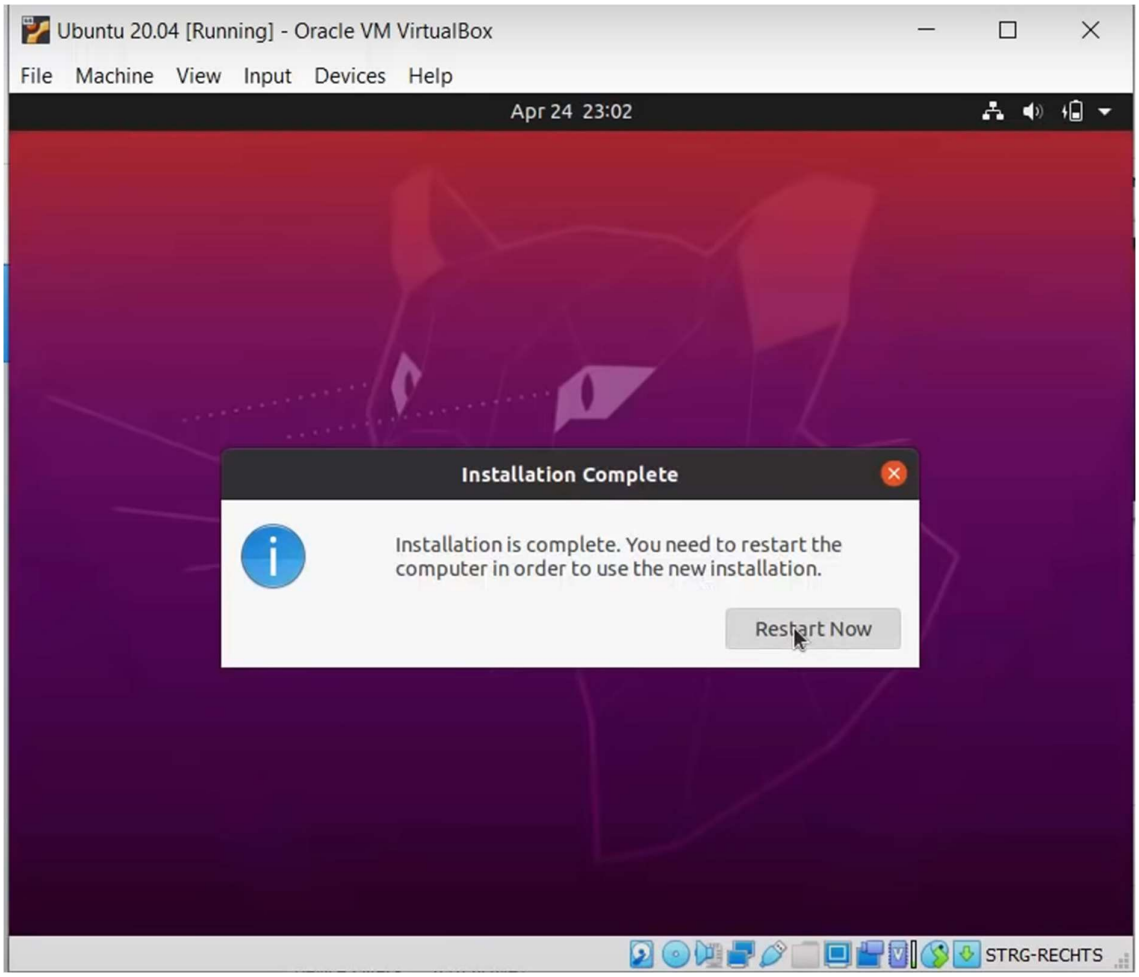


Select your region

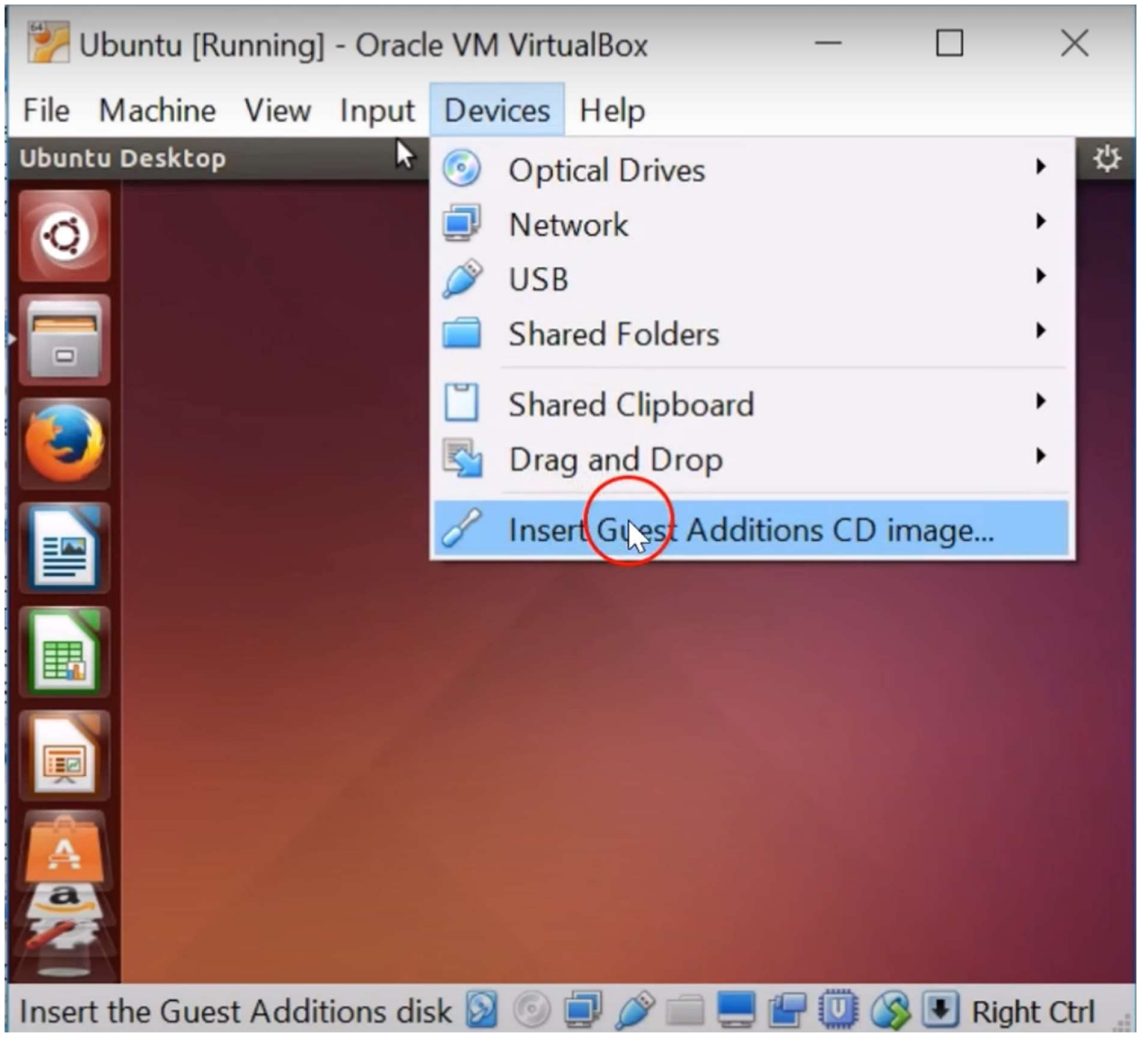


Pick a name and password of your choice


Ubuntu 20.04 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Apr 24 22:56
Install
Who are you?
Your name:
Your computer's name:
The name it uses when it talks to other computers.
Pick a username:
Choose a password:
Confirm your password:
Log in automatically
Require my password to log in
Back
Continue
STRG-RECHTS



Restart and enter your password. You will find the OS booted up. To view the OS in full screen go to devices and click on insert guest additions CD image



Just let it install. It might prompt you to enter the password then enter the password and then reboot the OS on the virtual machine. Now you can view on full screen.

5. Setting up ESP-IDF

a) First you need to install certain pre-requisites. Open terminal and run the following command.

sudo apt-get install git wget flex bison gperf python3 python3-pip python3-venv cmake ninja-build ccache libffi-dev libssl-dev dfu-util libusb-1.0-0

b)Get ESP-IDF.

Open terminal and run the following commands.

mkdir -p ~/esp

cd ~/esp

git clone --recursive https://github.com/espressif/esp-idf.git

c) Set up tools

Open terminal and run the following commands.

cd ~/esp/esp-idf

./install.sh esp32c6

d) Set Up environment

Open terminal and run the following command.

. $HOME/esp/esp-idf/export.sh

You need to run this every time you are working on ESP-IDF

6. Starting a project

Open terminal and run the following commands.

cd ~/esp

cp -r $IDF_PATH/examples/get-started/hello_world .

7. Connect your device.

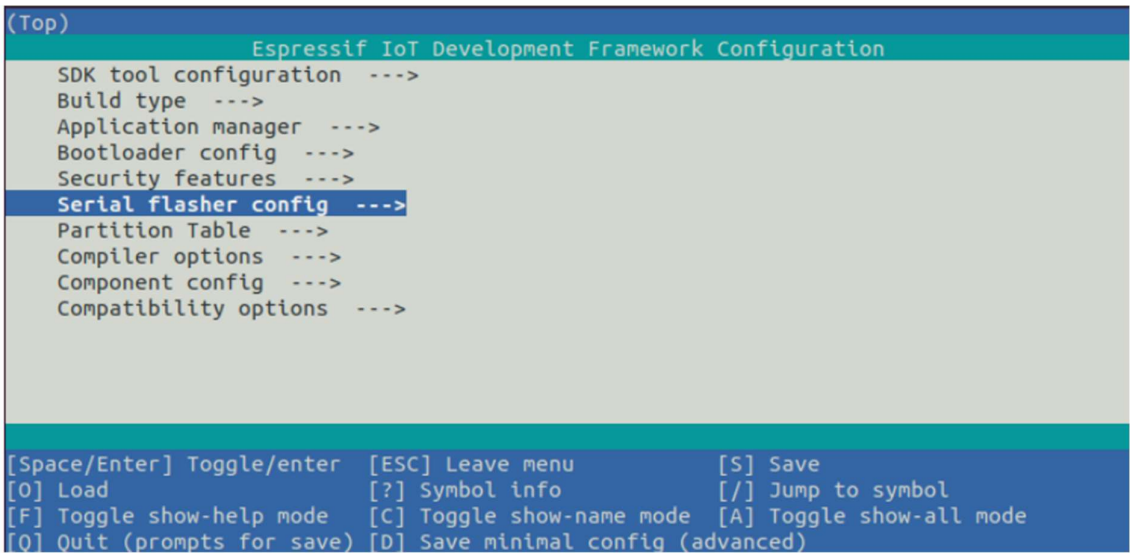
Connect your ESP 32c6 to your laptop.

8. Configure your project.

cd ~/esp/hello_world

idf.py set-target esp32c6

idf.py menuconfig



Click on Q

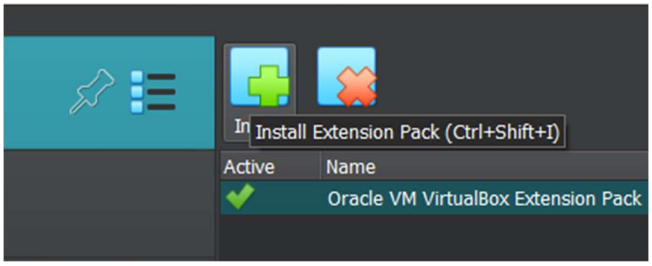
9. Configure for USB

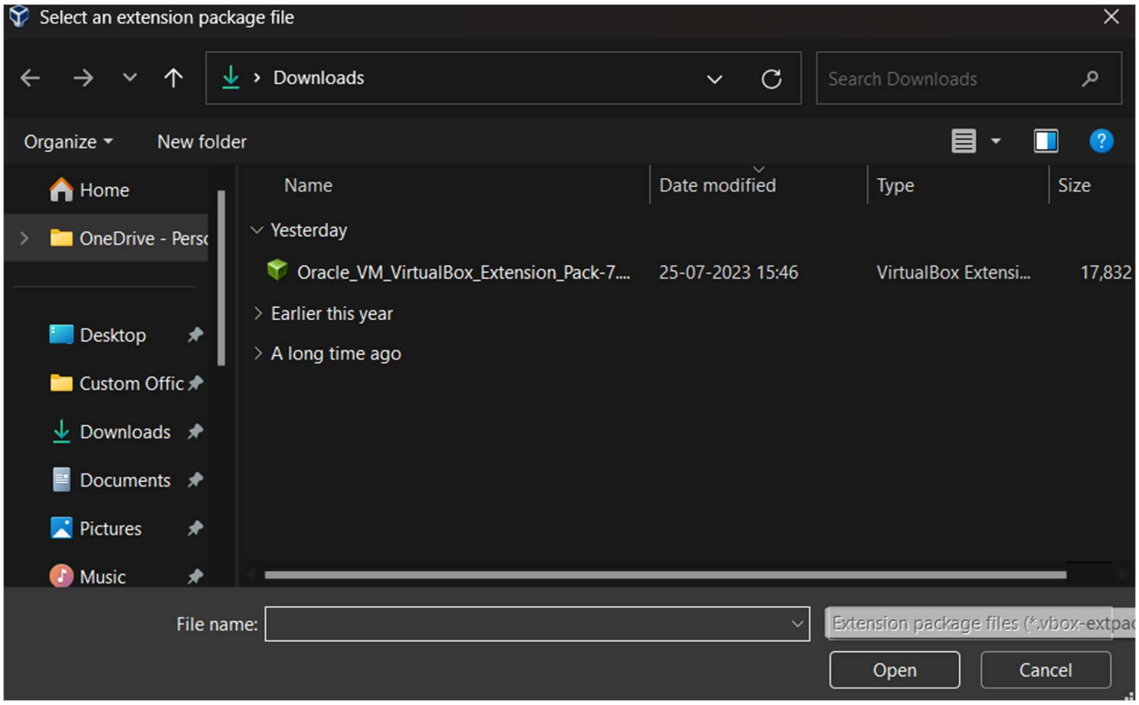
In the host OS(Windows)

Go to https://www.virtualbox.org/wiki/Downloads

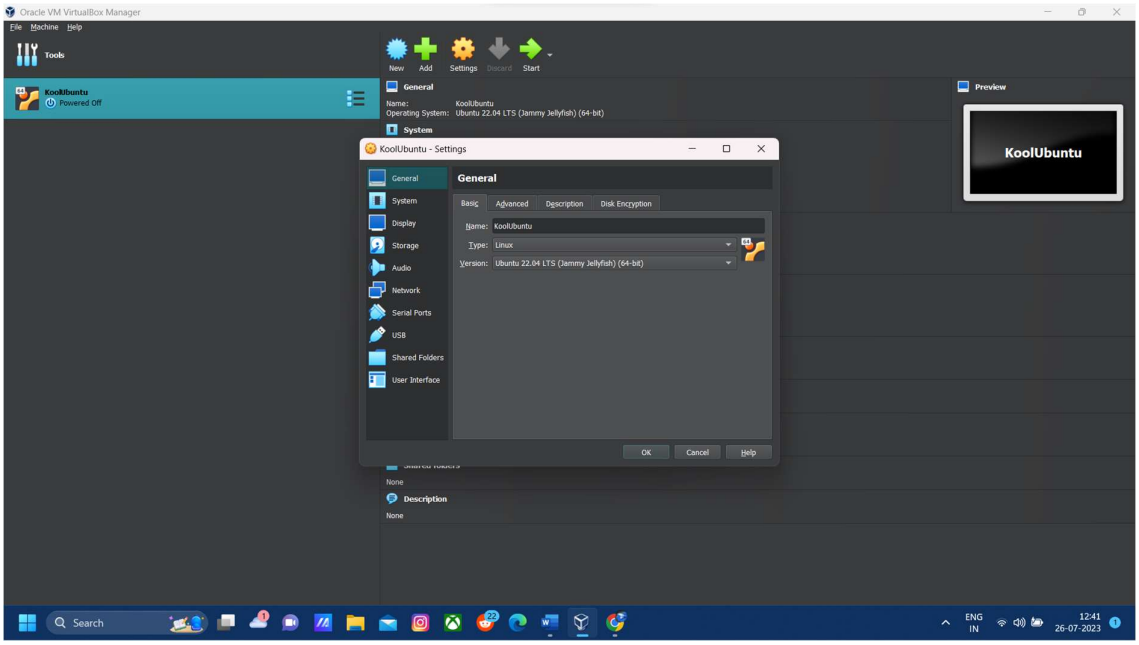
and download the extension pack.

Then open virtual box,click on tools,extensions and add the downloaded pack

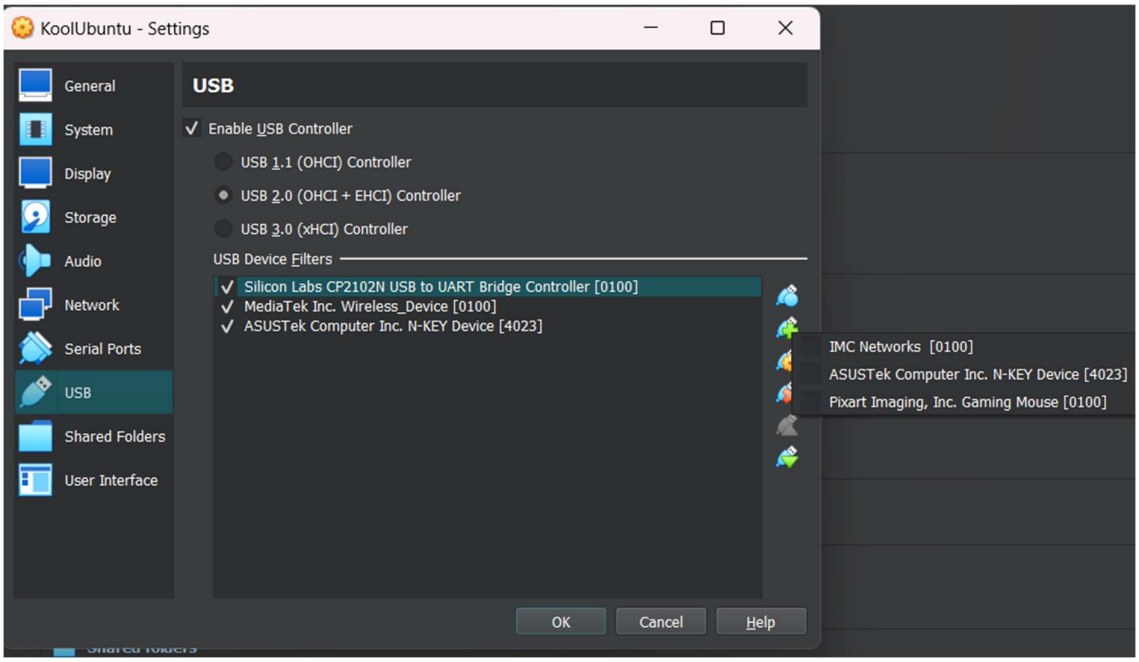




Now go to the Virtual Machine and click on setting



Go to USB and click on add all



Click on ok and now boot up the OS.

Now in the virtual OS

Open the terminal and run

ls /dev/ttyUSB*

if it has an USB then you will see your device in there.

Now run this command

sudo chmod a+rw /dev/ttyUSB0

Now your USB Port is ready

10. Build the project

On the terminal type

idf.py build

then enter

idf.py -p /dev/ttyUSB0 flash

idf.py -p /dev/ttyUSB0 monitor

Now you can clearly see and monitor your code.