

# INSTALL ROS NOETIC

# ROS NOETIC تثبيت

# الملخص

- تثبيت virtualbox على ويندوز ١٠ او ٦٤ بت.
- تنزيل Ubuntu 20.04 .
- تثبيت Ubuntu 20.04 على virtualbox .
- تثبيت ros noetic على Ubuntu 20.04

- Install virtualbox on windows 10,64bit.
- Download Ubuntu 20.04 .
- Install Ubuntu 20.04 on virtualbox.
- Install ros noetic on Ubuntu 20.04

تثبيت VIRTUALBOX على ويندوز ١٠ أو ٦٤ بت.

INSTALL VIRTUALBOX ON WINDOWS 10,64BIT.



أولاً : عليك أن تتأكد من نوع نظام التشغيل و بت، وذلك عن طريق ضغط على جهاز الكمبيوتر ثم ضغط على خصائص.

FRIST: YOU NEED TO CHECK THE TYPE OF OPERATING SYSTEM AND BIT.  
BY PRESSING PC AND THEN CLICKING PROPERTIES

# تثبيت virtualbox على ويندوز ١٠ ٦٤ بت(تابع).

## Install virtualbox on windows 10,64bit(cont).



ثانيا : أنظر الى نوع النظام مثلما موضح في الصورة.

Second: look at the **type of system** as shown in the picture

# تثبيت virtualbox على ويندوز ١٠ و ٦٤ بت (تابع).

## Install virtualbox on windows 10,64bit(cont).



write in the search  
browser to install the  
VirtualBox.

اكتب في متصفح البحث تثبيت  
install the VirtualBox.



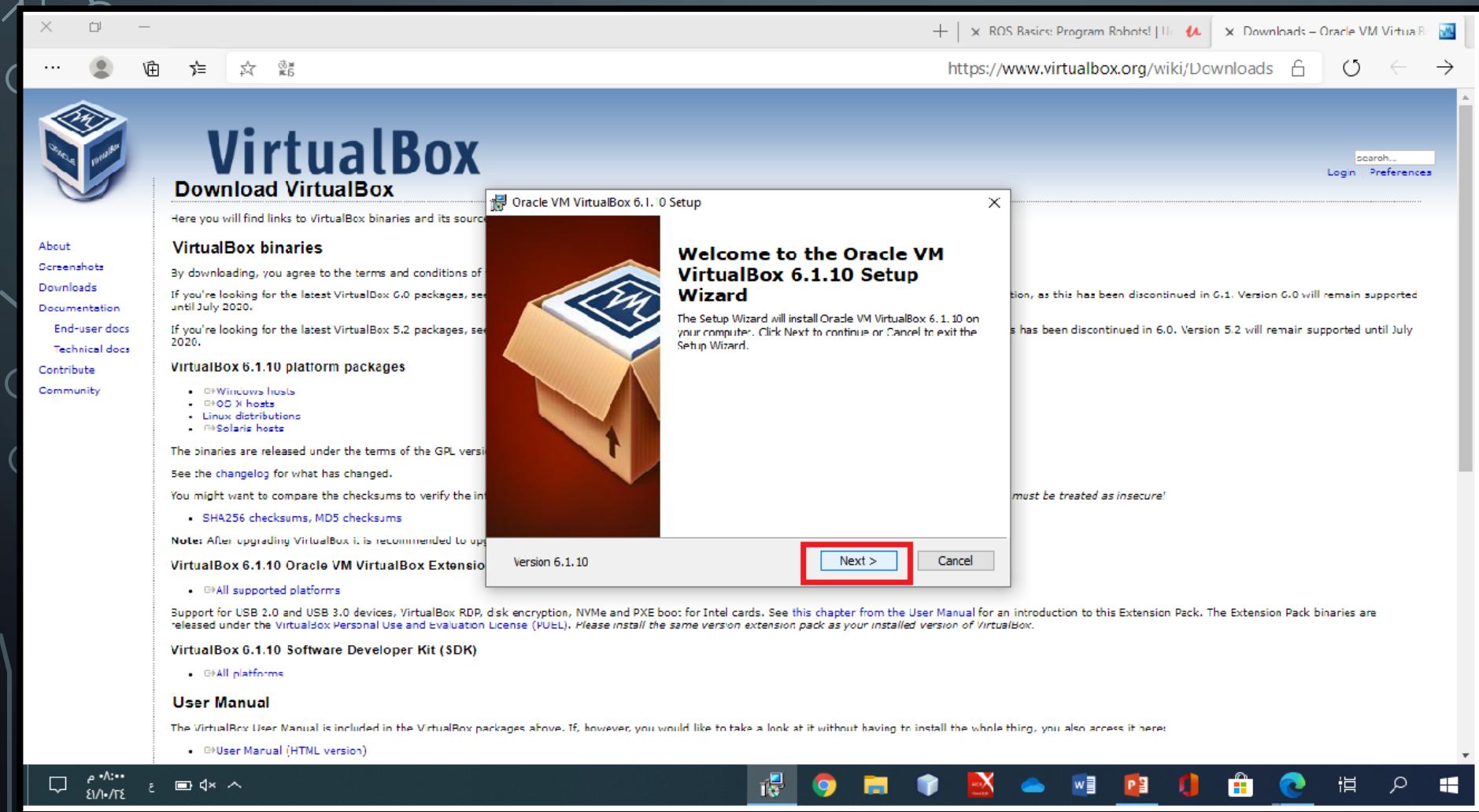
تثبيت virtualbox على ويندوز ١٠ أو ٦٤ بت (تابع).  
Install virtualbox on windows 10,64bit(cont).

The screenshot shows a web browser window with the URL <https://www.virtualbox.org/wiki/Downloads>. The page displays the VirtualBox download section. On the left, there's a sidebar with links to About, Screenshots, Downloads, Documentation, End-user docs, Technical docs, Contribute, and Community. The main content area has a large "VirtualBox" logo and a "Download VirtualBox" button. Below this, it says "Here you will find links to VirtualBox binaries and its source code." A section titled "VirtualBox binaries" contains text about license terms and links for Windows hosts, Linux distributions, and Solaris hosts. A red box highlights the "Windows hosts" link. Further down, there's information about GPL version 2, changelog, checksums (SHA256, MD5), and a note about upgrading guest additions. Another section for "VirtualBox 6.1.10 Oracle VM VirtualBox Extension Pack" is shown with a link to "All supported platforms". At the bottom, there's a "VirtualBox 6.1.10 Software Developer Kit (SDK)" section and a "User Manual" section with a link to the "User Manual (HTML version)". The browser's address bar shows the full URL, and the taskbar at the bottom includes icons for File Explorer, Task View, Start, Task Switcher, and other system icons.

Click on your operating system

اضغط على نظام التشغيل  
الخاص بك

تثبيت virtualbox على ويندوز ١٠ أو ٦٤ بت (تابع).  
Install virtualbox on windows 10,64bit(cont).



Click Next

اضغط  
Next

تثبيت virtualbox على ويندوز ١٠ أو ٦٤ بت (تابع).  
Install virtualbox on windows 10,64bit(cont).

The screenshot shows a Windows browser window with the URL <https://www.virtualbox.org/wiki/Downloads>. A modal dialog box titled "Oracle VM VirtualBox 6.1.10 Setup" is displayed, specifically the "Custom Setup" step. The dialog allows users to select which features of the application to install. In the tree view, several checkboxes are checked under the "VirtualBox Application" node, including "VirtualBox USB Support", "VirtualBox Networking", "VirtualBox Bridged Adapter", and "VirtualBox Host-Only Ethernet Adapter". A tooltip for "VirtualBox Application" states: "This feature requires 216MB on your hard drive. It has 3 of 3 subfeatures selected. The subfeatures require 932KB on yo...". Below the tree view, the "Location" is set to "C:\Program Files\Oracle\VirtualBox\". At the bottom of the dialog, there are buttons for "Version 6.1.10", "Disk Usage", "< Back", "Next >" (which is highlighted with a red box), and "Cancel". To the right of the dialog, there is a sidebar with links for "About", "Screenshots", "Downloads", "Documentation", "End-user docs", "Technical docs", "Contribute", and "Community". The main page content includes sections for "VirtualBox binaries", "VirtualBox 6.1.10 platform packages" (listing "Windows hosts", "OS X hosts", "Linux distributions", and "Solaris hosts"), and "VirtualBox 6.1.10 Oracle VM VirtualBox Extension Pack" (with a note about SHA256 and MD5 checksums). The "User Manual" section is also visible at the bottom.

Click Next  
اضغط

تثبيت virtualbox على ويندوز ١٠ أو ٦٤ بت (تابع).  
Install virtualbox on windows 10,64bit(cont).

# 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 Oracle VM VirtualBox End User License Agreement. If you're looking for the latest VirtualBox 6.0 packages, see the download page for version 6.0. If you're looking for the latest VirtualBox 5.2 packages, see the download page for version 5.2.

### VirtualBox 6.1.10 platform packages

- Windows hosts
- OS X hosts
- Linux distributions
- Solaris hosts

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

See the [changelog](#) for what has changed.

You might want to compare the checksums to verify the integrity of the files.

- SHA256 checksums, MD5 checksums

**Note:** After upgrading VirtualBox it is recommended to update the extension pack.

### VirtualBox 6.1.10 Oracle VM VirtualBox Extension Pack

- All supported platforms

Support for USB 2.0 and USB 3.0 devices, VirtualBox RDP, disk encryption, NVMe and PXE boot for Intel cards. See [this chapter from the User Manual](#) for an introduction to this Extension Pack. The Extension Pack binaries are released under the [VirtualBox Personal Use and Evaluation License \(PUEL\)](#). Please install the same version extension pack as your installed version of VirtualBox.

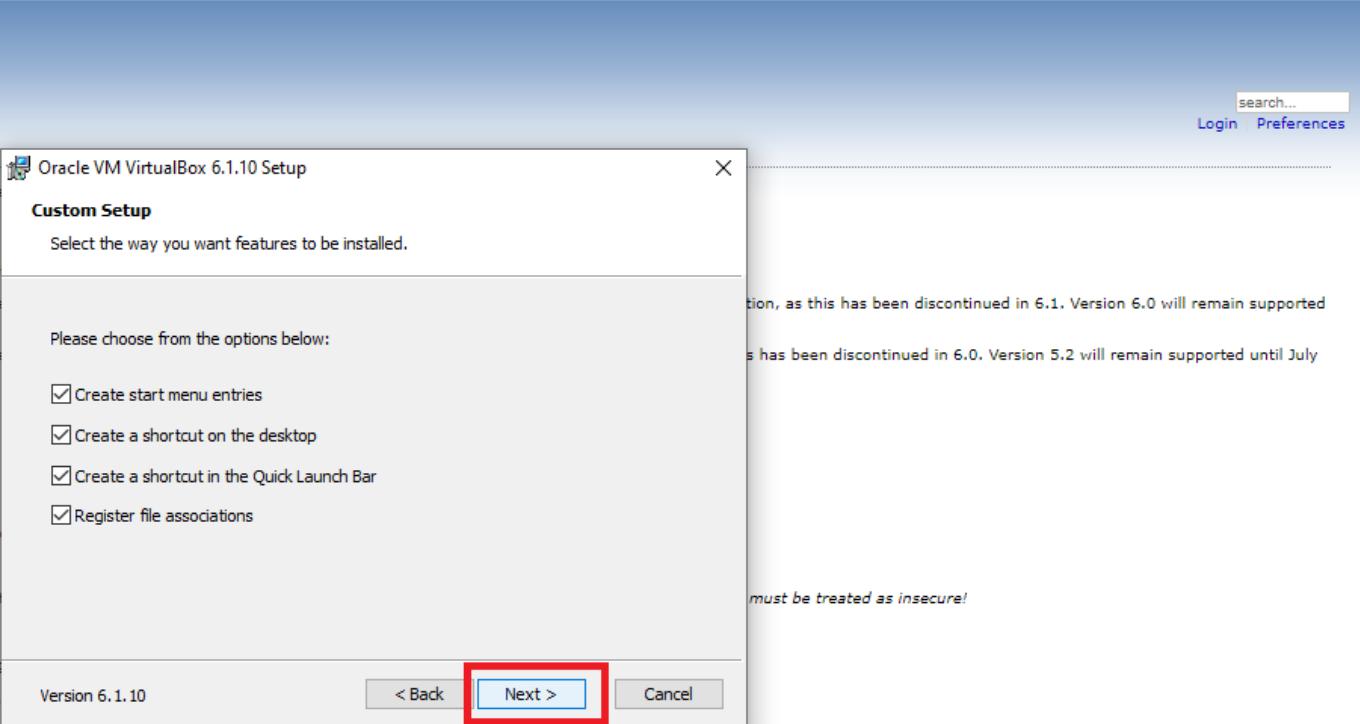
### VirtualBox 6.1.10 Software Developer Kit (SDK)

- All platforms

### User Manual

The VirtualBox User Manual is included in the VirtualBox packages above. If, however, you would like to take a look at it without having to install the whole thing, you also access it here:

- [User Manual \(HTML version\)](#)



Click Next  
اضغط Next

تثبيت virtualbox على ويندوز ١٠ أو ٦٤ بت (تابع).  
Install virtualbox on windows 10,64bit(cont).

The screenshot shows the official Oracle VM VirtualBox download page. A modal dialog box titled "Warning: Network Interfaces" is displayed. The dialog contains a warning message about the networking feature resetting the network connection. It includes a "Yes" button highlighted with a red box and a "No" button.

**VirtualBox binaries**  
By downloading, you agree to the terms and conditions of the Oracle VM VirtualBox End User License Agreement (EULA). If you're looking for the latest VirtualBox 6.0 packages, see the [VirtualBox 6.0 documentation](#). If you're looking for the latest VirtualBox 5.2 packages, see the [VirtualBox 5.2 documentation](#).

**VirtualBox 6.1.10 platform packages**

- Windows hosts
- OS X hosts
- Linux distributions
- Solaris hosts

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**VirtualBox 6.1.10 Software Developer Kit (SDK)**  
All platforms

**User Manual**  
The VirtualBox User Manual is included in the VirtualBox packages above. If, however, you would like to take a look at it without having to install the whole thing, you also access it here:

Click yes  
اضغط على yes

تثبيت virtualbox على ويندوز ١٠ أو ٦٤ بت (تابع).  
Install virtualbox on windows 10,64bit(cont).

# VirtualBox

## Download VirtualBox

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

### VirtualBox binaries

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If you're looking for the latest VirtualBox 5.2 packages, see the [VirtualBox 5.2 page](#). It has been discontinued in 6.0. Version 5.2 will remain supported until July 2020.

### VirtualBox 6.1.10 platform packages

- [Windows hosts](#)
- [OS X hosts](#)
- [Linux distributions](#)
- [Solaris hosts](#)

The binaries are released under the terms of the GPL version 2.0.

See the [changelog](#) for what has changed.

You might want to compare the checksums to verify the integrity of the files.

- [SHA256 checksums](#), [MD5 checksums](#)

**Note:** After upgrading VirtualBox it is recommended to update the Extension Pack.

### VirtualBox 6.1.10 Oracle VM VirtualBox Extension Pack

- [All supported platforms](#)

Support for USB 2.0 and USB 3.0 devices, VirtualBox RDP, disk encryption, NVMe and PXE boot for Intel cards. See [this chapter from the User Manual](#) for an introduction to this Extension Pack. The Extension Pack binaries are released under the [VirtualBox Personal Use and Evaluation License \(PUEL\)](#). Please install the same version extension pack as your installed version of VirtualBox.

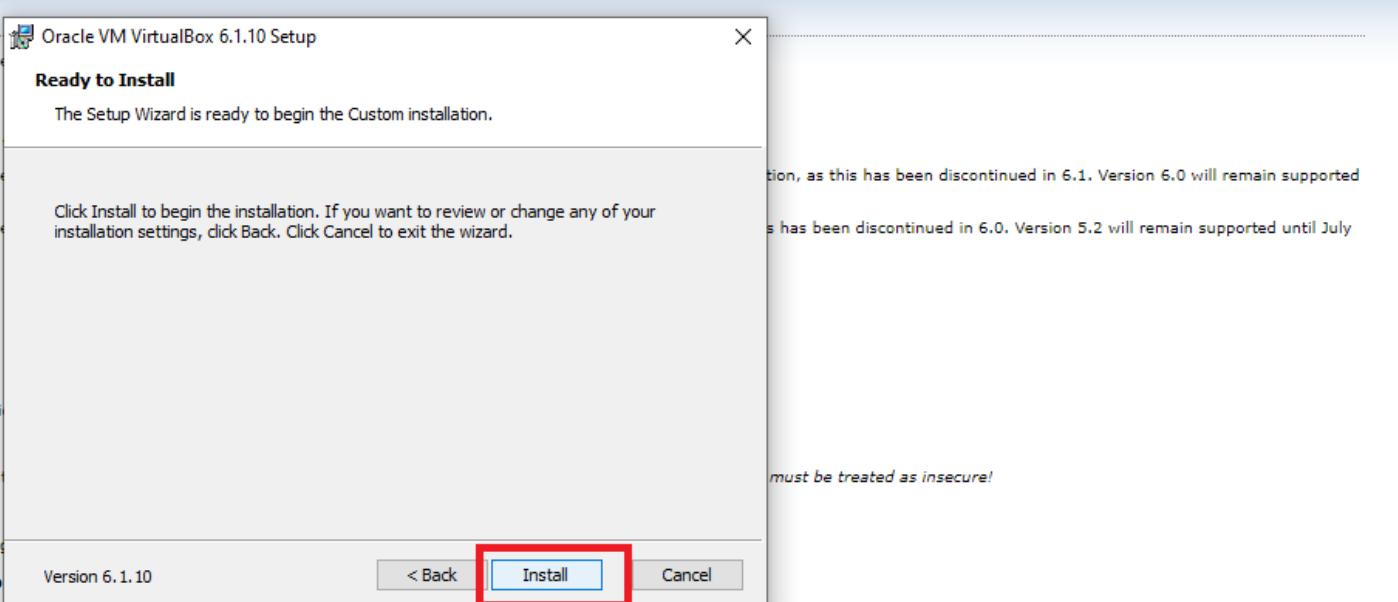
### VirtualBox 6.1.10 Software Developer Kit (SDK)

- [All platforms](#)

### User Manual

The VirtualBox User Manual is included in the VirtualBox packages above. If, however, you would like to take a look at it without having to install the whole thing, you also access it [here](#).

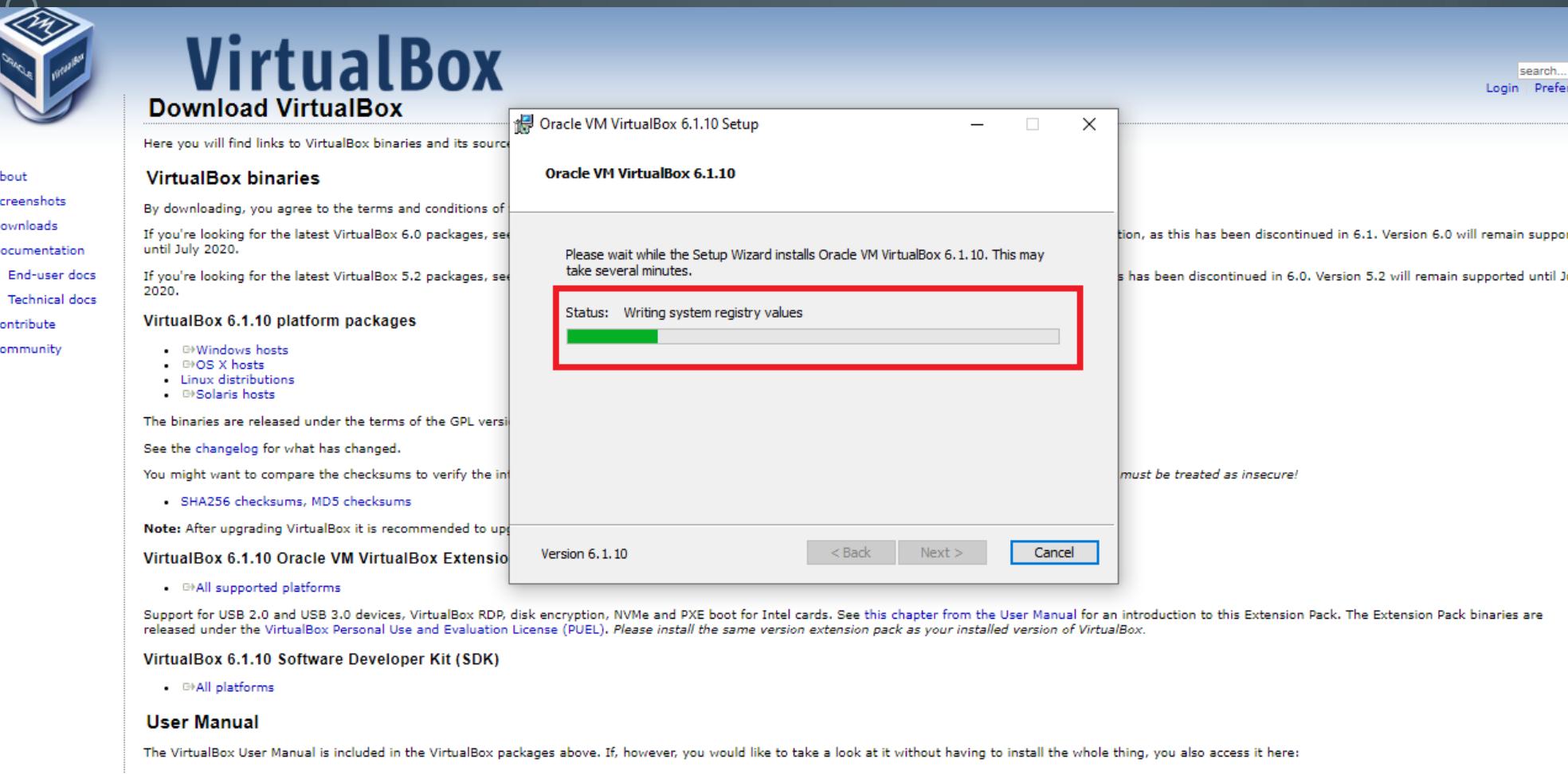
- [User Manual \(HTML version\)](#)



Click install

اضغط install

تثبيت virtualbox على ويندوز ١٠ و ٦٤ بت (تابع).  
Install virtualbox on windows 10,64bit(cont).



just wait

انتظر فقط

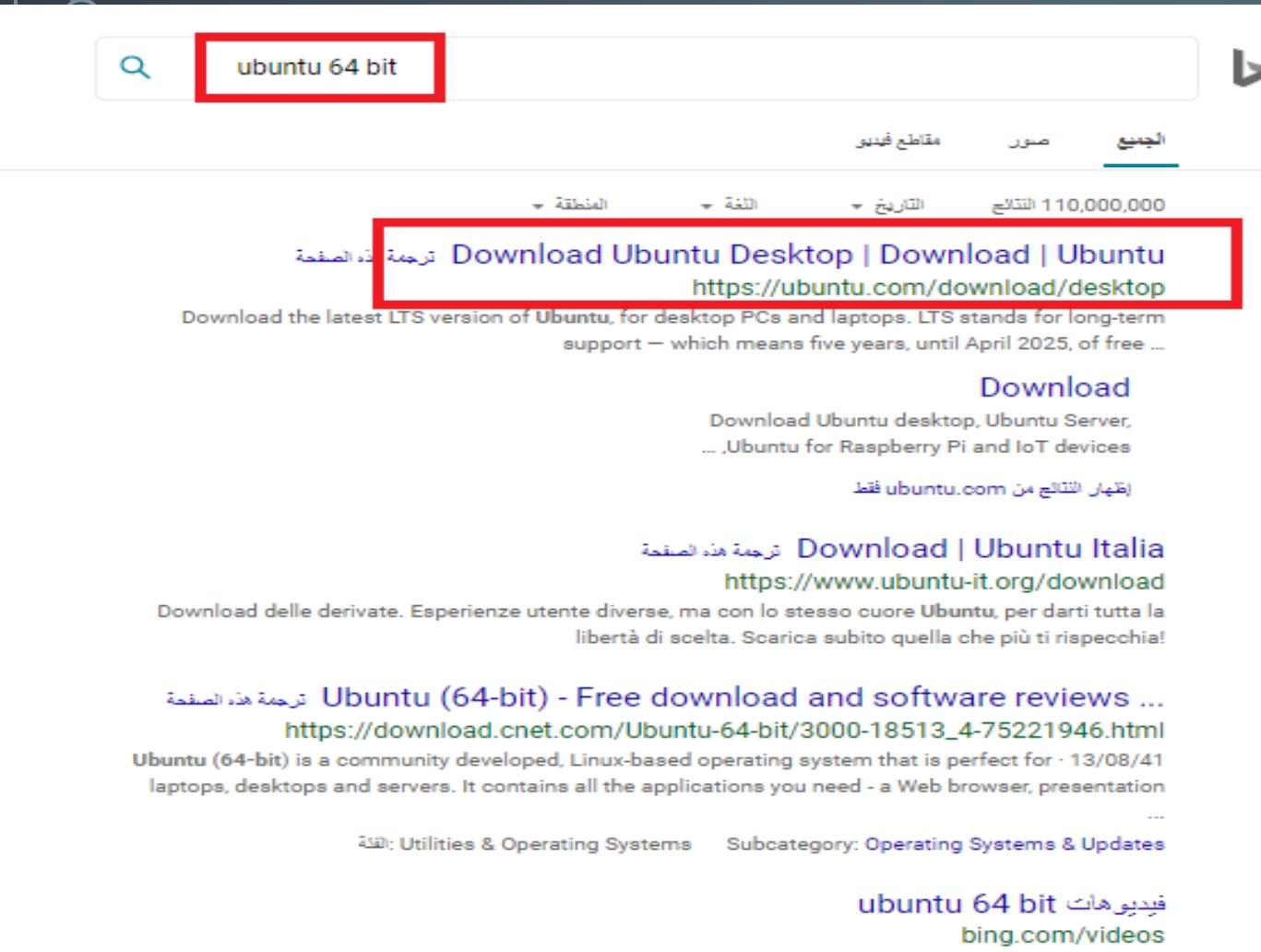
تثبيت virtualbox على ويندوز ١٠ أو ٦٤ بت (تابع)  
Install virtualbox on windows 10,64bit(cont).

Click Finish

اضغط على  
Finish



# تنزيل Ubuntu 20.04 Download Ubuntu 20.04



Write in browser install ubuntu

اكتب في المتصفح تثبيت او بينتو

# تنزيل Ubuntu 20.04 (تابع) Download Ubuntu 20.04 (cont.).

Ubuntu 20.04 LTS

Download the latest LTS version of Ubuntu, for desktop PCs and laptops. LTS stands for long-term support — which means five years, until April 2025, of free security and maintenance updates, guaranteed.

[Ubuntu 20.04 LTS release notes](#)

Recommended system requirements:

- 2 GHz dual core processor or better
- 4 GB system memory
- 25 GB of free hard drive space
- Either a DVD drive or a USB port for the installer media
- Internet access is helpful

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be cerfull that it is on the desktop, not a server, and also check requirements

كن حذراً من أنه موجود على سطح المكتب ، وليس خادماً ، وكذلك تحقق من المتطلبات

This process takes time and you can do other activities

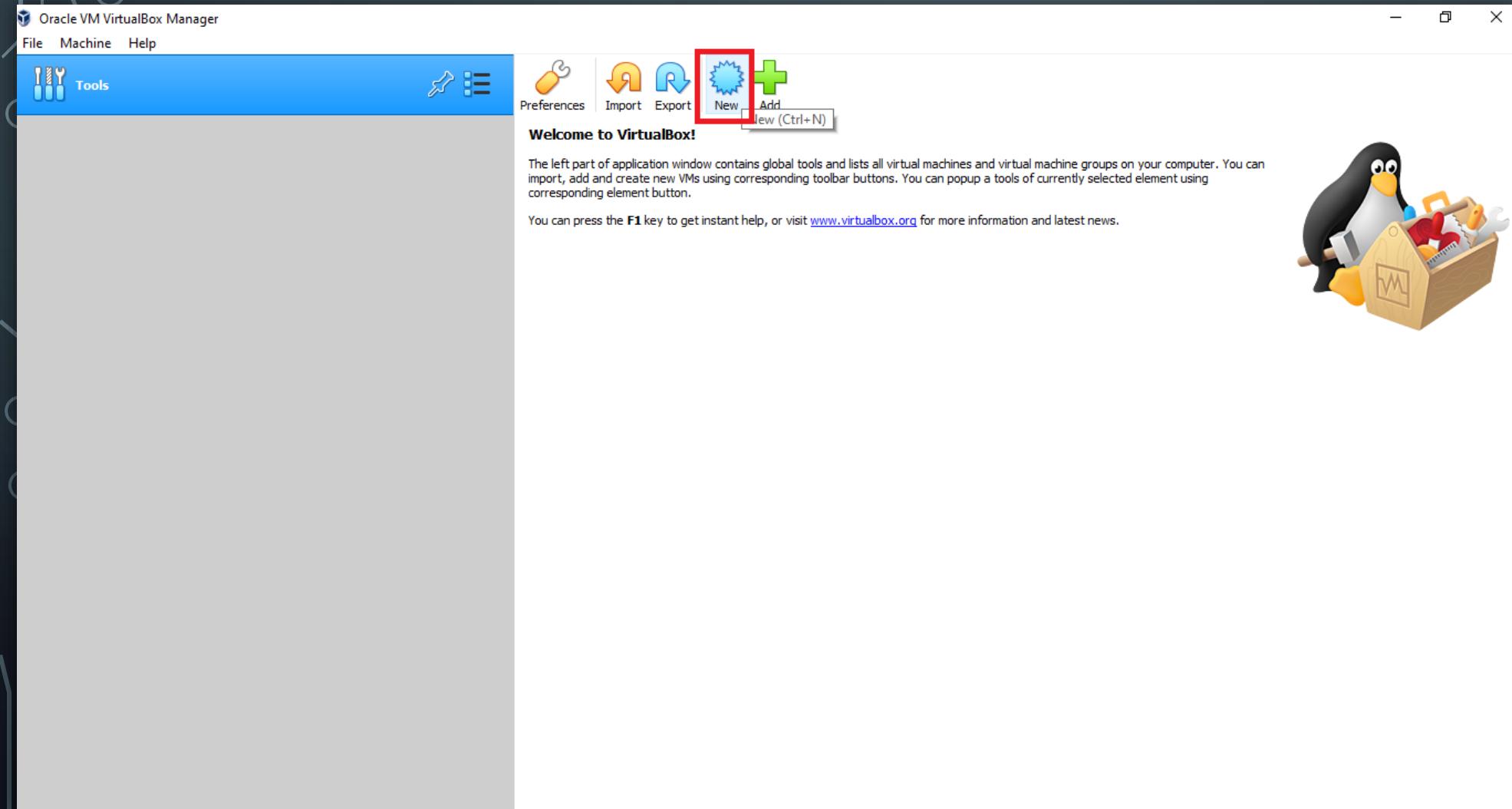
هذه العملية تحتاج وقت يمكنك القيام بنشاطات أخرى.

## تثبيت Ubuntu 20.04 على virtualbox

Install Ubuntu 20.04 on virtualbox.

Click New Icon

انقر ايقونة New



مشاكل قد تظهر لك (١).

PROBLEMS MAY APPEAR TO YOU(1)

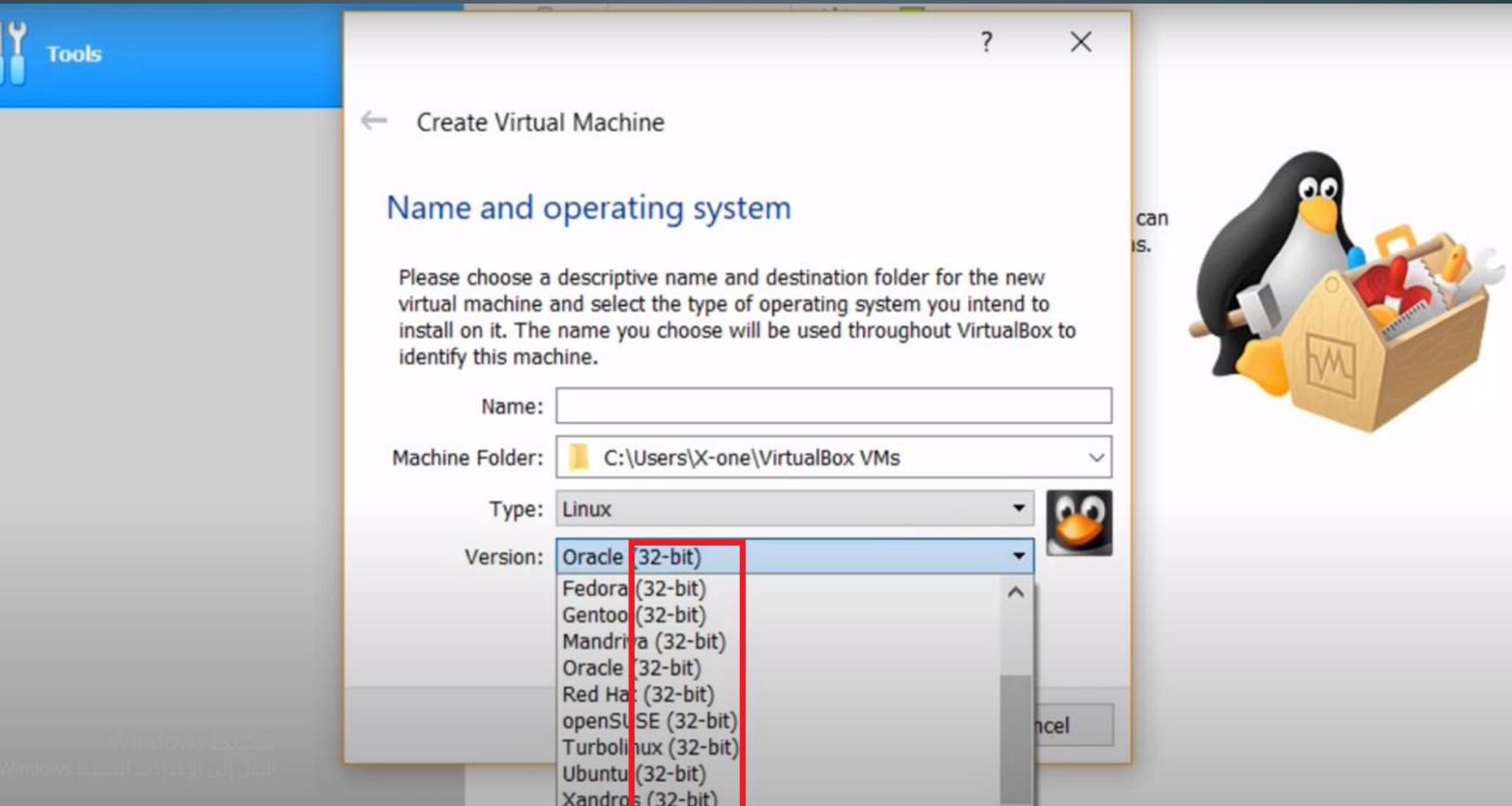
PROBLEM NOT TO APPEAR 64 BIT

مشكلة عدم ظهور ٦٤ بت



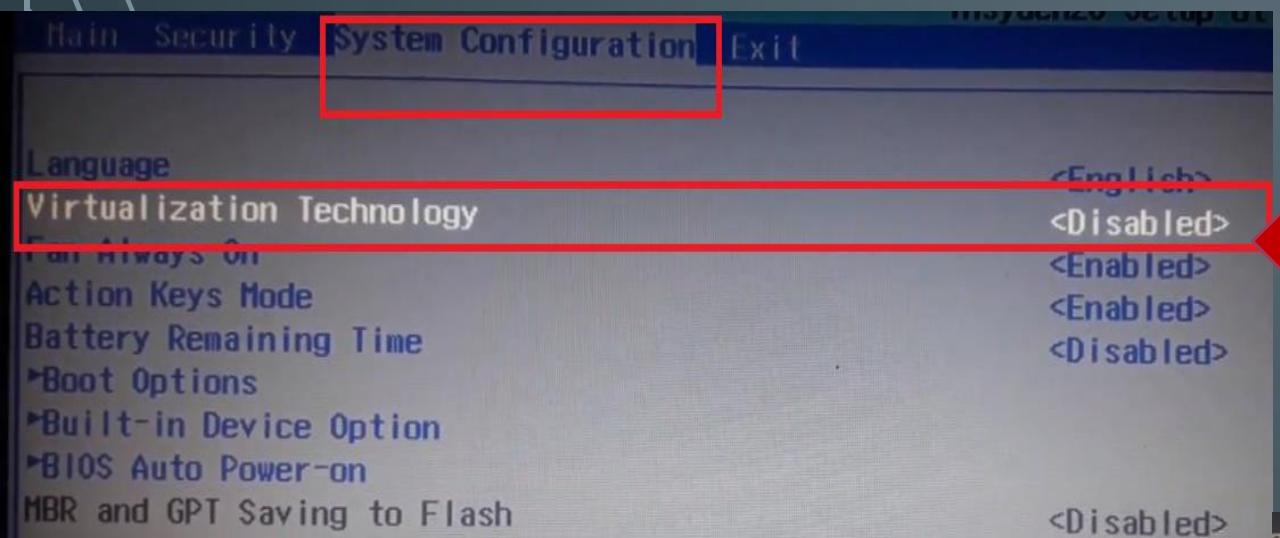
# Problem not to appear 64 bit

مشكلة عدم ظهور ٦٤ بت



# HP laptop bois settings.

اعدادات البوس لا بتوب اتش بي .



اول خطوة  
First step

اضغط على إعادة التشغيل ثم انتظر ظهور الشاشة السوداء ثم اضغط على (f10) بشكل متكرر الى ان تظهر الشاشة (bois) ثم اتبع الخطوات الموضحة في الصور.

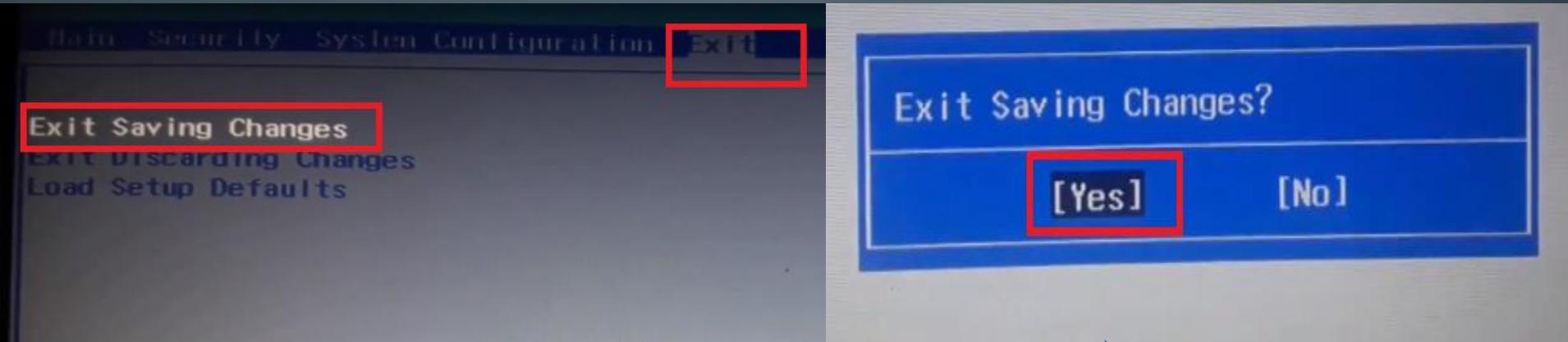
Press restart and wait for the black screen to appear, then press f10 repeatedly until the bios screen appears , then follow the steps shown in pictures.

الثاني خطوة  
Second step

<Disabled>  
<Enabled>  
<Enabled>  
<Disabled>

<Disabled>

Disabled  
Enabled



اتبع الخطوات الموضحة في الصور لحفظ التغييرات.  
Follow the steps shown in the pictures to save the changes.

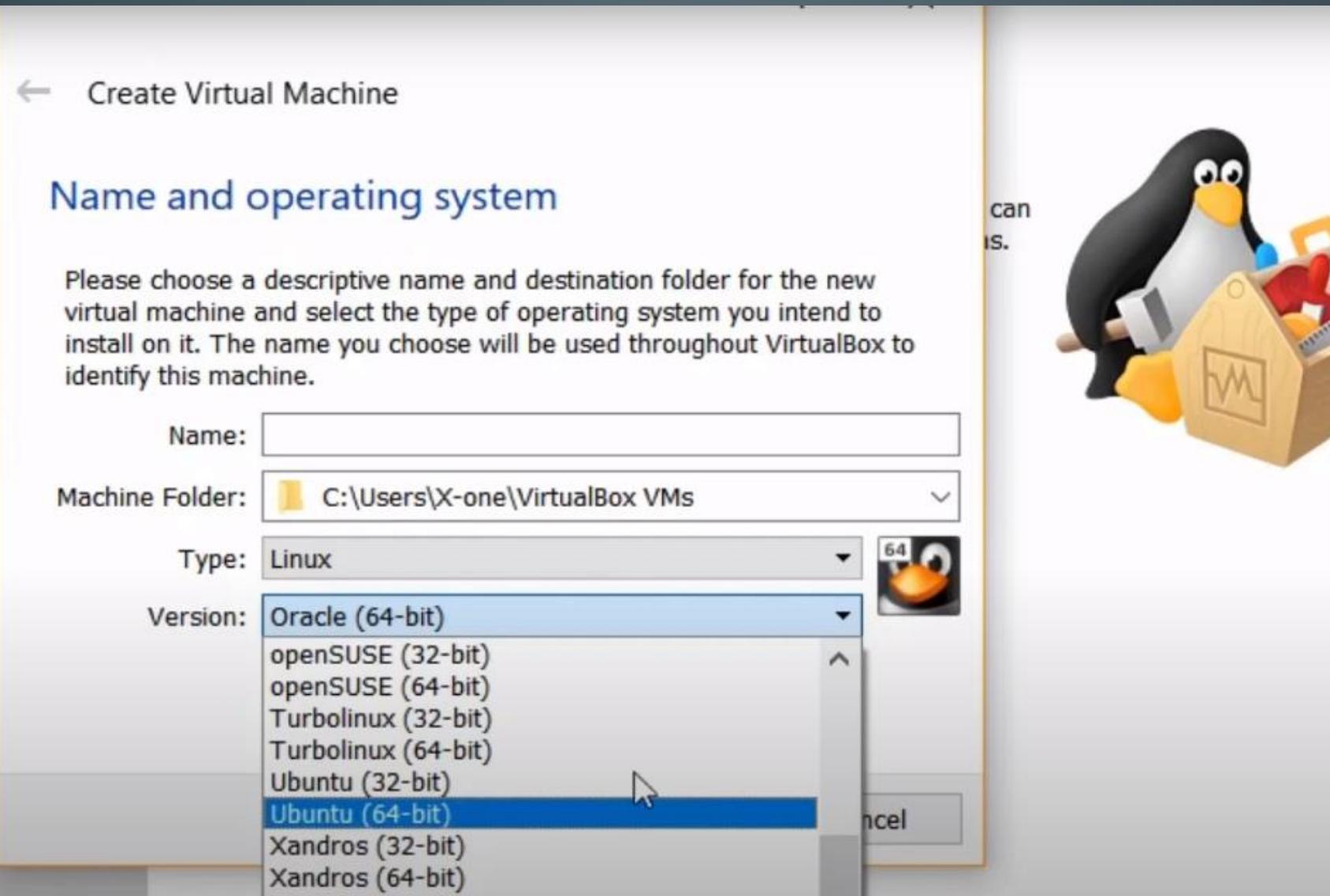
هكذا يتحول الوجه الحزين الى سعيد(١).

Thus the sad face turns into happy(1).



## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

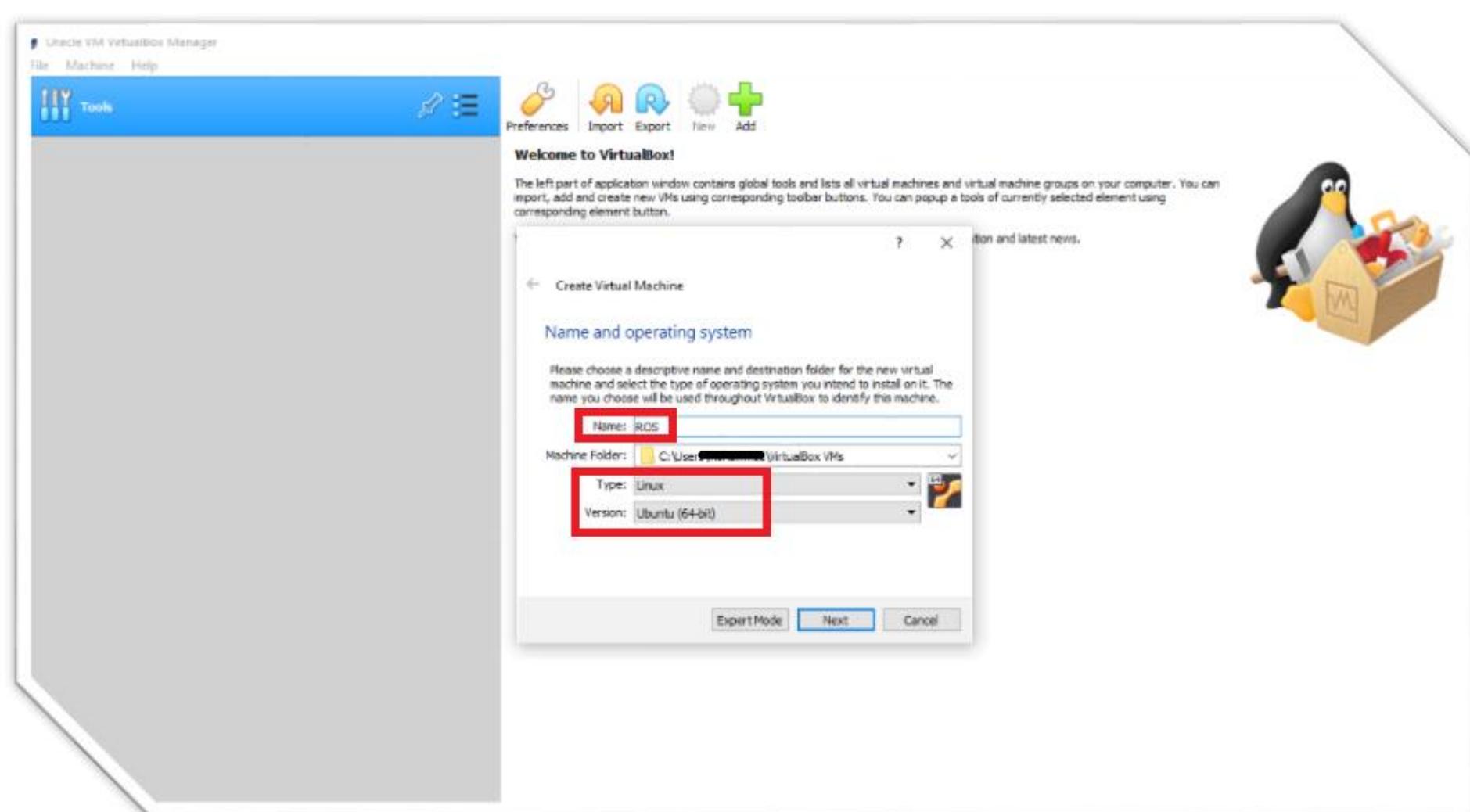


اختر اصدار ع حسب  
بت الحاسوب ، كما تم  
توضيحة في شريحة ٣

Choose the  
version based on  
the bit of your pc,  
as illustrated in  
slide 3.

# Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

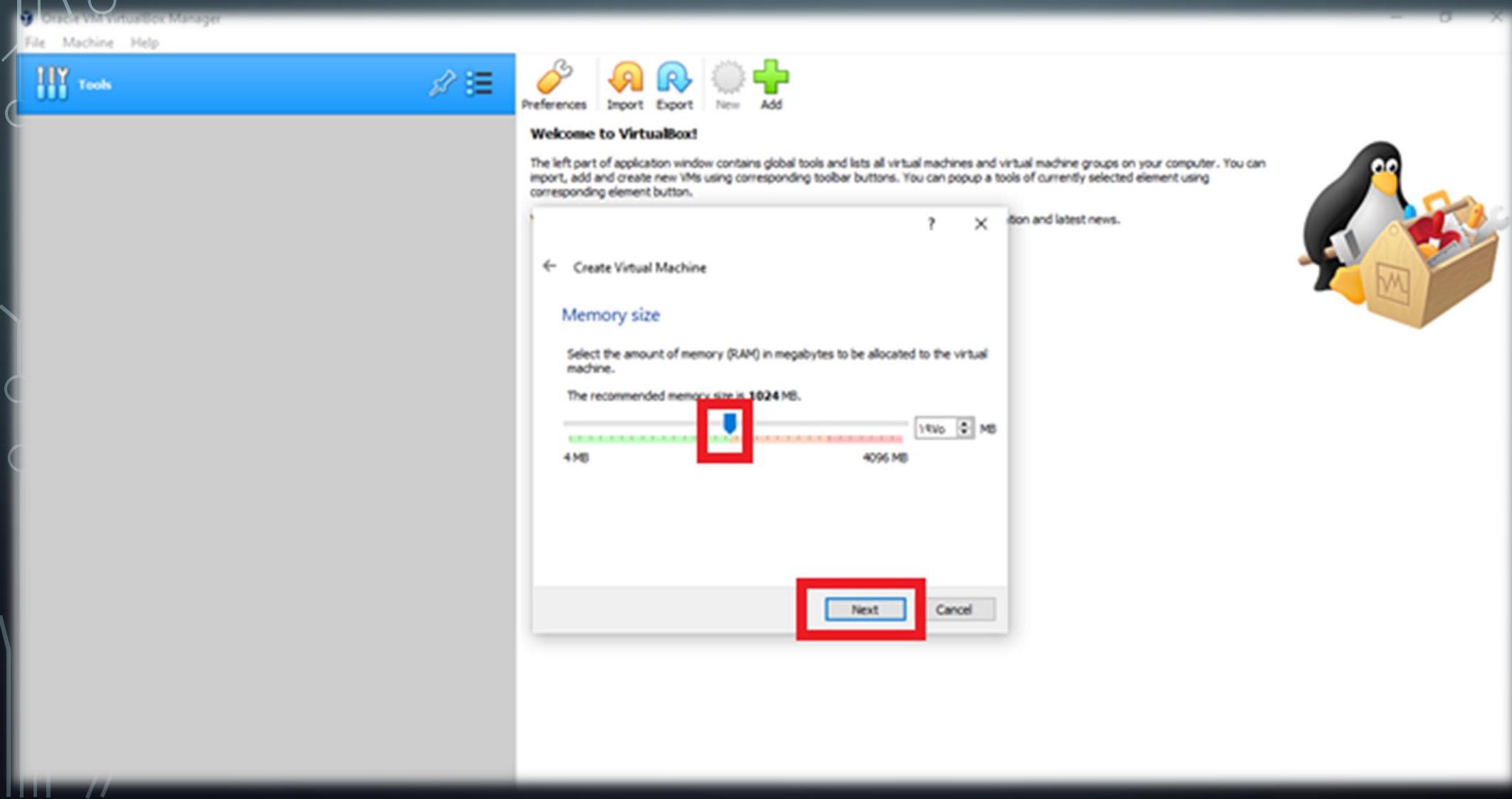


اختر الاسم بناءا على رغباتك.

Choose the name as desired.

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

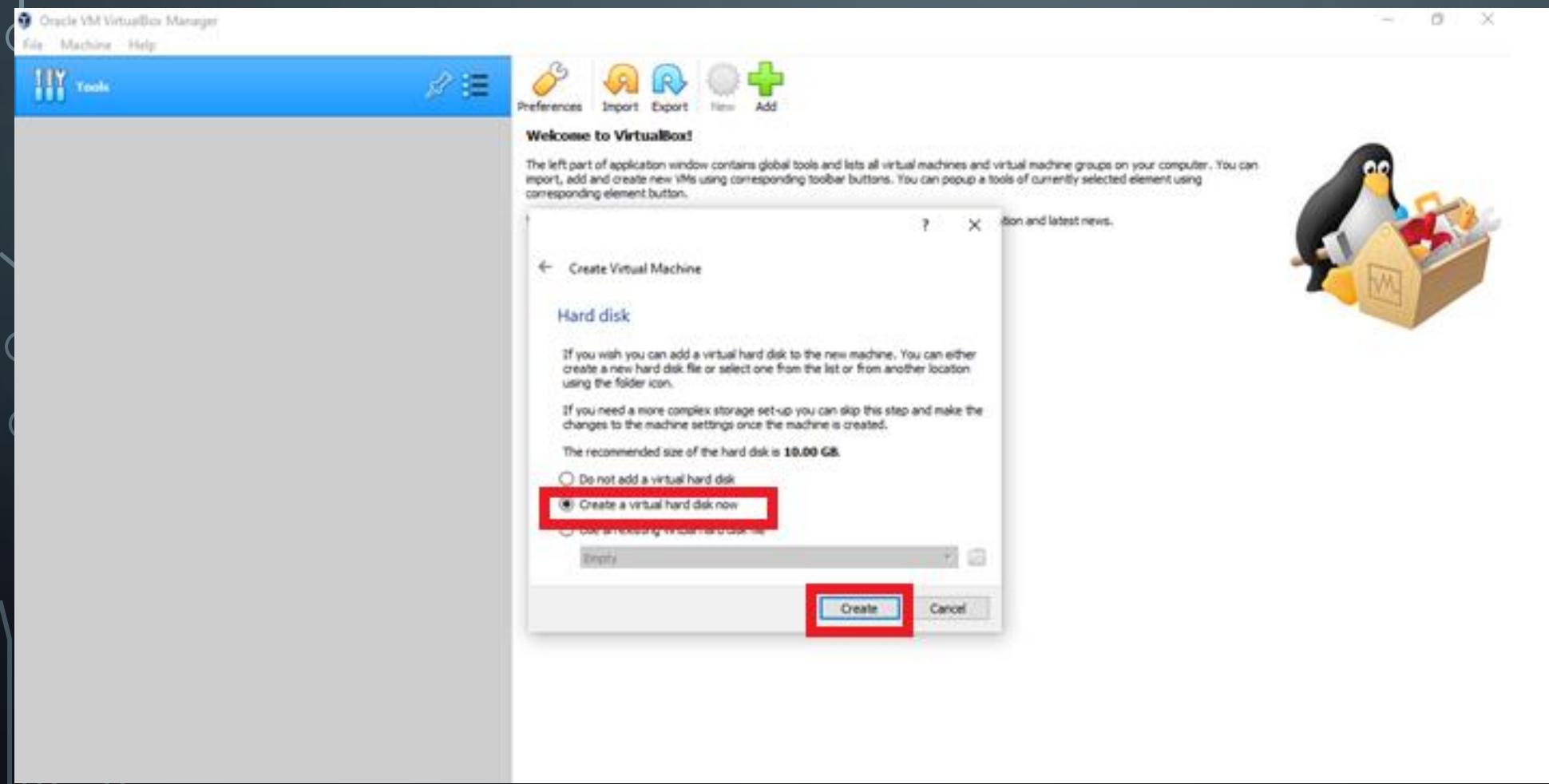


من الأفضل وضع رأس السهم في نهاية المنقطة الخضراء ثم اضغط على .next

it's better to put the arrowhead at the end of the green ,then press next.

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

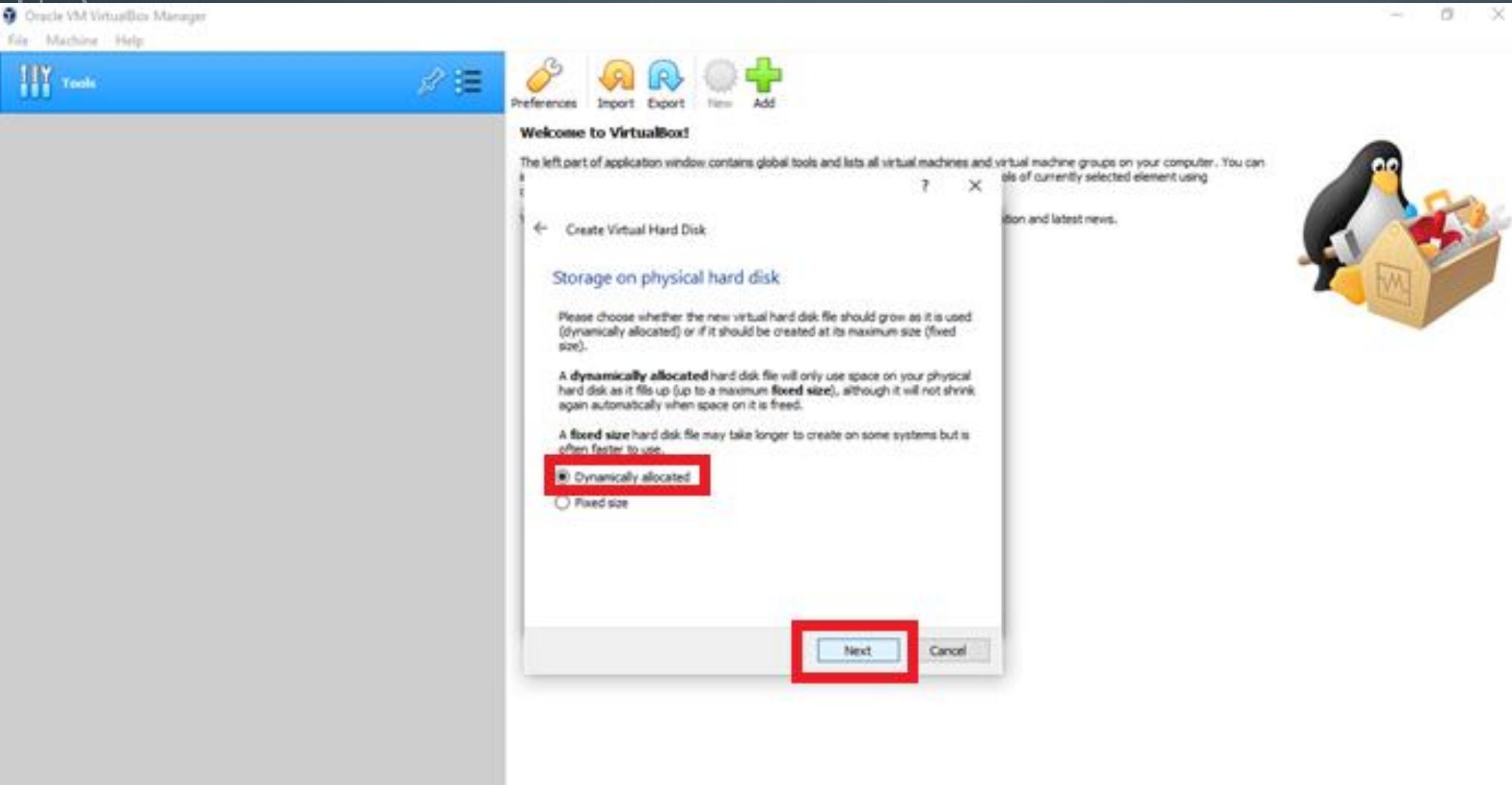


اضغط على الخيار  
الموضح في الصورة ثم  
اضغط على create

Click on option  
shown in the  
image, then click  
create.

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

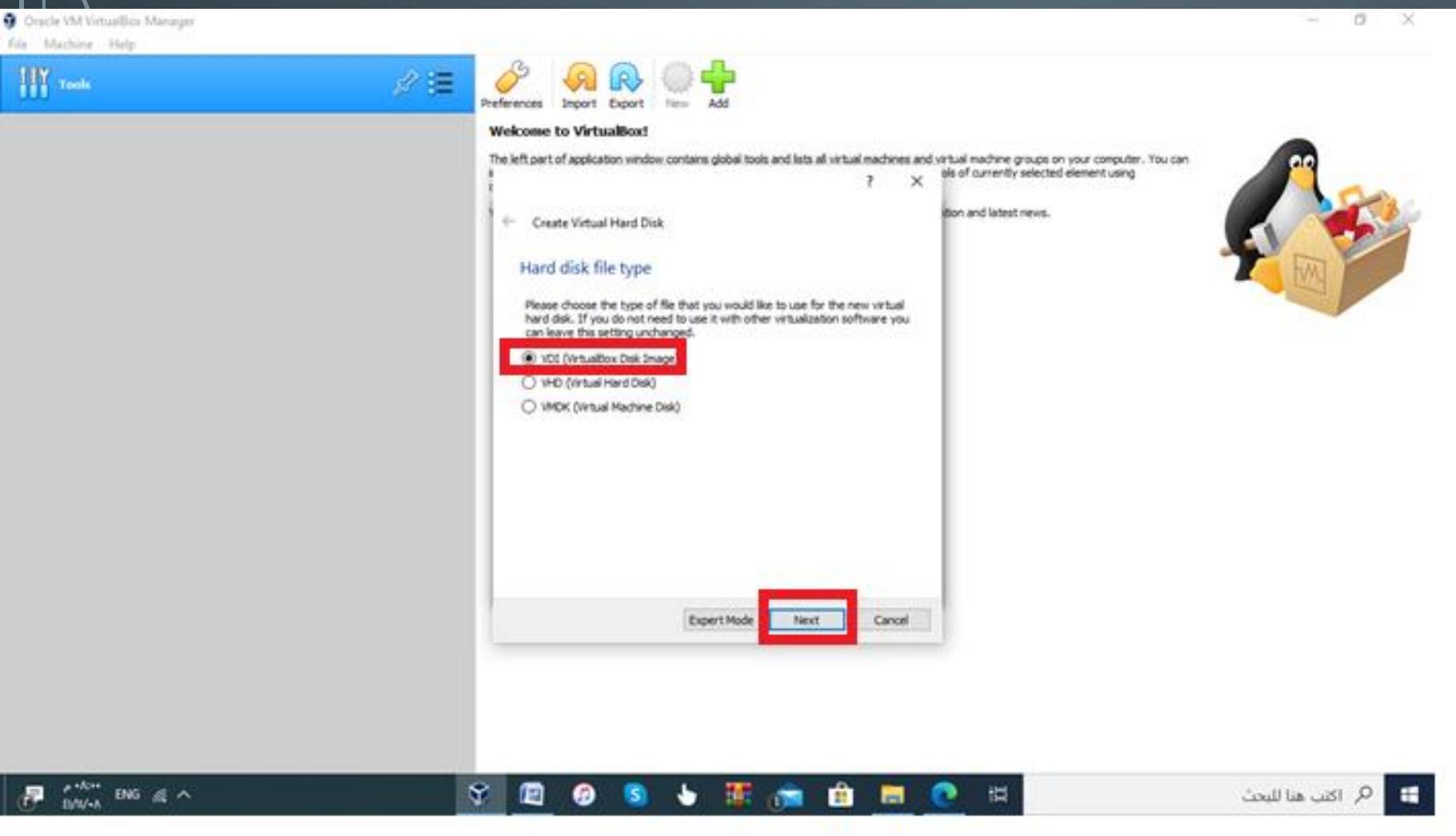


اضغط على الخيار  
الموضح في الصورة ثم  
اضغط على next

Click on option  
shown in the  
image, then click  
next.

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)



اضغط على الخيار  
الموضح في الصورة ثم  
اضغط على next

Click on option  
shown in the  
image, then click  
next.

مشاكل قد تظهر لك (٢).

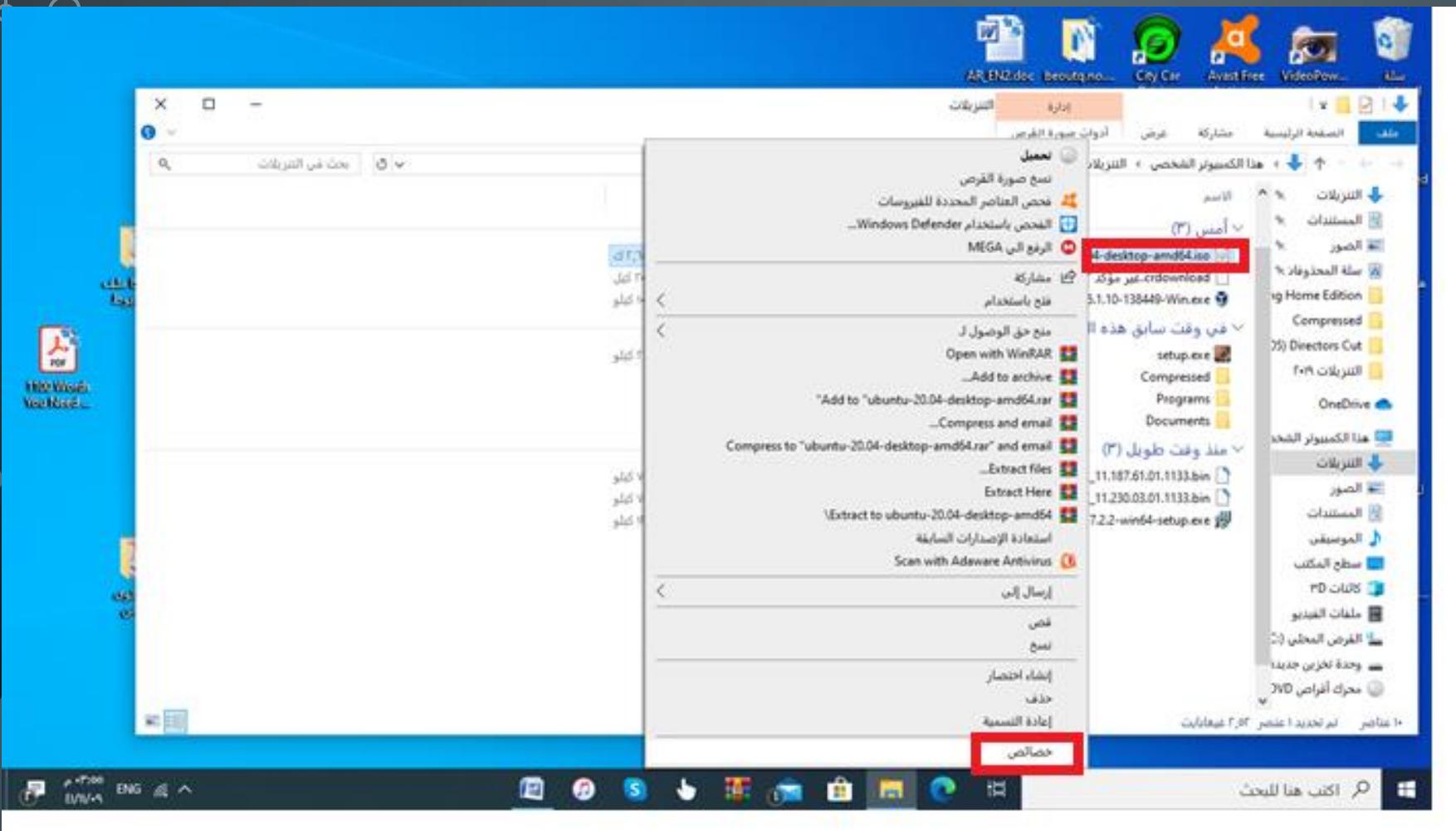
PROBLEMS MAY APPEAR TO YOU(2)

مشكلة عدم تثبيت UBUNTU 20.04

PROBLEM NOT TO INSTALL UBUNTU 20.04 .



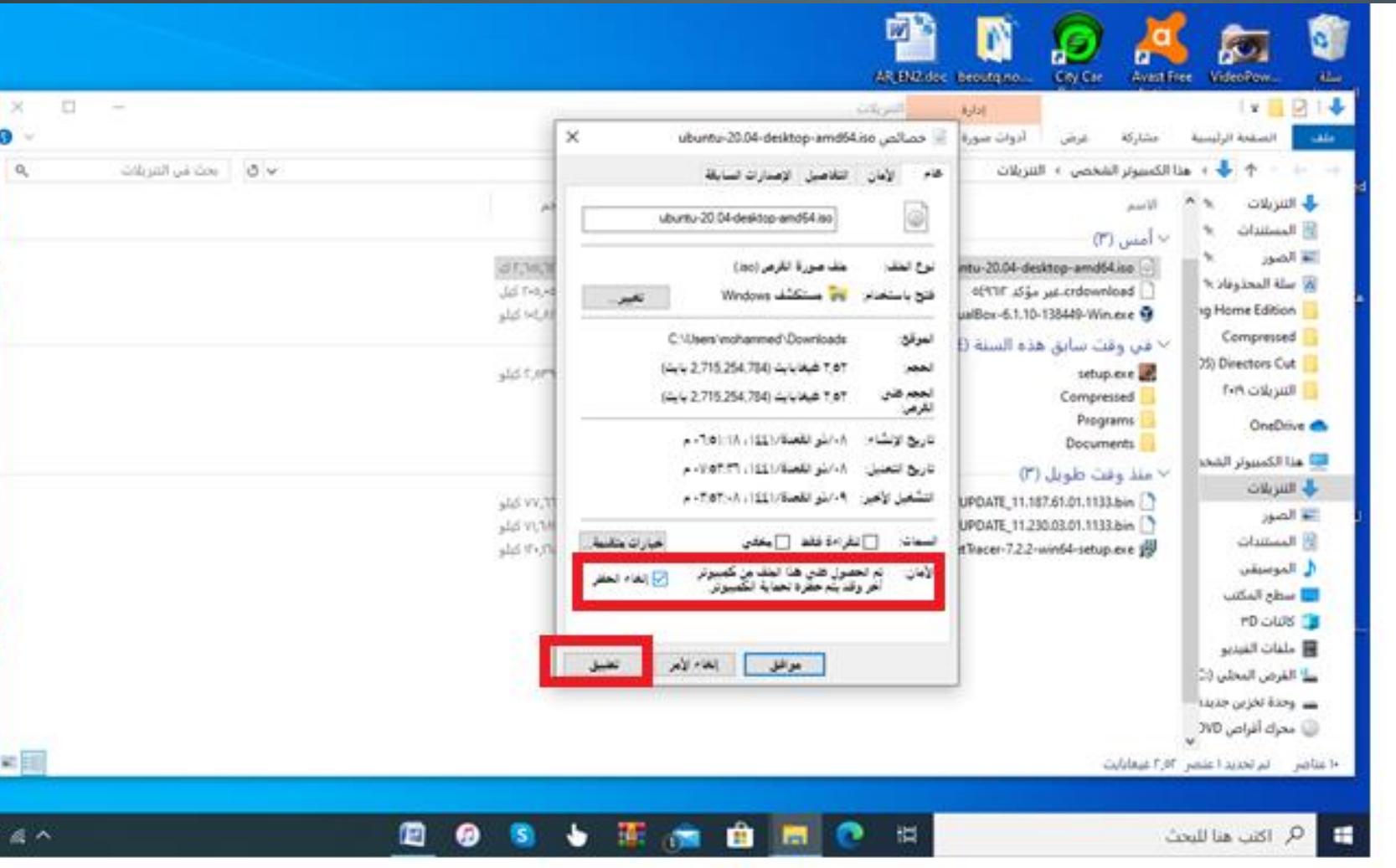
## مشكلة عدم تثبيت Ubuntu 20.04(تابع) problem not to install Ubuntu 20.04(cont.) .



افتح موقع الملف Ubuntu  
ثم اضغط ع خصائص.

Open the Ubuntu file and  
click properties.

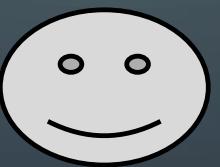
## مشكلة عدم تثبيت Ubuntu 20.04(تابع) problem not to install Ubuntu 20.04(cont.) .



من قائمة عام اضغط على  
 الخيار إلغاء الحظر، ثم زر  
 تطبيق ثم رز موافق .

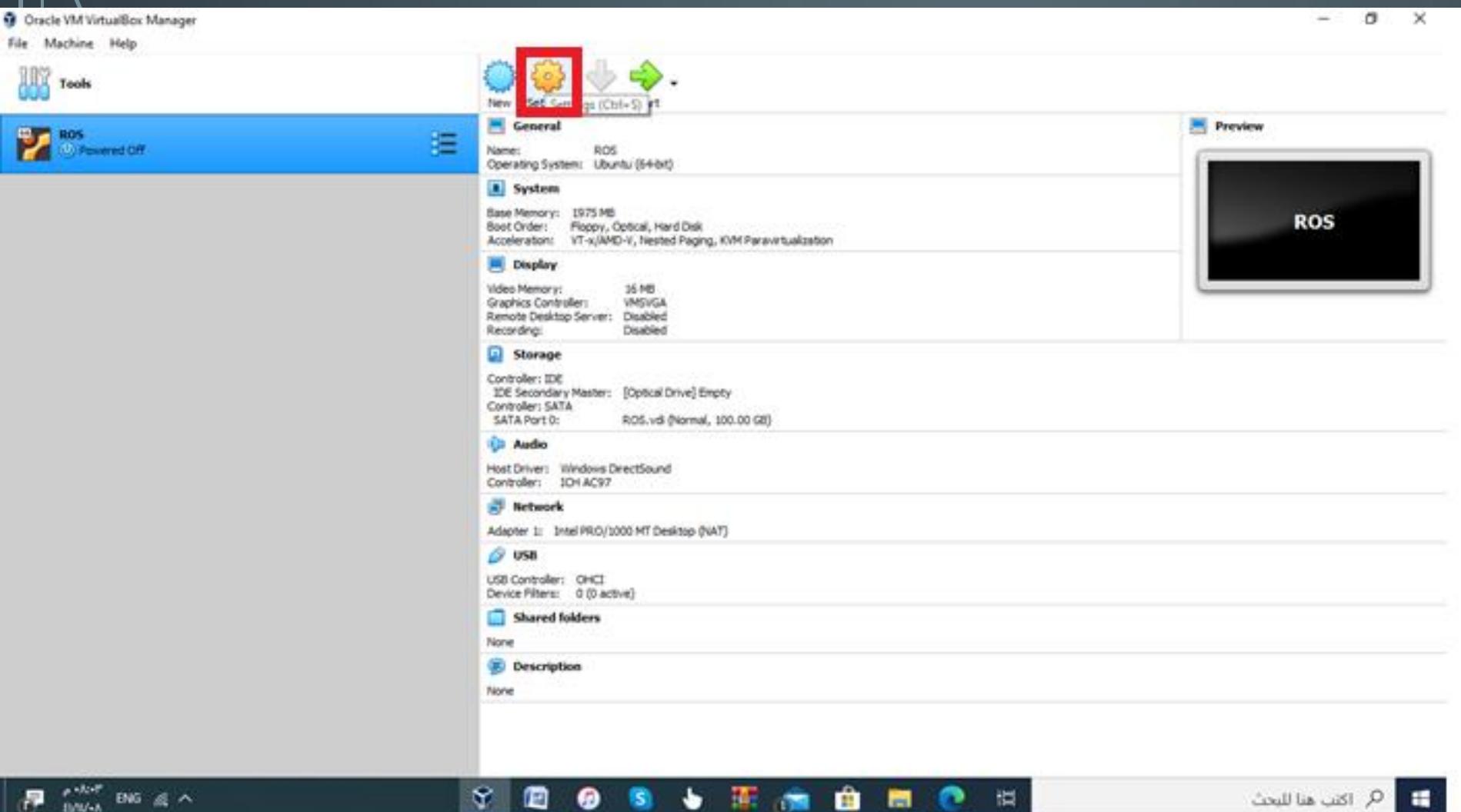
From the general  
menu, click on the  
unblock option, then  
apply button, then  
ok button .

حلت المشكلة(٢).  
Problem solved(2).



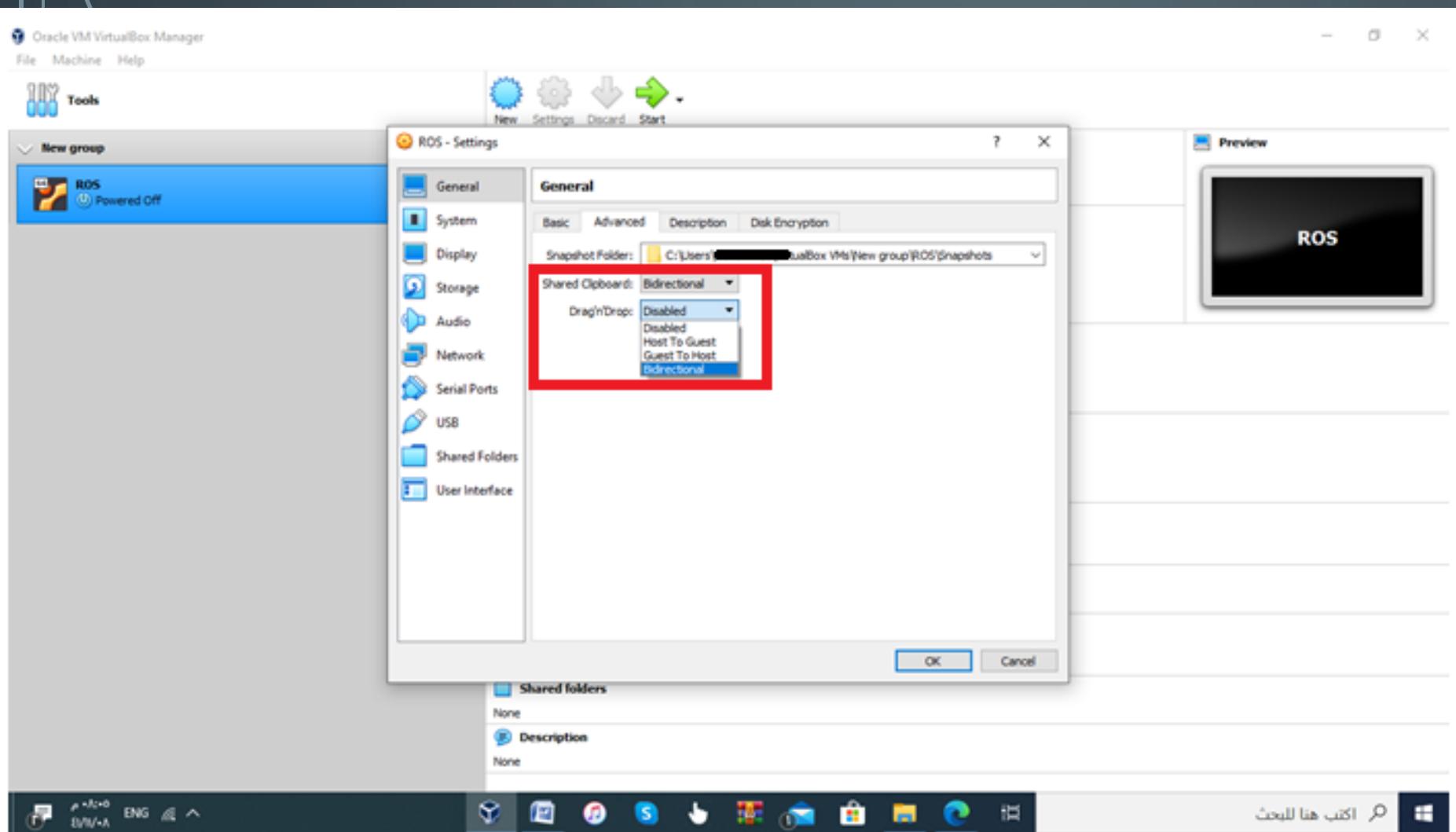
اضغط على إعدادات.

Click settings.



## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)



A selection box will appear from the general menu, then choose advanced, choose in both shared clipboard and drag and drop bidirectional option.

سيظهر صندوق اختيار من القائمة (advanced) ثم اختيار (general)

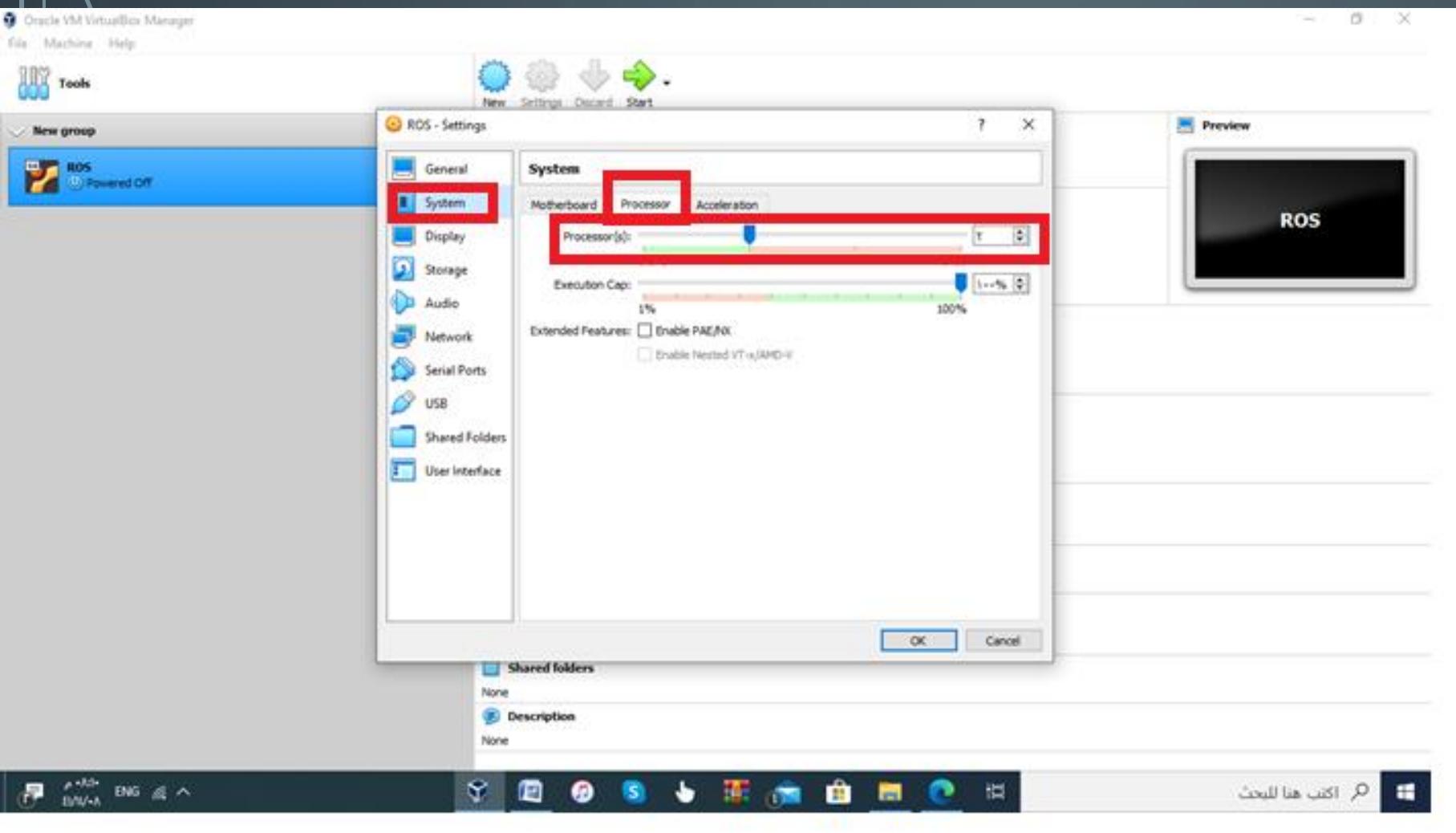
ثم في كلا من خيارات drag drop و clipboard

خيار

.bidirectional

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

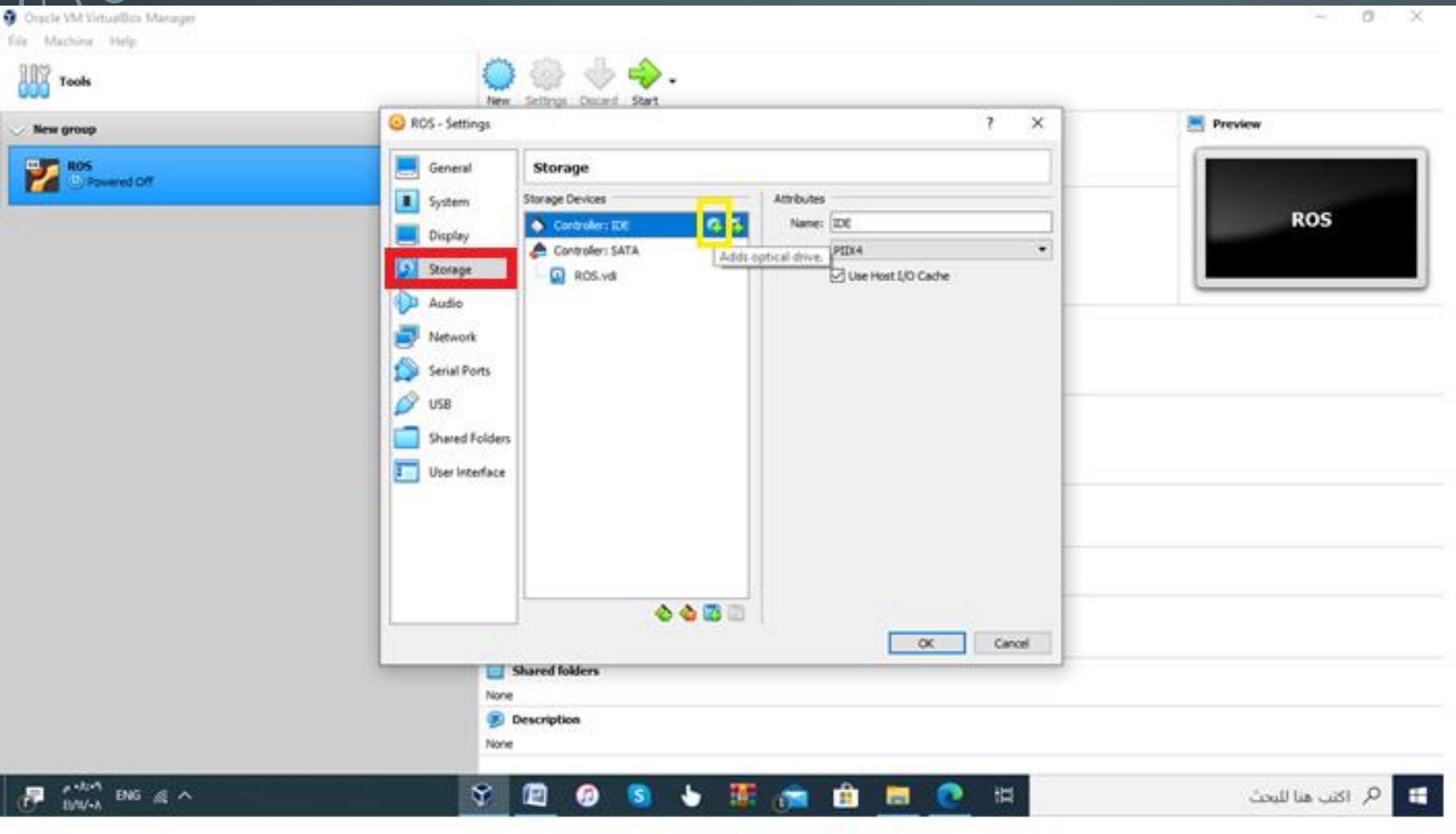


from the system menu, then choose processor , then put the arrowhead at the end of the green.

اختر من القائمة (system) ثم  
اختر (processor )  
ثم ضع رأس السهم عند نهاية المنطقة  
الخضراء.

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

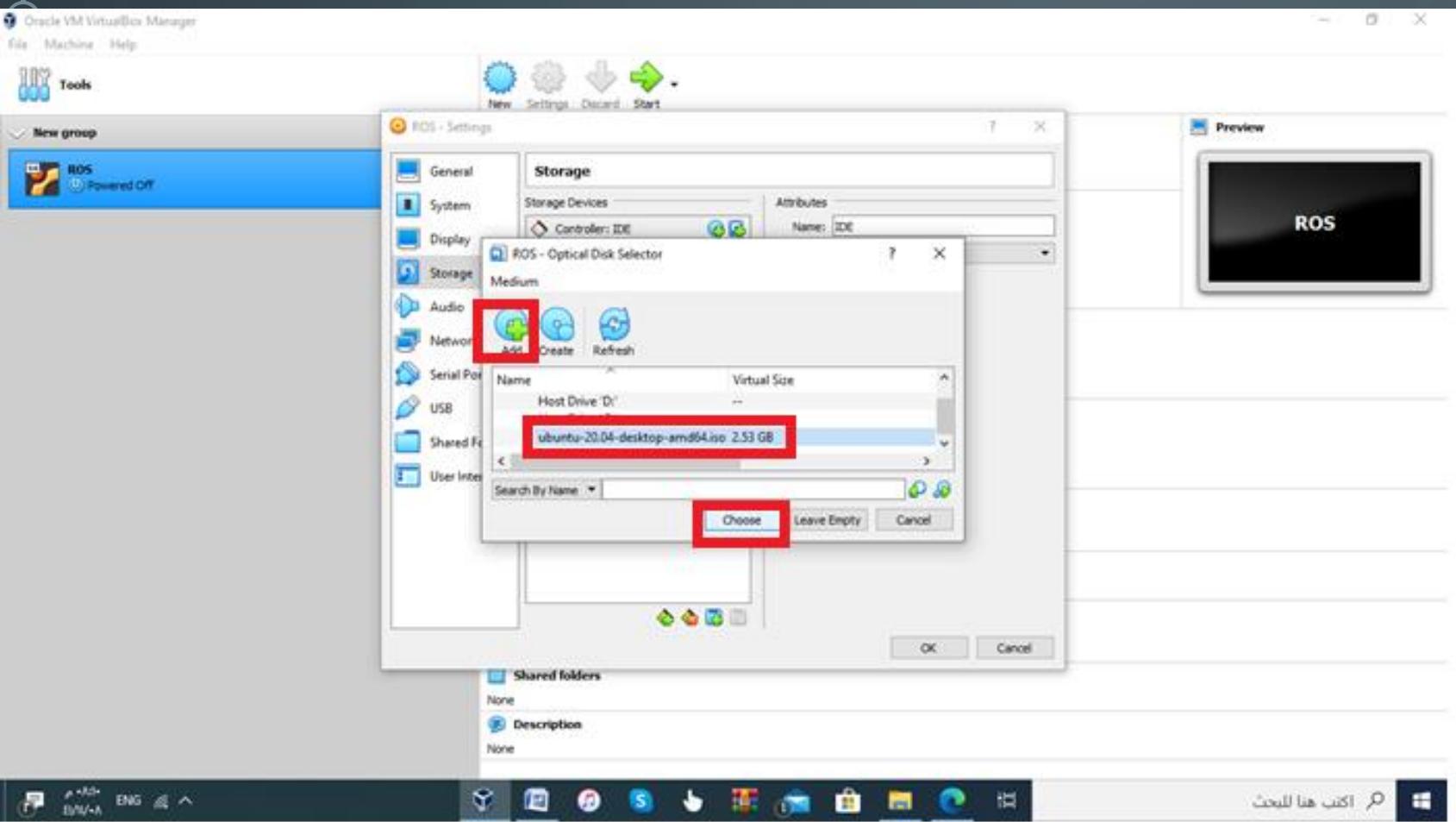


from the storage menu,  
then choose adds optical  
drive.

من قائمة Storage اختر  
adds optical drive

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)



Click Add, then click on the option shown in the image, then choose.

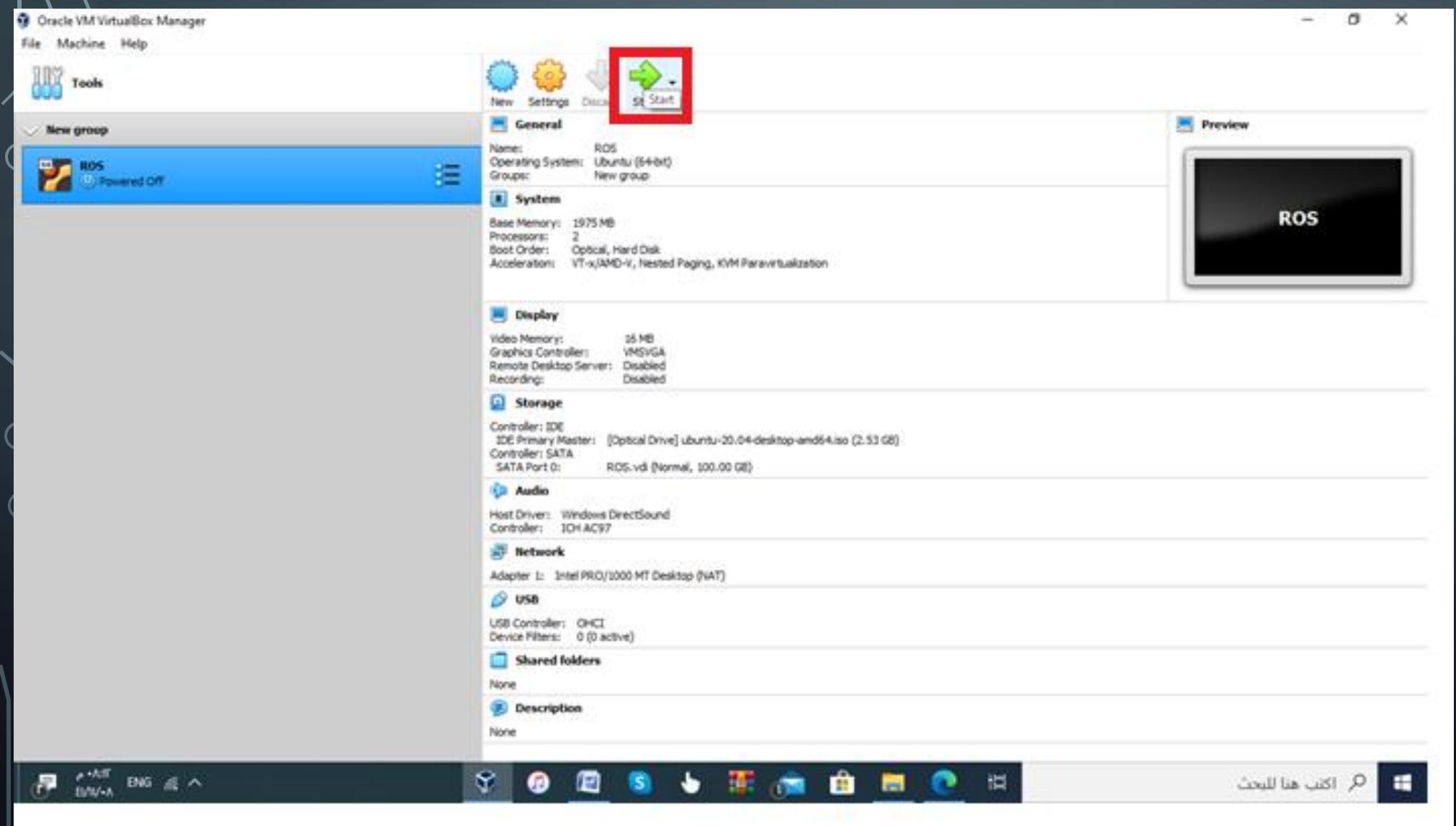
اضغط Add ثم اضغط على الخيار  
موضح في الصورة ثم choose

You can change the remaining  
settings. I will keep the default  
mode and press OK

يمكنك تغيير بقية الاعدادات سأبقي  
على وضع الافتراضي و  
اضغط على  
.ok

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

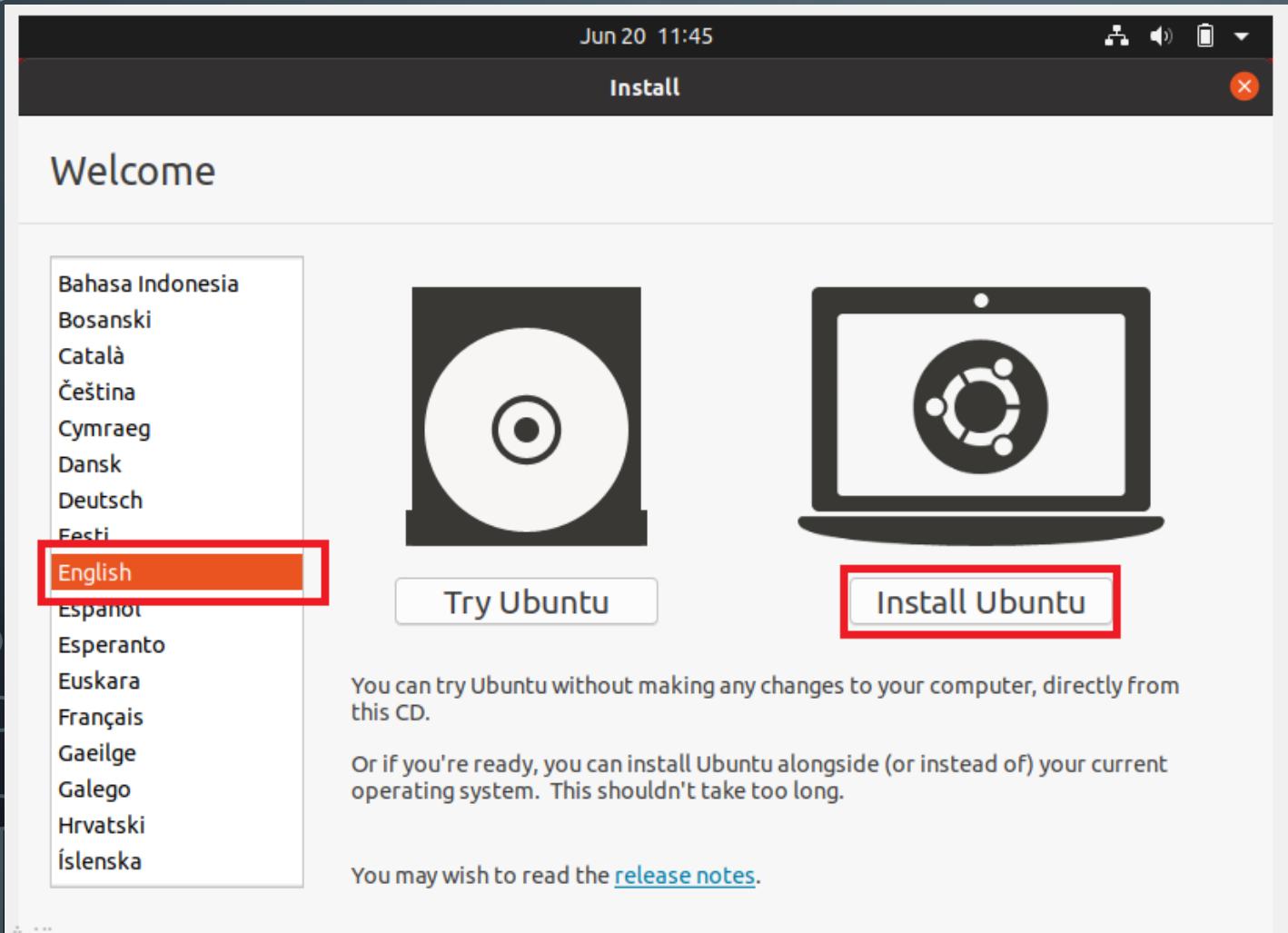


اضغط على  
start

Click start

## Install Ubuntu 20.04 on virtualbox (cont.).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

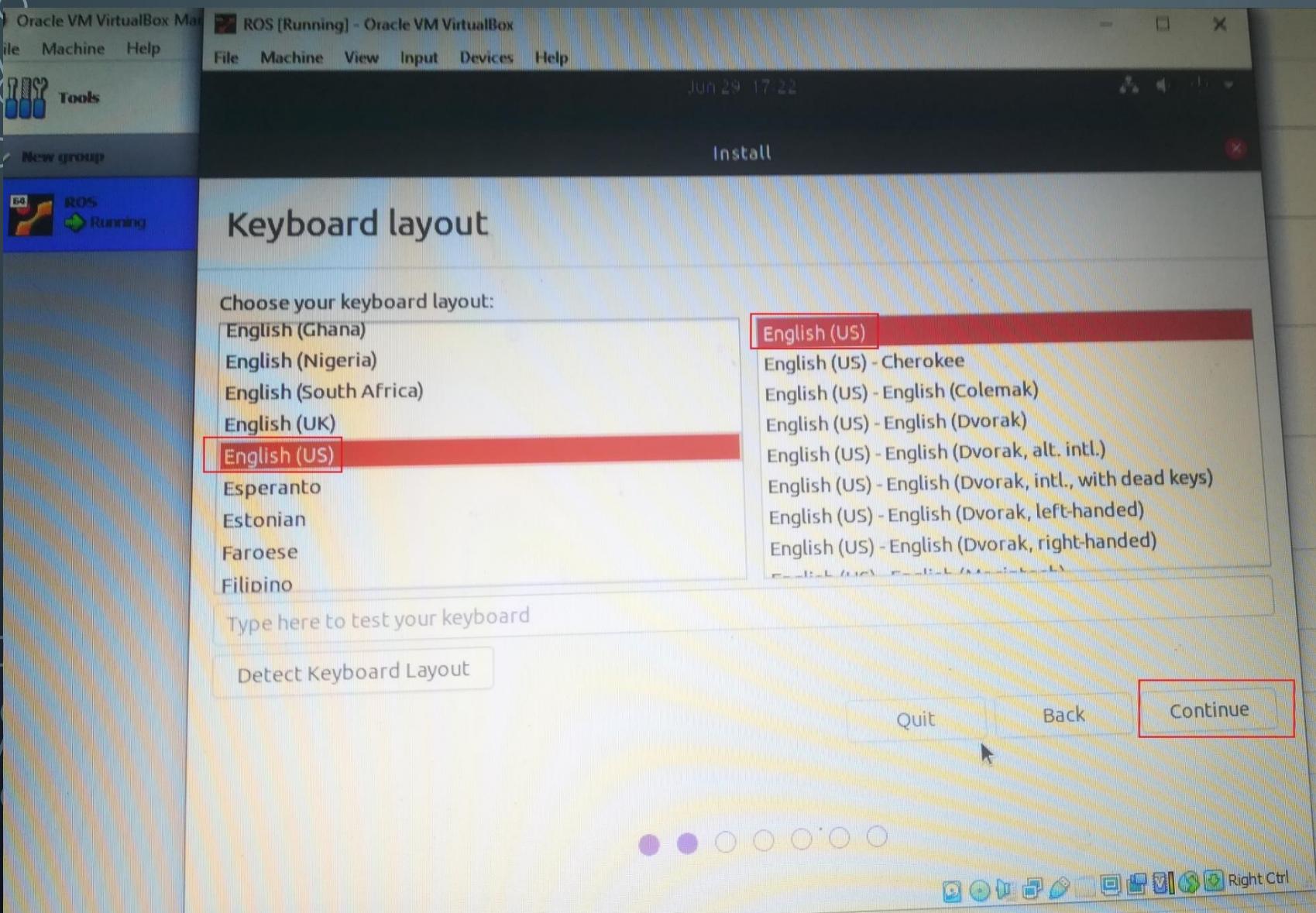


Choose the language and  
install Ubuntu

اختر اللغة و تثبيت اوبينتو

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

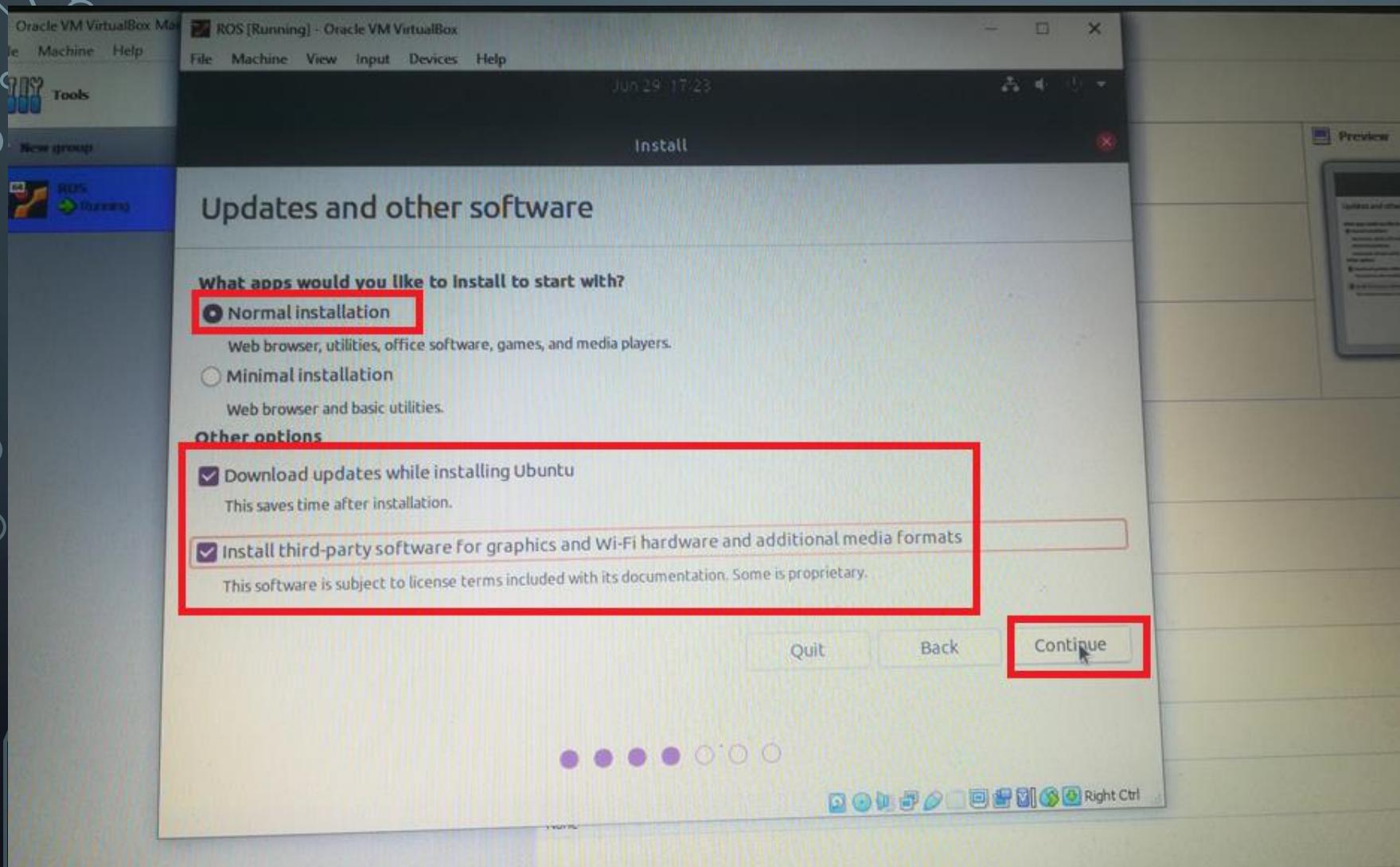


اختر لغة لوحة  
المفاتيح ثم اضغط  
على Continue

Choose your  
keyboard  
language, then  
press Continue

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)



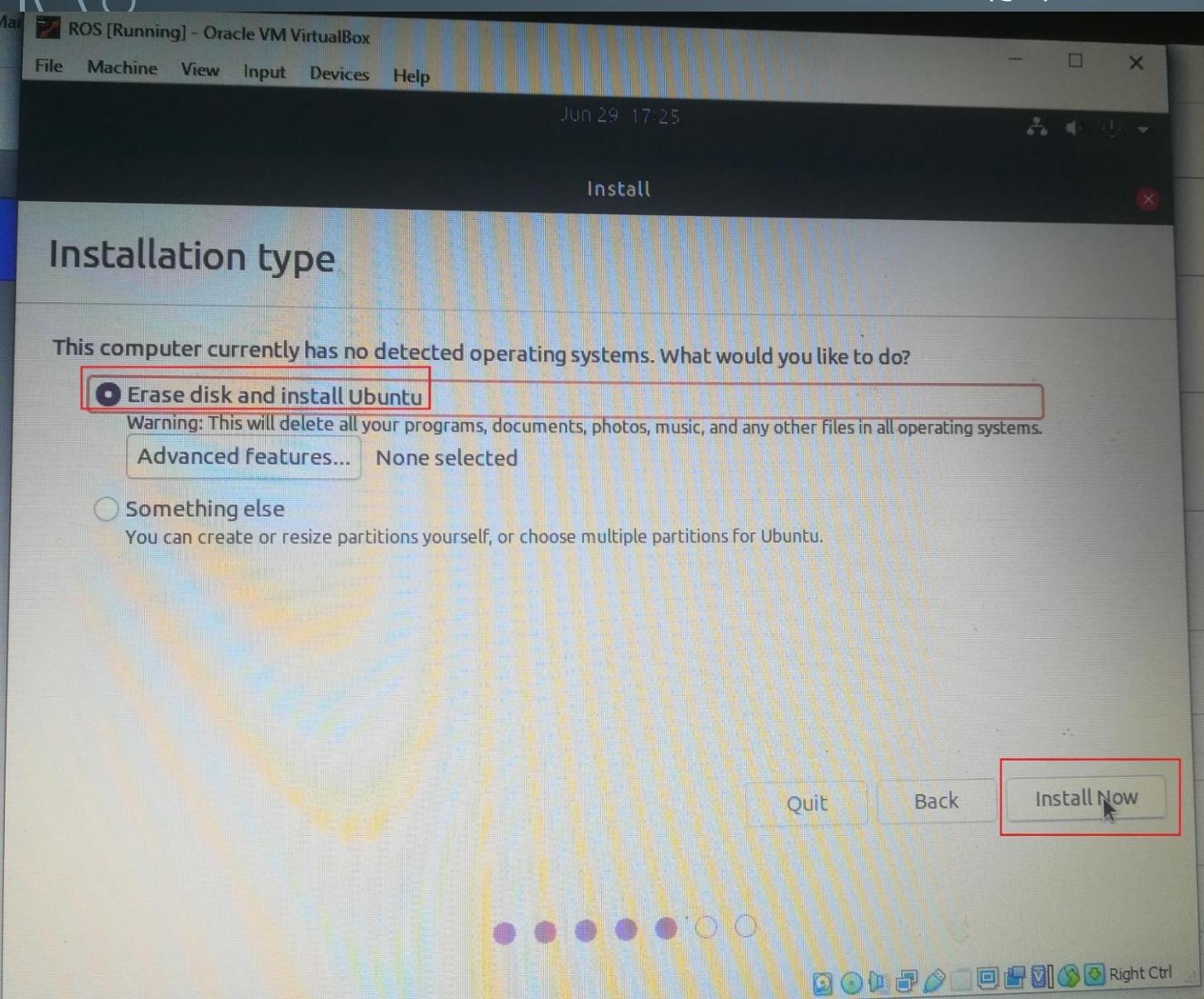
Put a check on the three options, then click continue.

ضع علامة على خيارات  
الثلاث ثم اضغط

continue

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

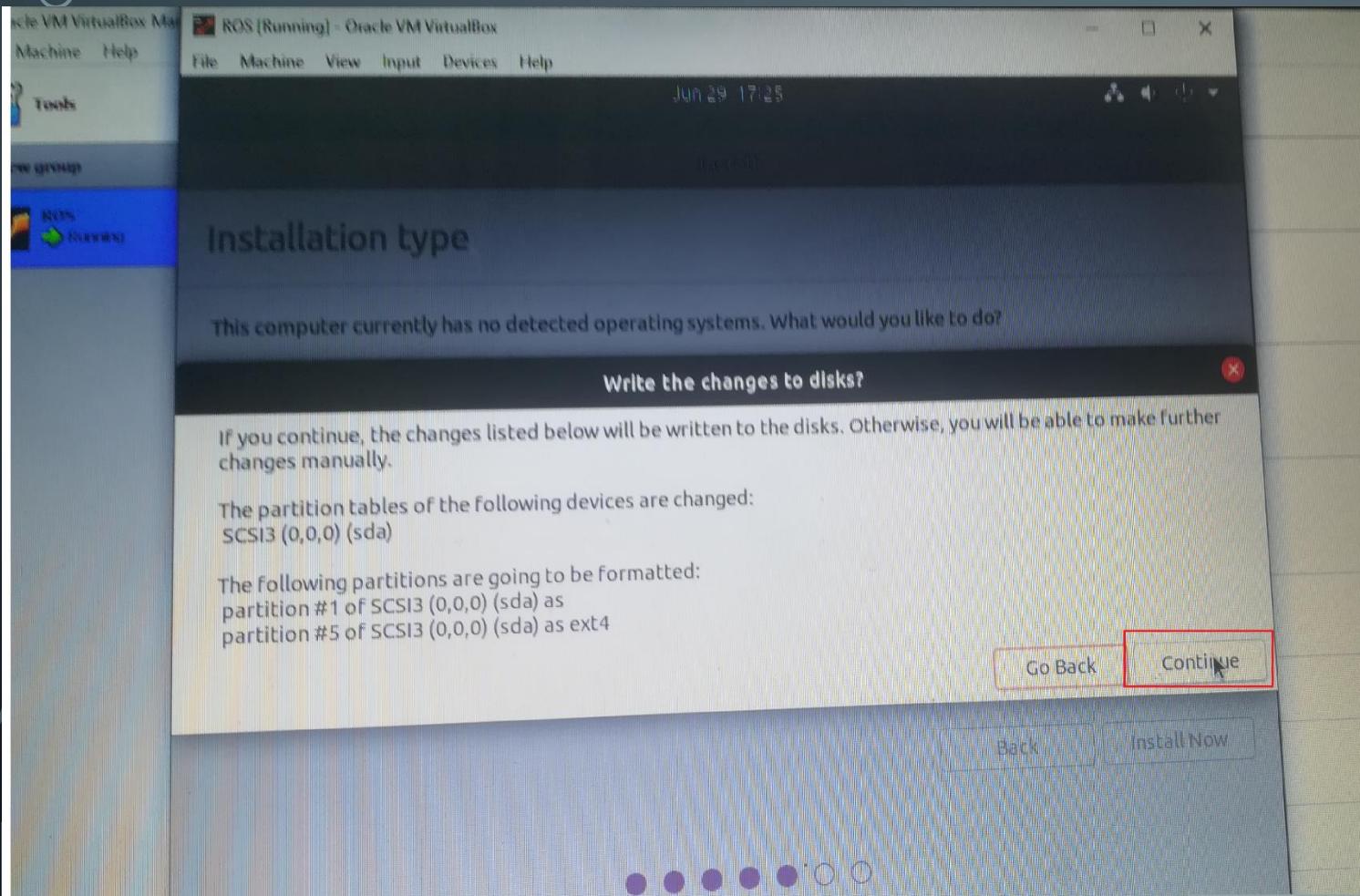


Choose the option shown in the image, then click Install now.

اختر الخيار الموضح في الصورة ثم  
اضغط على Install now

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

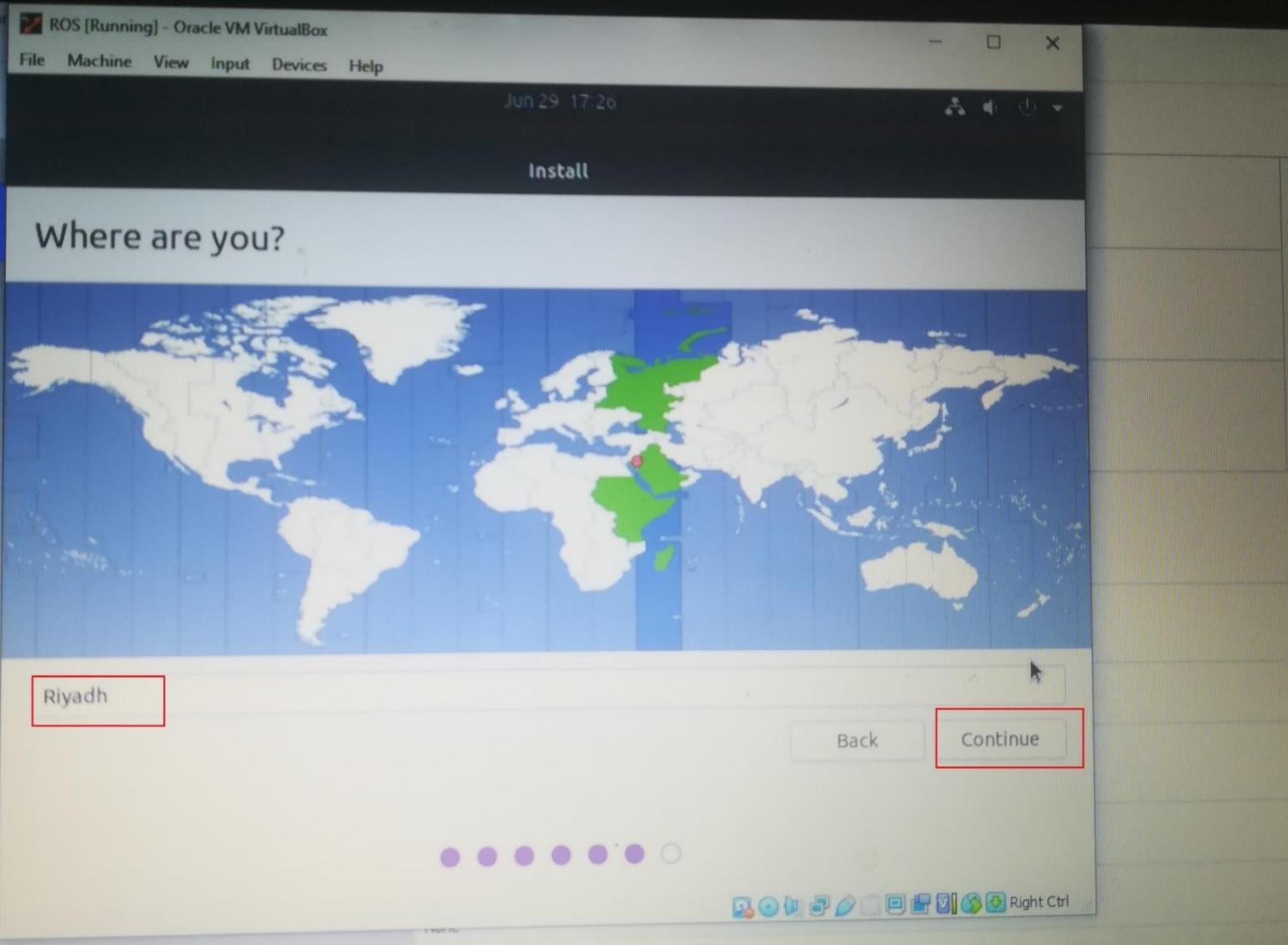


Click continue

اضغط على continue

## Install Ubuntu 20.04 on virtualbox (cont.).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

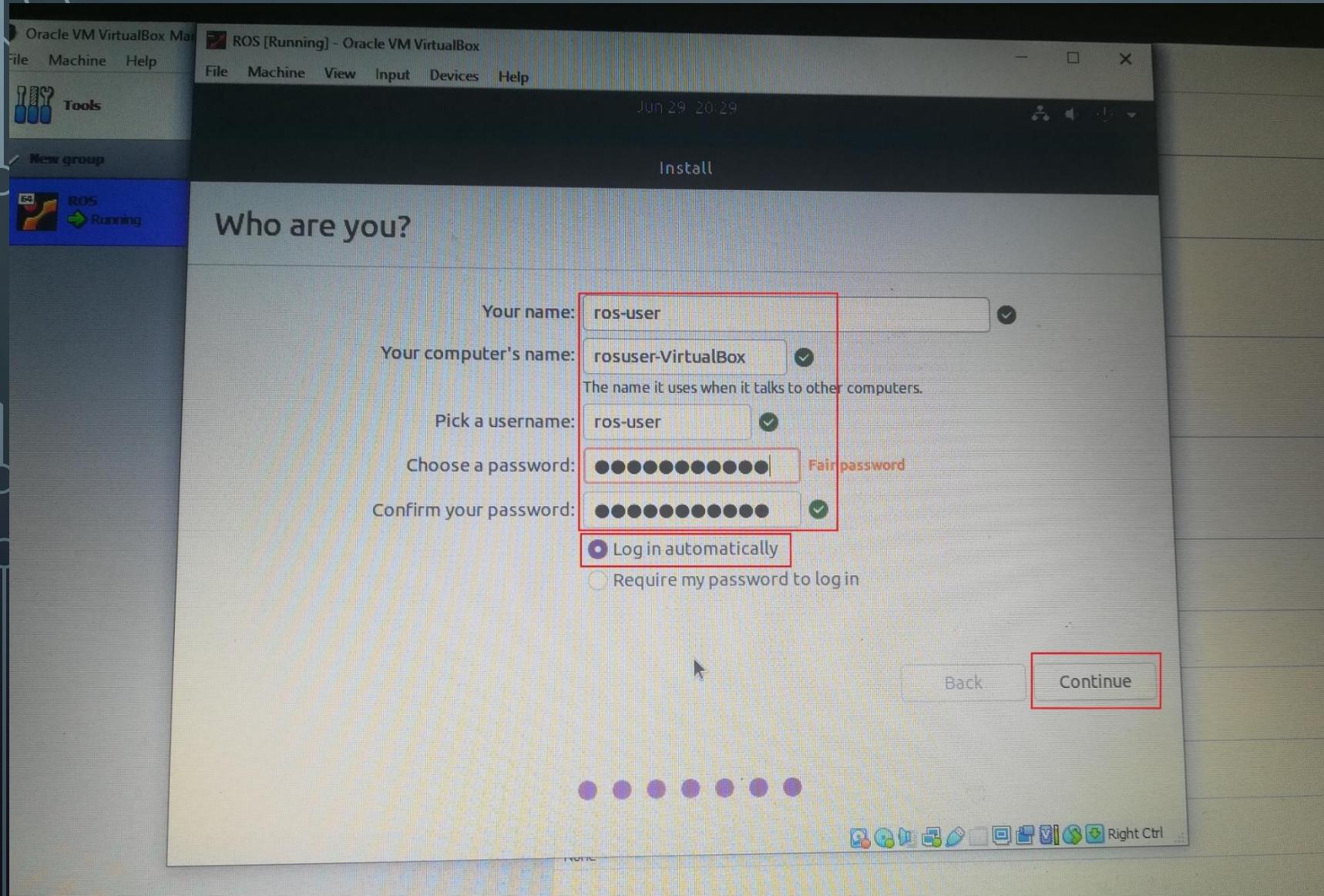


Write your  
city.

اكتب مدينتك.

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)

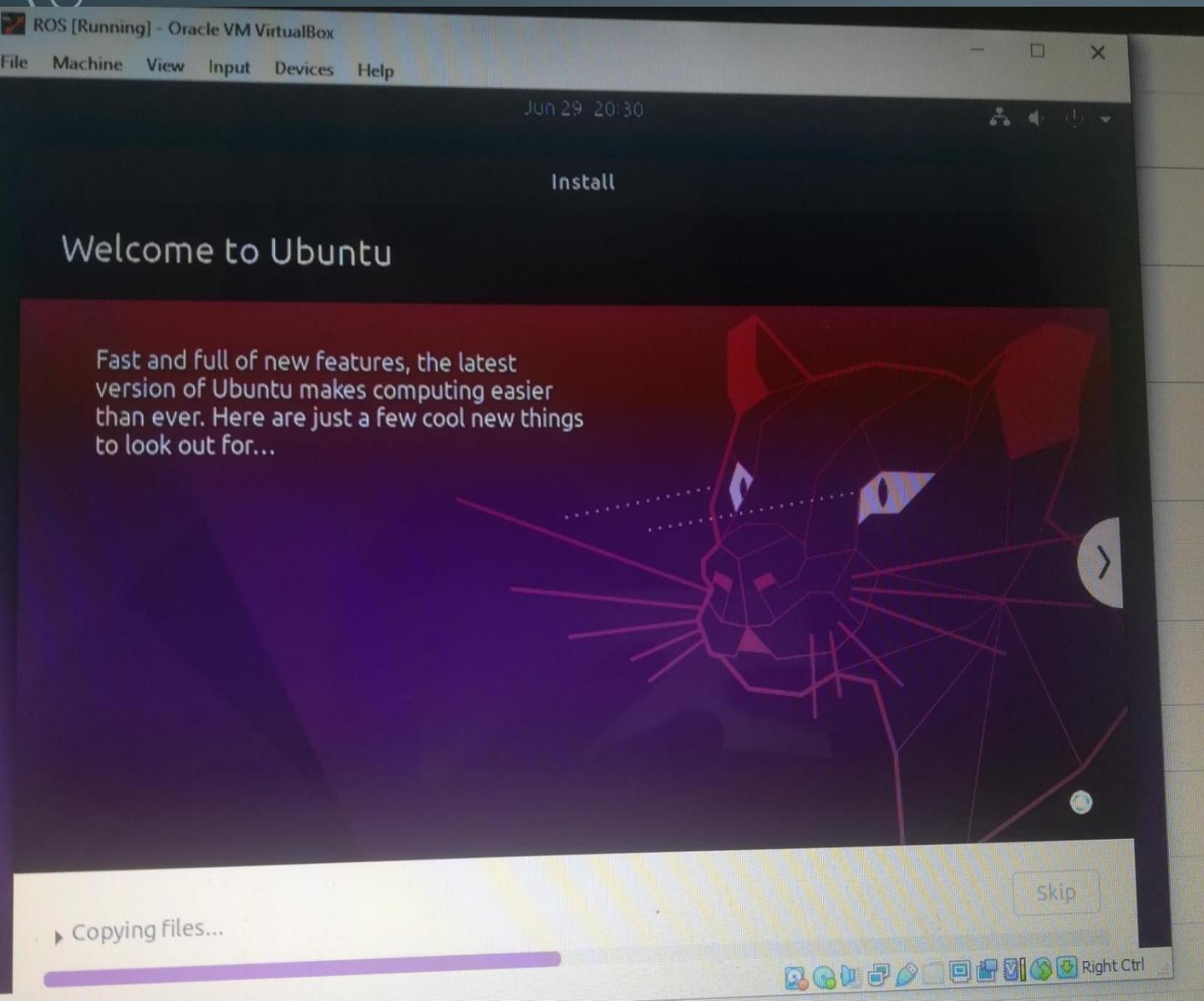


ضع اسمك واسم الحاسب واختر  
اسم المستخدم وكلمة المرور ثم  
اضغط على continue

Put your name and  
computer name and  
choose your username  
and password, then press  
continue

## Install Ubuntu 20.04 on virtualbox (cont.).

### تثبيت Ubuntu 20.04 على virtualbox (تابع)

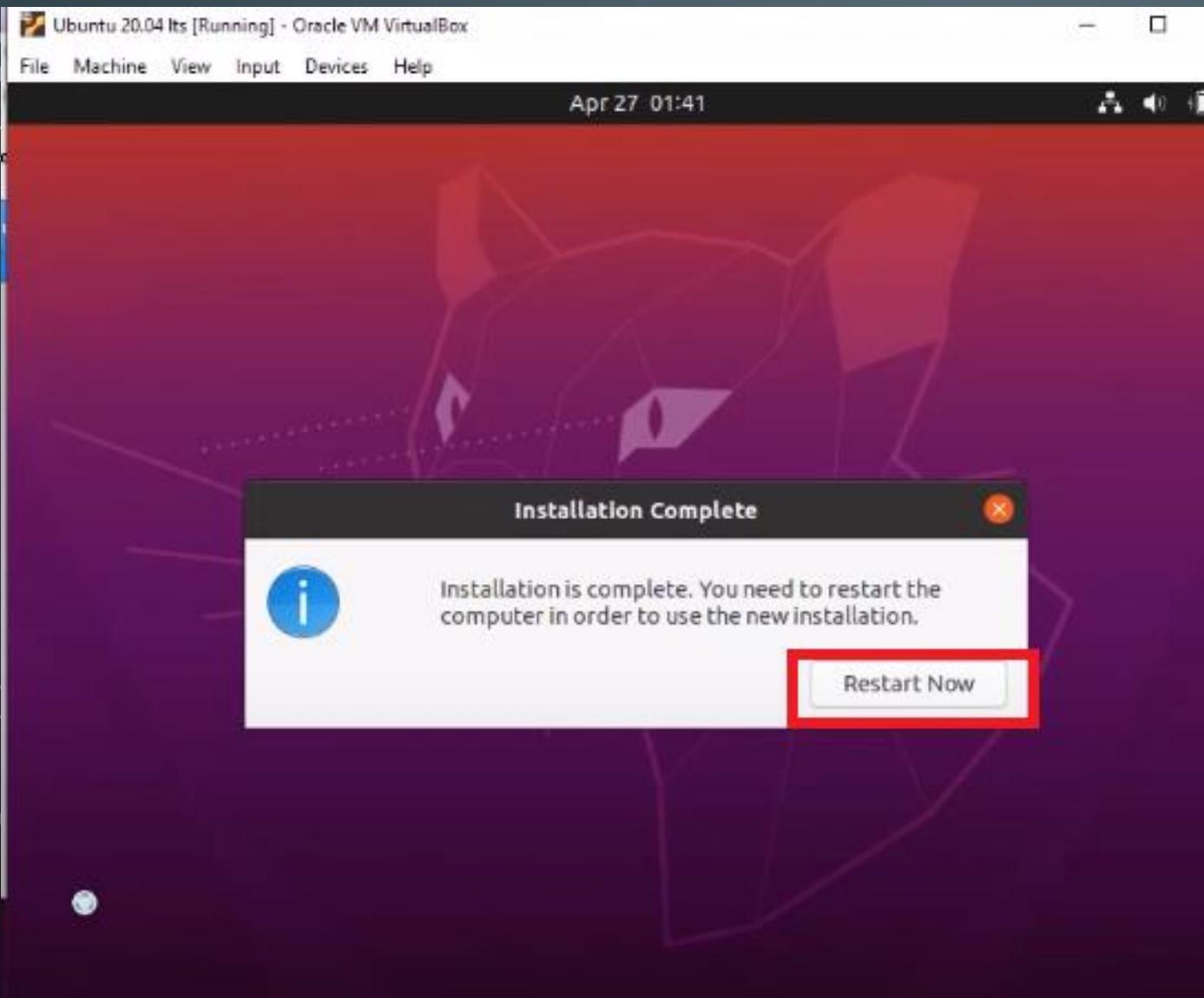


During this time you can go and drink a cup of coffee because the installation process takes time.

خلال هذا الوقت يمكنك الذهاب لشرب كوب من قهوة لأن عملية التثبيت تحتاج وقت.

## Install Ubuntu 20.04 on virtualbox (cont).

تثبيت Ubuntu 20.04 على virtualbox (تابع)



Click Restart Now

اضغط على Restart Now

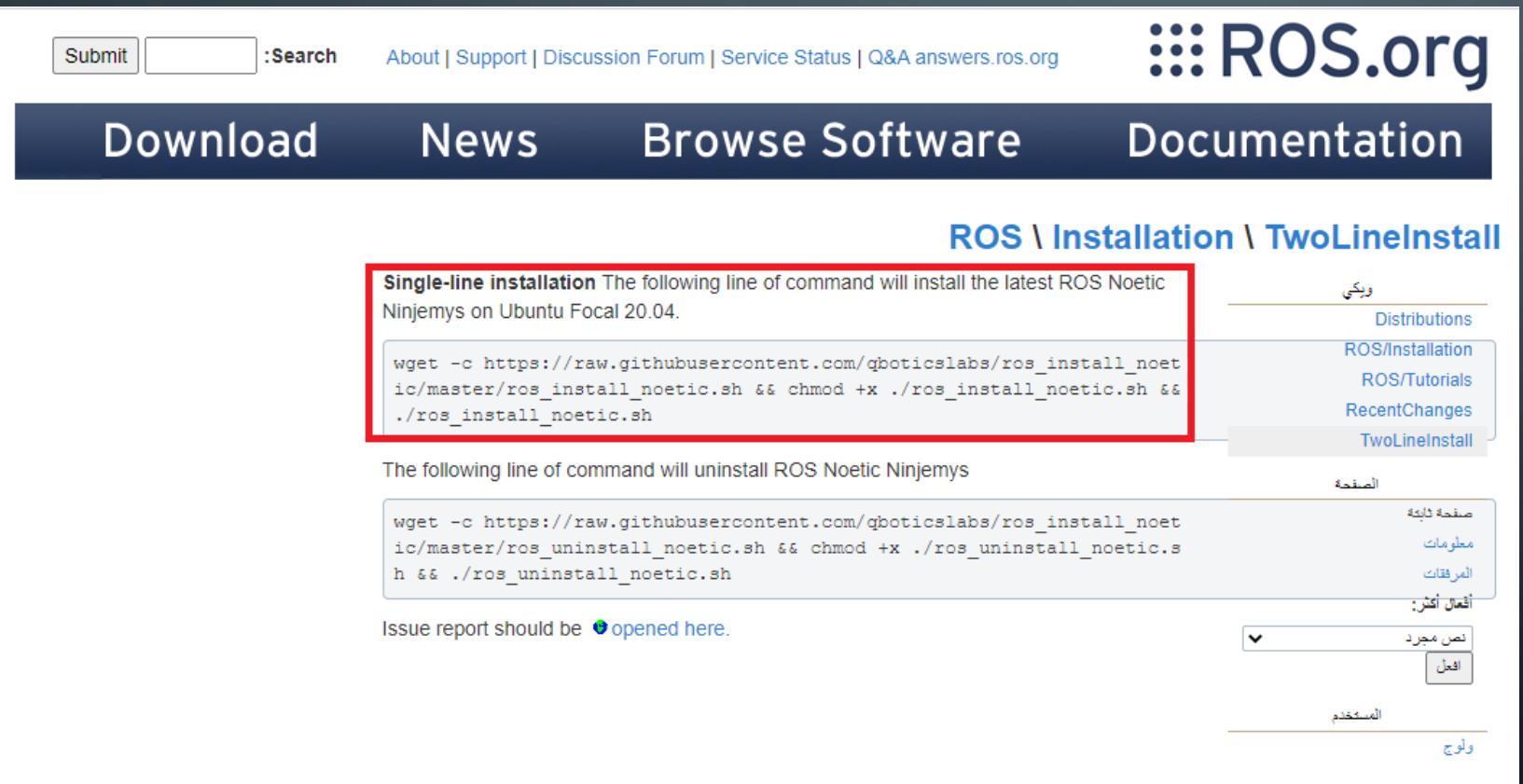
Ubuntu installed 20.04  
تم تثبيت Ubuntu 20.04

# INSTALL ROS NOETIC

# ROS NOETIC تثبيت

• تثبيت روز عن طريق الرابط كما موضح بالصورة.

- Installing ros via the link as shown in the picture.
- <http://wiki.ros.org/ROS/Installation/TwoLineInstall>.
- للتأكد من تثبيت روز، قم بنسخ هذه الأوامر ووضعها في (.terminal)
- To make sure that ros is installed, copy these commands and place them in terminal.
  - **rosversion -d**
  - **roscore**
  - **rosrun rosjava\_tutorials talkerls**



انسخ سطر الأوامر الموجود في الموقع وضعه على .terminal

Copy the command line into the link and put it in terminal.

```
robot@robot-virtual-machine:~$ wget -c https://raw.githubusercontent.com/qbotics  
labs/ros_install_noetic/master/ros_install_noetic.sh && chmod +x ./ros_install_n  
oetic.sh && ./ros_install_noetic.sh  
--2020-05-23 17:26:42-- https://raw.githubusercontent.com/qboticslabs/ros_insta  
ll_noetic/master/ros_install_noetic.sh  
Resolving raw.githubusercontent.com (raw.githubusercontent.com)...
```

اول خطوة  
First step

الثاني خطوة  
Second step

اختر أحد أنواع ٣ الأفضل أن تختار  
.default  
Choose one of 3 types, better  
choose default.

```
#####  
#####  
>>> {Step 5: Install ROS, you pick how much of ROS you would like to install.}  
[1. Desktop-Full Install: (Recommended) : Everything in Desktop plus 2D/3D  
simulators and 2D/3D perception packages ]  
  
[2. Desktop Install: Everything in ROS-Base plus tools like rqt and rviz]  
  
[3. ROS-Base: (Bare Bones) ROS packaging, build, and communication librarie  
s. No GUI tools.]  
Enter your install (Default is 1):1
```

اكتب (roscore) لترى الإصدار  
وملخص.

Write(roscore) to show version  
and summary

```
>>> {Step 7: Testing ROS installation, checking ROS version.}  
>>> {Type [ rosversion -d ] to get the current ROS installed version}
```

```
robot@robot-virtual-machine:~$ rosversion -d
```

الخطوة الأولى  
First step

انسخ سطر الأوامر في المستطيل الأصفر وضعه  
في المستطيل الأحمر لظهور لك كلمة (noetic).

Copy the command line into the yellow  
rectangle and place it in the red  
rectangle to show you the word (noetic).

الخطوة الثانية  
Second step

```
robot@robot-virtual-machine:~$ roscore
```

ثالث خطوة.  
The third step

```
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://robot-virtual-machine:46601/
ros_comm version 1.15.6

SUMMARY
=====
PARAMETERS
* /rosdistro noetic
* /rosversion: 1.15.6

NODES

auto-starting new master
process[master]: started with pid [42031]
ROS_MASTER_URI=http://robot-virtual-machine:11311/

setting /run id to 443e2352-9ced-11ea-a5f1-2d0f478ee643
```

```
roscore http://robot-virtual-machine:11311/          robot@robot-virtual-machine: ~
robot@robot-virtual-machine:~$ rosrun roscpp_tutorials talker
INFO] [1590235365.359761876]: hello world 0
INFO] [1590235365.460506395]: hello world 1
INFO] [1590235365.560278989]: hello world 2
INFO] [1590235365.661037037]: hello world 3
INFO] [1590235365.760470461]: hello world 4
INFO] [1590235365.860285718]: hello world 5
```

رابع خطوة  
The fourth step

افتح (terminal) الجديد للاختبار 1.  
Open new terminal to test 1.

الخطوة الأخيرة.  
The last step.

```
roscore http://robot-virtual-machine...      robot@robot-virtual-machine: ~      robot@robot-virtual-machine: ~
robot@robot-virtual-machine:~$ rosrun roscpp tutorials listener
[ INFO] [1590235379.360977579]: I heard: [hello world 140]
[ INFO] [1590235379.460405226]: I heard: [hello world 141]
[ INFO] [1590235379.561264054]: I heard: [hello world 142]
[ INFO] [1590235379.660471329]: I heard: [hello world 143]
[ INFO] [1590235379.760649483]: I heard: [hello world 144]
[ INFO] [1590235379.861045607]: I heard: [hello world 145]
```

افتح (terminal) الجديد للاختبار ٢.  
Open new terminal to test 2.



**And now it can  
celebrate.  
Congratulations.**

بالتوفيق.

Good luck.