



# **Operating system project**

## **Create a Basic Virtual Machine**

**project members :**

**Albatool Hassan Ghannam.      ID: 444006718**

**Raydaa Barak Almabadi.      ID: 444002439**

**Group 3**

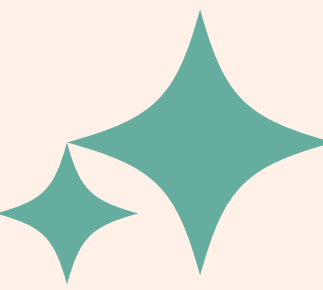
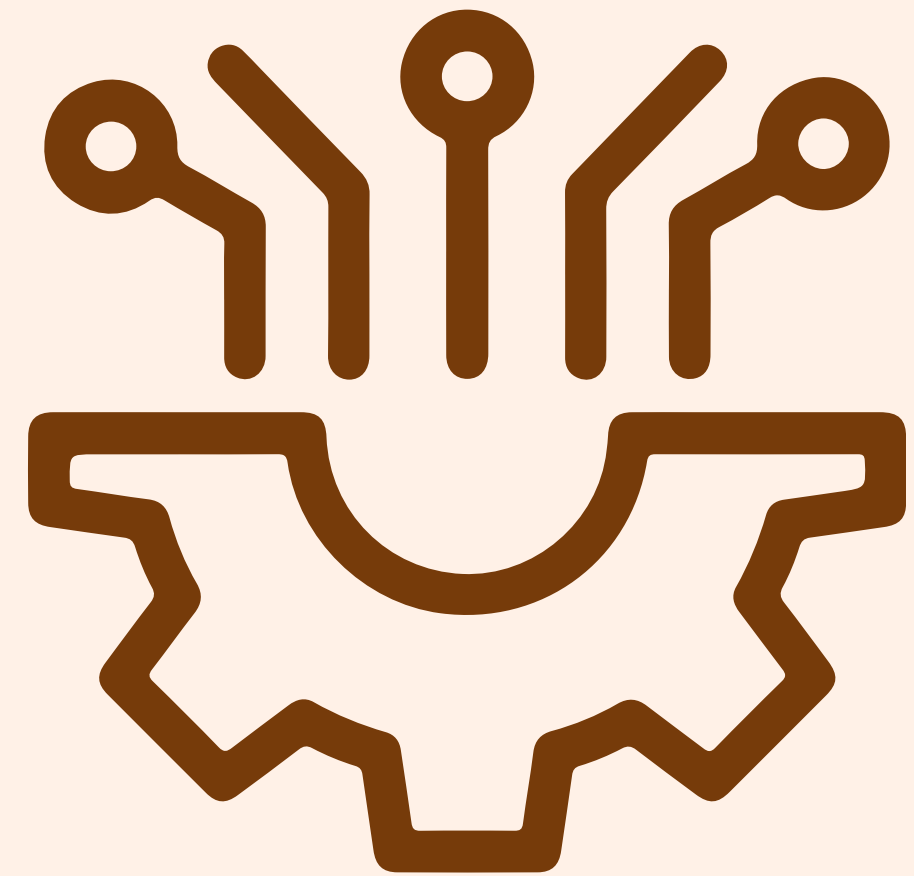
**Supervisor/ Dr. Hind Alsharif**

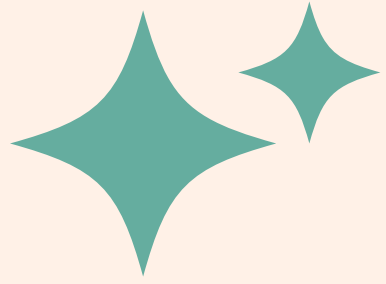
**17/10/2024**



## Project Goal :

**To demonstrate the creation and configuration of virtual machines using both graphical interfaces (VirtualBox on macOS) and command-line tools (on Ubuntu)**

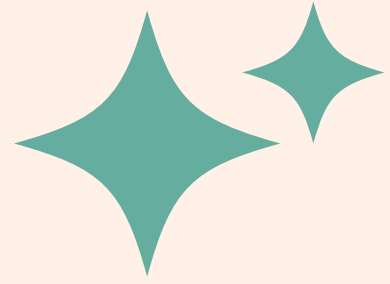




# What is the Virtual Machine?

VM

**It's a logical version of a physical computer. and It runs on a physical computer (the host) and behaves like a real computer with its own operating system, memory, storage, and applications.**



**For example:**

**VM**

**you can use virtual machine software to create  
isolated environments on this computer,  
like separate rooms in a house.  
Each virtual machine acts like a completely  
independent computer.**

# HOW TO CREATE THE VIRTUAL MACHINE?

There is several ways, but we do two:

1

**Create Virtual Machine by using  
VirtualBox in MAC operating system.**

2

**Create Virtual Machine by using  
commands inside Ubuntu system.**

# HOW TO CREATE THE VIRTUAL MACHINE?

## First Way

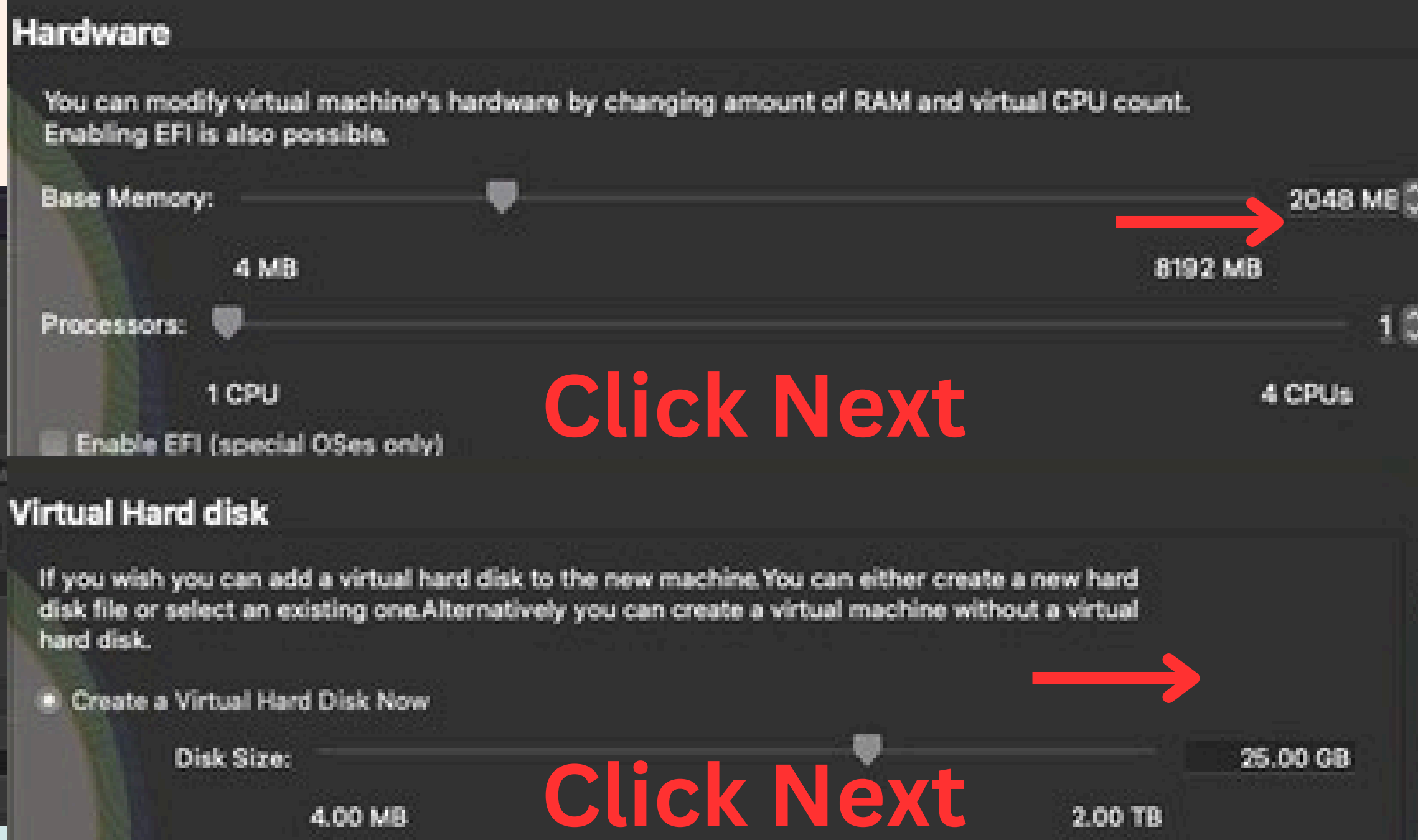
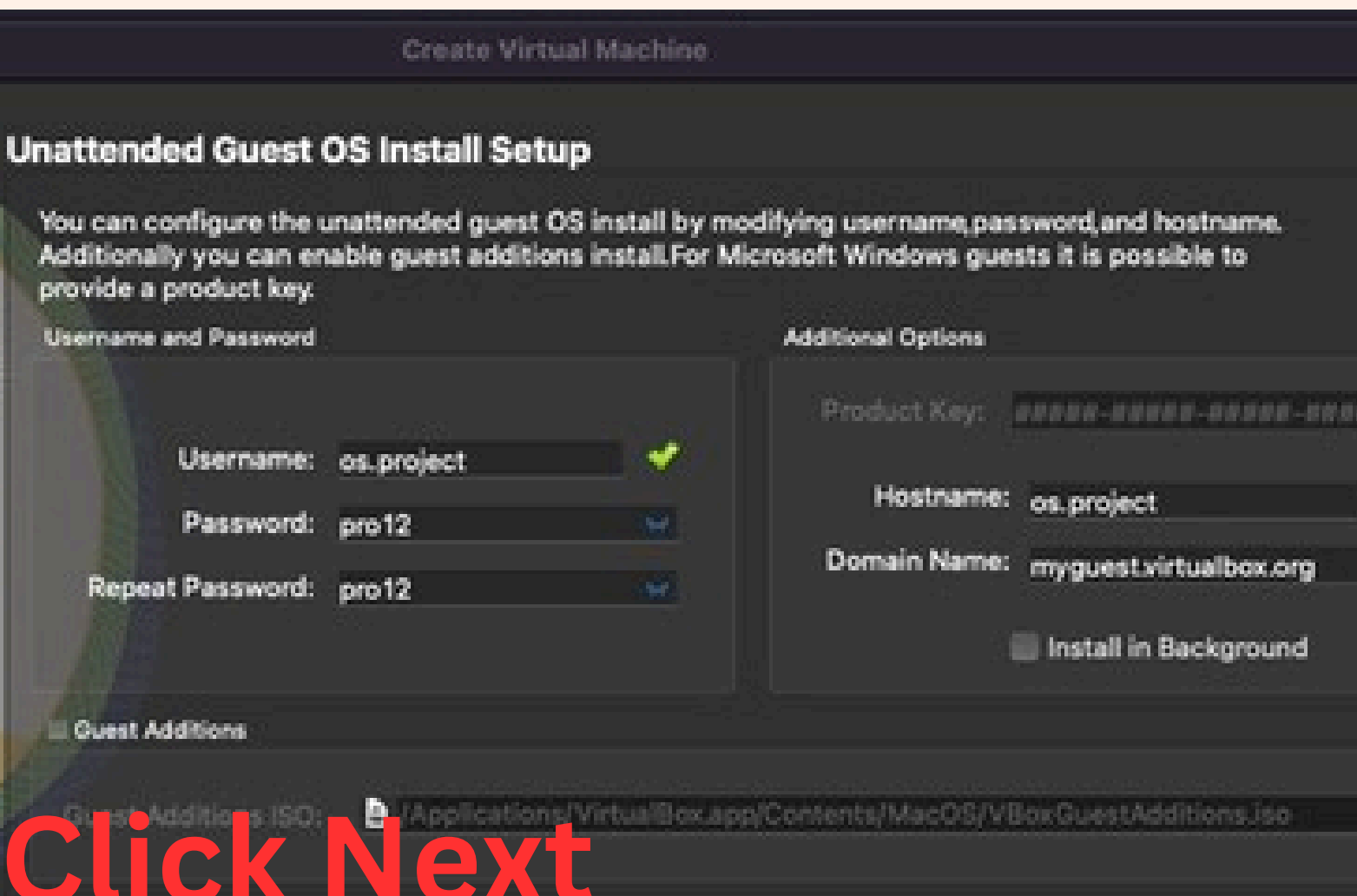
1

**Create Virtual Machine by using  
VirtualBox in MAC operating system.**



**Step1/ create new Virtual Machine AND name it:**

- Click on “New” the blue button.
- Enter name for your Virtual Machine
- Select the type of OS you want, and the version .
- add the iso image



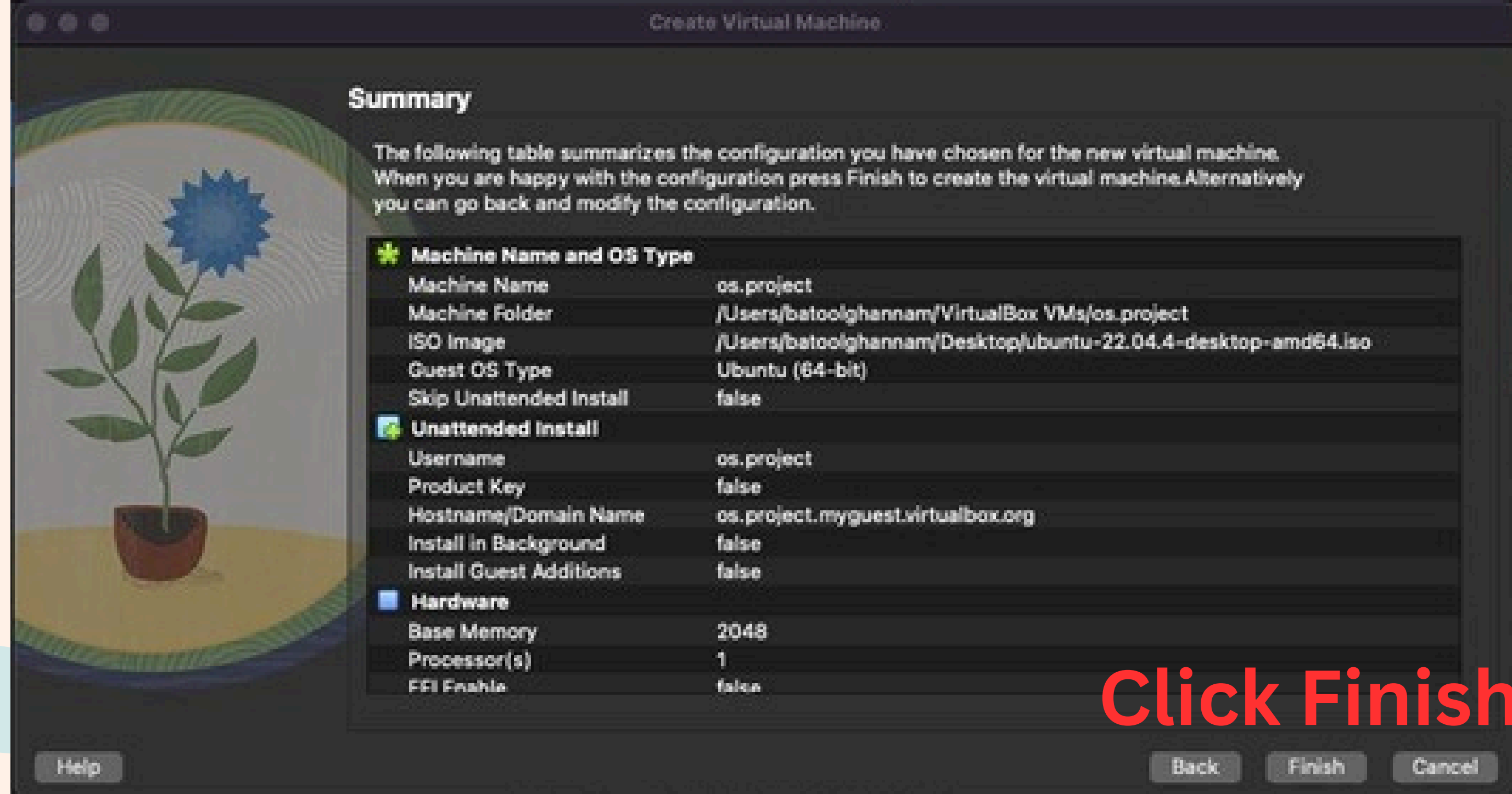
**Step2/ set a username and password for our VM:**

**Step3/ change the RAM amount:**

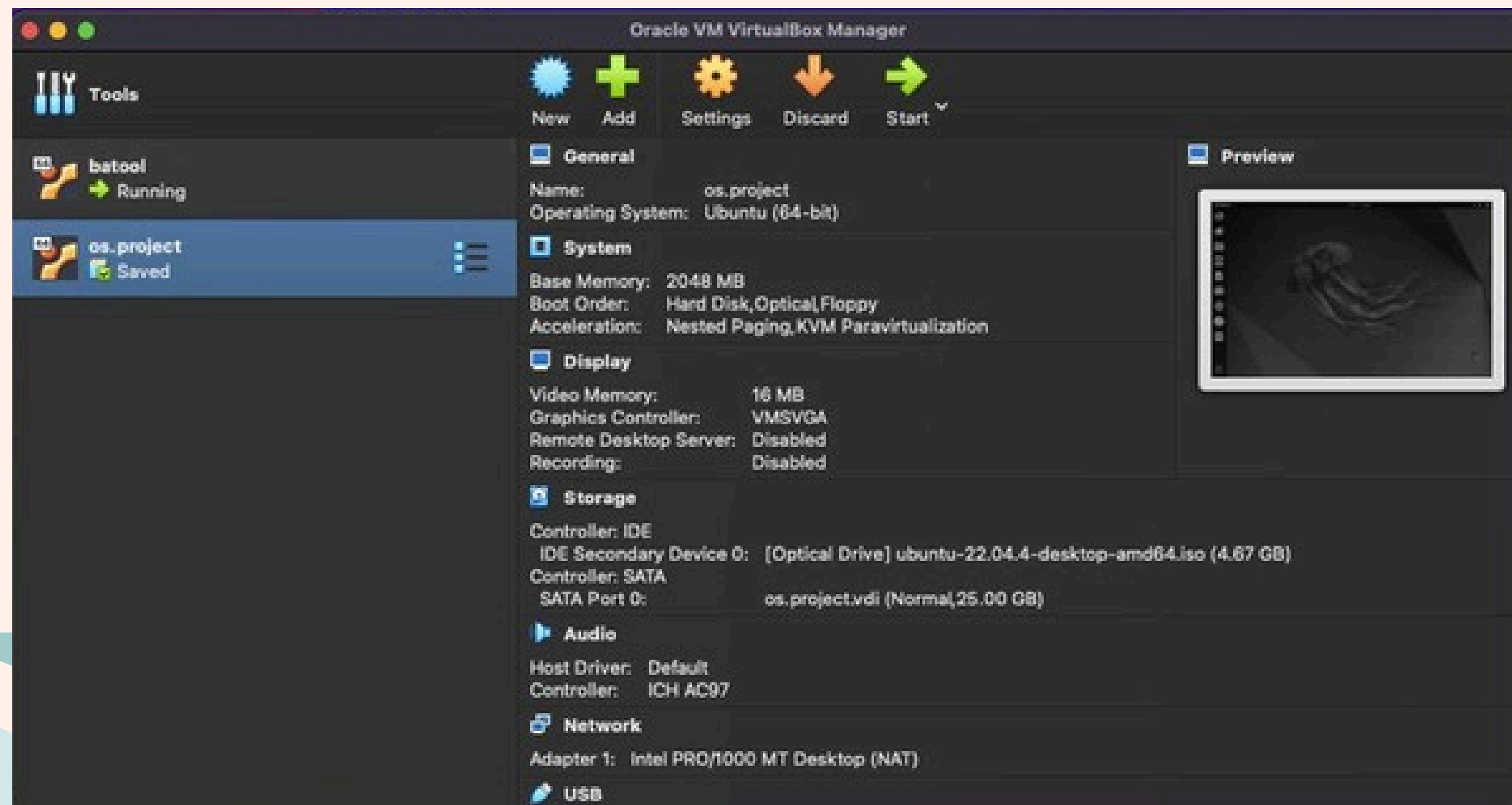
- 1) change your machine hardware to 2048MG
- 2) Change the virtual hard disk to 2GB

These values are the recommended for Ubuntu





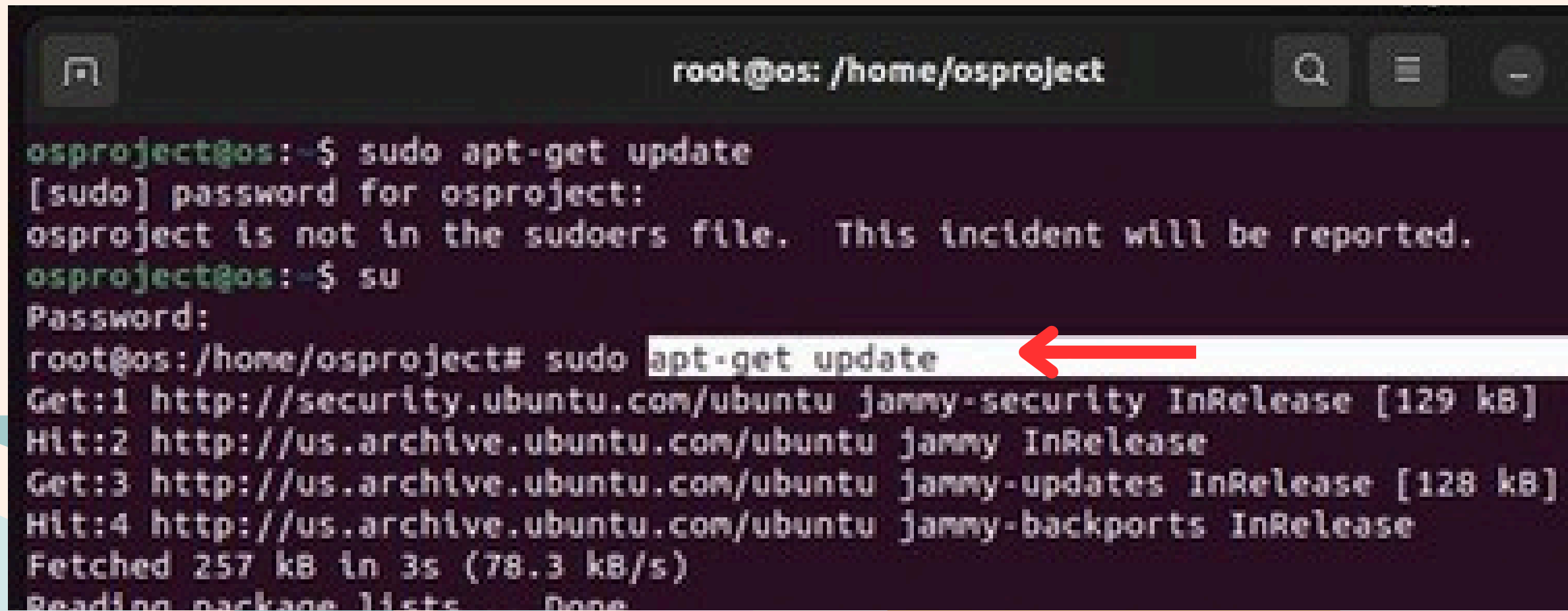
**Step4/ our VM general information:**  
these information (summary) will appear after you  
complete the previous steps.  
it's summarised all configuration you've chosen.



**Now your VM is ready to be used**  
**Click on start**

## \*Additional Steps\*

Step8/ here we run the VM and go to the terminal to use some commands to insure that our VM is working successfully

A terminal window with a dark background. The title bar shows 'root@os: /home/osproject'. The terminal content shows a user 'osproject' running 'sudo apt-get update', entering a password, and receiving a message that they are not in the sudoers file. Then, they run 'su' to become root. The root prompt shows 'root@os:/home/osproject# sudo apt-get update' with a red arrow pointing to it. The output shows the system fetching updates from various sources and reading package lists.

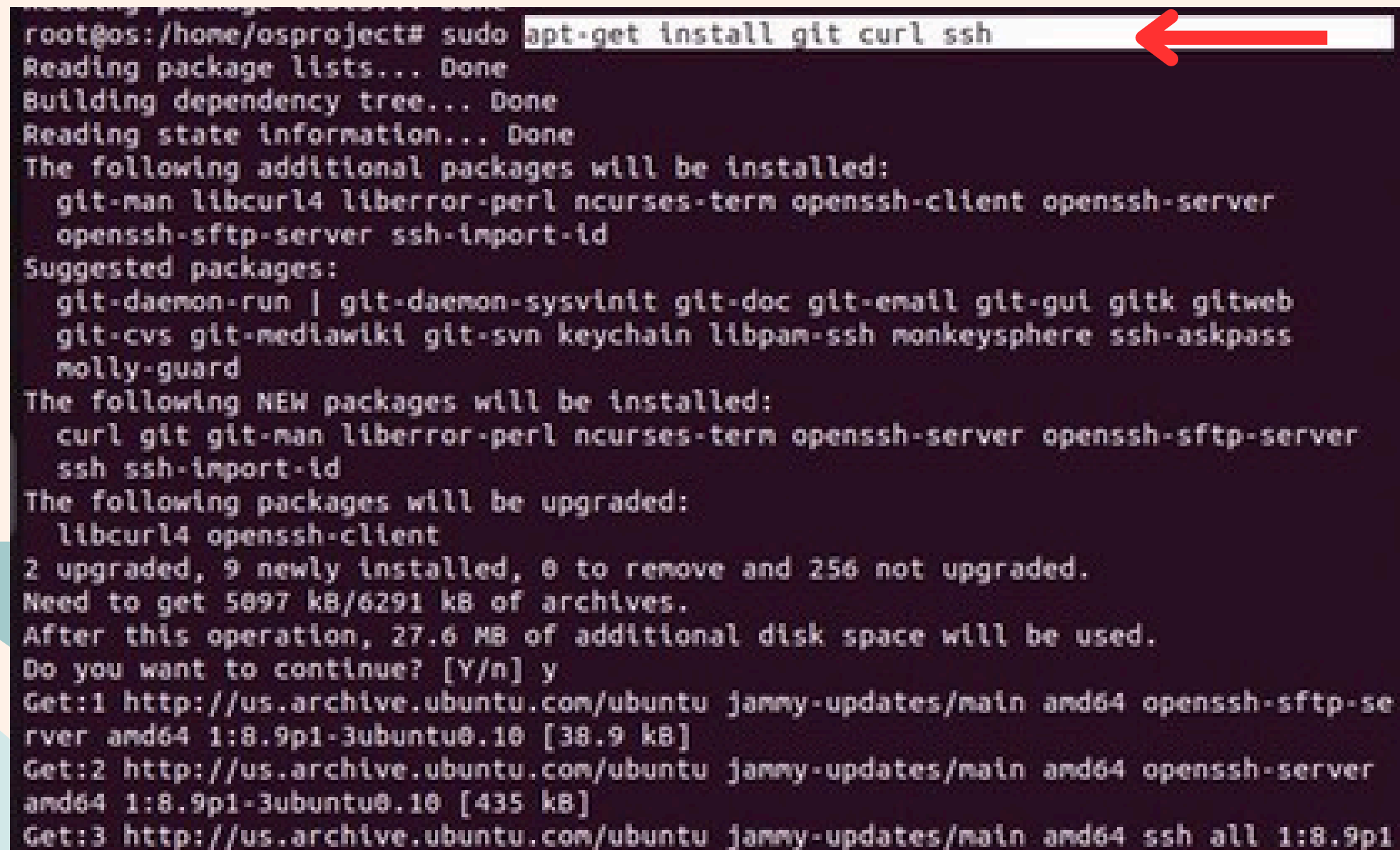
```
root@os: /home/osproject

osproject@os:~$ sudo apt-get update
[sudo] password for osproject:
osproject is not in the sudoers file.  This incident will be reported.
osproject@os:~$ su
Password:
root@os:/home/osproject# sudo apt-get update
Get:1 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:2 http://us.archive.ubuntu.com/ubuntu jammy InRelease
Get:3 http://us.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:4 http://us.archive.ubuntu.com/ubuntu jammy-backports InRelease
Fetched 257 kB in 3s (78.3 kB/s)
Reading package lists... Done
```

we use this command to retrieves  
the information in the system

## \*Additional Steps\*

Step8/ here we run the VM and go to the terminal to use some commands to insure that our VM is working successfully



```
root@os:/home/osproject# sudo apt-get install git curl ssh
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  git-man libcurl4 liberror-perl ncurses-term openssh-client openssh-server
  openssh-sftp-server ssh-import-id
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-email git-gui gitk gitweb
  git-cvs git-mediawiki git-svn keychain libpam-ssh monkeysphere ssh-askpass
  molly-guard
The following NEW packages will be installed:
  curl git git-man liberror-perl ncurses-term openssh-server openssh-sftp-server
  ssh ssh-import-id
The following packages will be upgraded:
  libcurl4 openssh-client
2 upgraded, 9 newly installed, 0 to remove and 256 not upgraded.
Need to get 5097 kB/6291 kB of archives.
After this operation, 27.6 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu jammy-updates/main amd64 openssh-sftp-se
rver amd64 1:8.9p1-3ubuntu0.10 [38.9 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu jammy-updates/main amd64 openssh-server
amd64 1:8.9p1-3ubuntu0.10 [435 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu jammy-updates/main amd64 ssh all 1:8.9p1
```

we use this command to install the  
Git Because we want to put our  
project in the GitHub

## **\*Additional Steps\***

**Step8/** here we run the VM and go to the terminal to use some commands to insure that our VM is working successfully

```
root@os:/home/osproject# git clone https://github.com/Batool-ghannam/osproject1.git
Cloning into 'osproject1'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.
```

**we use this command to put our  
repository link to upload our  
project in it**

## **\*Additional Steps\***

**Our GitHub Repository** You can visit it and see our project Report and Presentation.



# HOW TO CREATE THE VIRTUAL MACHINE?

## Second Way

2

**Create Virtual Machine inside Ubuntu system.**

```
root@os: /home/osproject
root@os:/home/osproject# sudo apt update
Hit:1 http://download.virtualbox.org/virtualbox/debian jam
my InRelease
Get:2 http://security.ubuntu.com/ubuntu jammy-security InR
elease [129 kB]
Hit:3 http://us.archive.ubuntu.com/ubuntu jammy InRelease
Get:4 http://us.archive.ubuntu.com/ubuntu jammy-updates In
Release [128 kB]
Hit:5 http://us.archive.ubuntu.com/ubuntu jammy-backports
InRelease
Get:6 http://security.ubuntu.com/ubuntu jammy-security/main
 amd64 Packages [547 kB]
Get:7 http://security.ubuntu.com/ubuntu jammy-security/main
 amd64 Packages [1854 kB]
Get:8 http://security.ubuntu.com/ubuntu jammy-security/main
 amd64 c-n-f Metadata [13.3 kB]
Get:9 http://security.ubuntu.com/ubuntu jammy-security/unite
rsity amd64 Packages [910 kB]
Get:10 http://us.archive.ubuntu.com/ubuntu jammy-updates/main
 amd64 Packages [2071 kB]
Get:11 http://us.archive.ubuntu.com/ubuntu jammy-updates/main
 amd64 Packages [705 kB]
Get:12 http://us.archive.ubuntu.com/ubuntu jammy-updates/main
```

**we use this command to  
downloads the package  
information from the Internet.  
and It is useful to get info on the  
updated version of packages or  
their dependencies**



```
root@os: /home/osproject
root@os:/home/osproject# sudo apt install virtualbox
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is n
o longer required:
  libstdc++2.0-0
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  libgsoap-2.8.117 liblzfl virtualbox-dkms virtualbox-qt
Suggested packages:
  vde2 virtualbox-guest-additions-iso
The following packages will be REMOVED:
  virtualbox-6.1
The following NEW packages will be installed:
  libgsoap-2.8.117 liblzfl virtualbox virtualbox-dkms
  virtualbox-qt
0 upgraded, 5 newly installed, 1 to remove and 260 not upg
raded.
Need to get 46.4 MB of archives.
After this operation, 45.6 MB disk space will be freed.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu jammy/universe a
nd64 libgsoap-2.8.117 amd64 2.8.117-2build1 [269 kB]
```

**we use this command to install  
VirtualBox package from the  
official repositories on the Ubuntu**

```
root@os: /home/osproject

root@os:/home/osproject# VBoxManage --version
6.1.50_Ubuntur161033
root@os:/home/osproject#
```

we use this command to see the latest VirtualBox version installed via the Ubuntu repository

```
root@os:/home/osproject# wget https://download.virtualbox.org/virtualbox/7.0.14/Oracle_VM_VirtualBox_Extension_Pack-7.0.14.vbox-extpack
--2024-10-15 13:57:28-- https://download.virtualbox.org/virtualbox/7.0.14/Oracle_VM_VirtualBox_Extension_Pack-7.0.14.vbox-extpack
Resolving download.virtualbox.org (download.virtualbox.org)... 23.209.88.118
Connecting to download.virtualbox.org (download.virtualbox.org)|23.209.88.118|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 18331089 (17M) [text/plain]
Saving to: 'Oracle_VM_VirtualBox_Extension_Pack-7.0.14.vbox-extpack'

Oracle_VM_VirtualBo 100%[=====>] 17.48M  6.94MB/s   in 2.5s

2024-10-15 13:57:33 (6.94 MB/s) - 'Oracle_VM_VirtualBox_Extension_Pack-7.0.14.vbox-extpack' saved [18331089/18331089]

root@os:/home/osproject# sudo VBoxManage extpack install Oracle_VM_VirtualBox_Extension_Pack-7.0.14.vbox-extpack
VirtualBox Extension Pack Personal Use and Evaluation License (PUEL)
```

we use this command to The current extension pack version on the VirtualBox website is 7.0.14. And it's adds additional features to VirtualBox

```
root@os:/home/osproject# sudo VBoxManage extpack install Oracle_VM_VirtualBox_Extension_Pack-7.0.14.vbox-extpack  
VirtualBox Extension Pack Personal Use and Evaluation License (PUEL)
```

**we use this command to install  
the Oracle VM VirtualBox  
Extension Pack that we've  
previously downloaded.**

```

or Santa Clara counties in California in any dispute arising
relating to this Agreement. Upon 45 days written notice, Oracle
audit your use of the Product to confirm that you are in compliance
with the terms of this Agreement. You agree to cooperate with the
audit and provide reasonable assistance and access to information.
such audit shall not unreasonably interfere with your normal business
operations. You agree to pay within 30 days of written notice,
any fees applicable to your unlicensed use of the Product,
that Oracle shall not be responsible for any of your costs
cooperating with the audit. If a legal action or proceeding is
brought by either party in connection with the enforcement of this
Agreement, the prevailing party shall be entitled to its costs and attorney
fees actually incurred in connection with such action or proceeding.

Do you agree to these license terms and conditions (y/n)? y

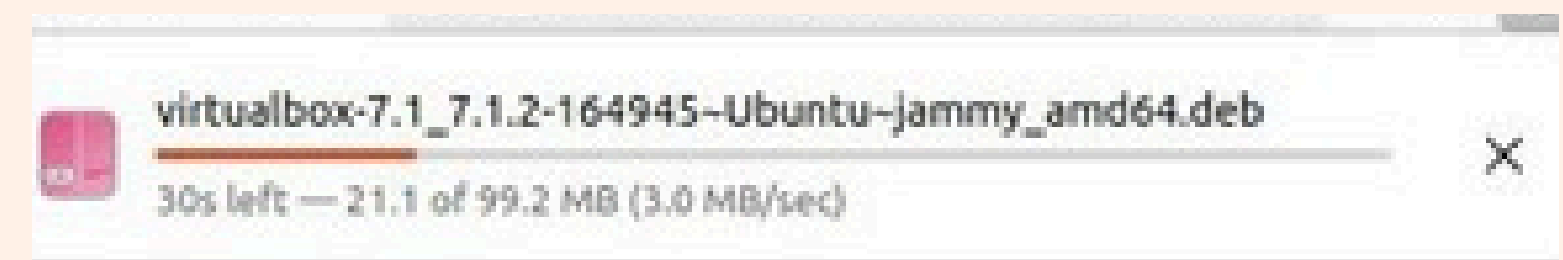
License accepted. For batch installation add
--accept-license=33d7284dc4a8ece381196fda3cfe2ed8e1e8e7ed7f
C
to the VBoxManage command line.

0%...10%...20%...30%...40%...50%...60%...70%...80%...90%...
Successfully installed "Oracle VM VirtualBox Extension Pack"
root@os:/home/osproject#

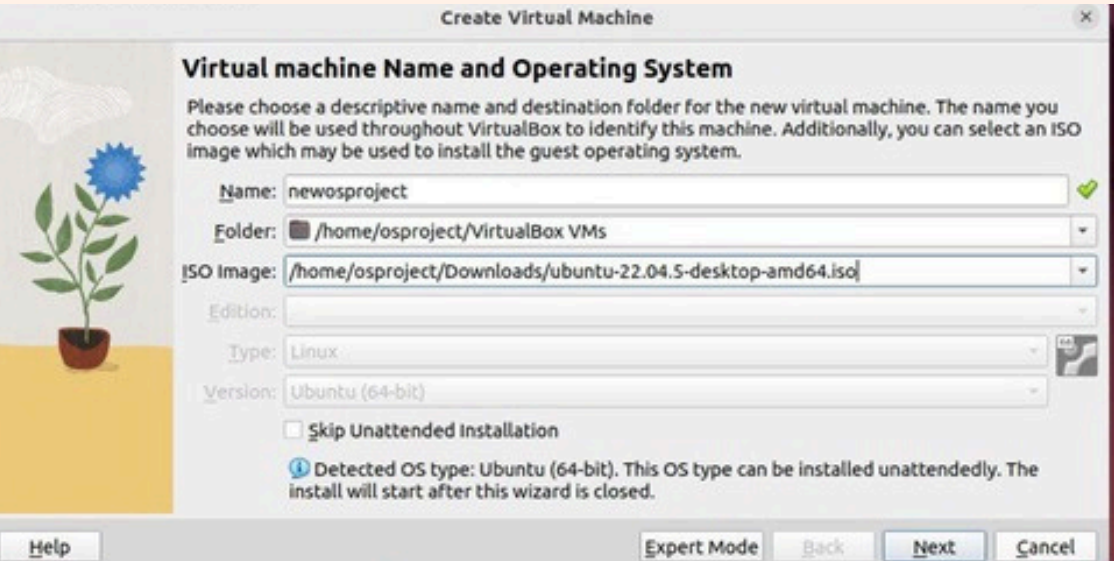
```

we use this command to Confirm  
the installation and  
allow the process to complete

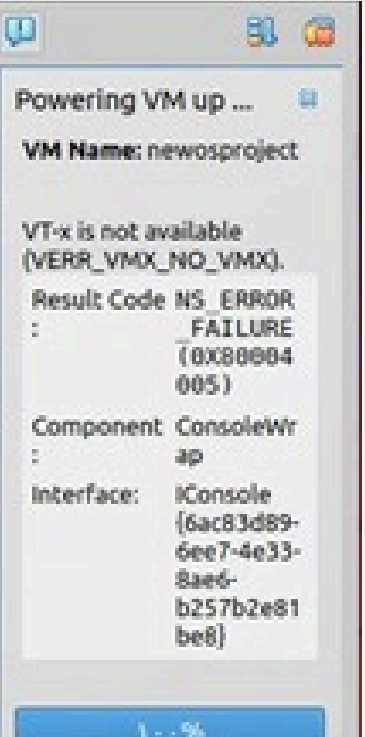
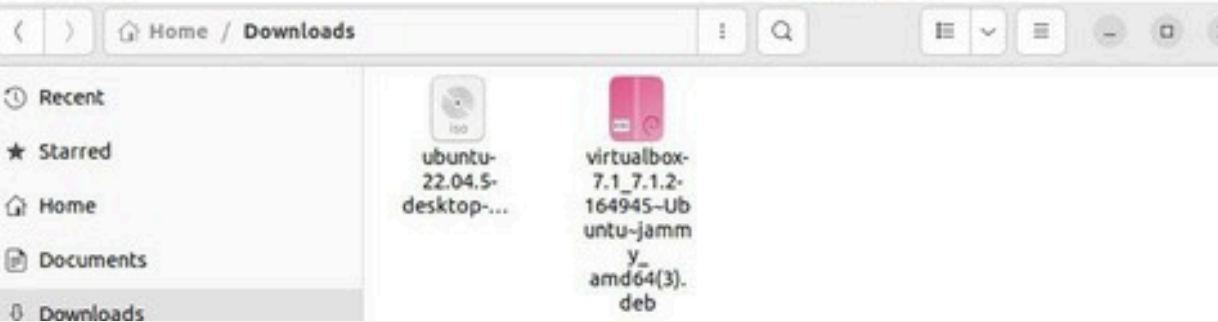
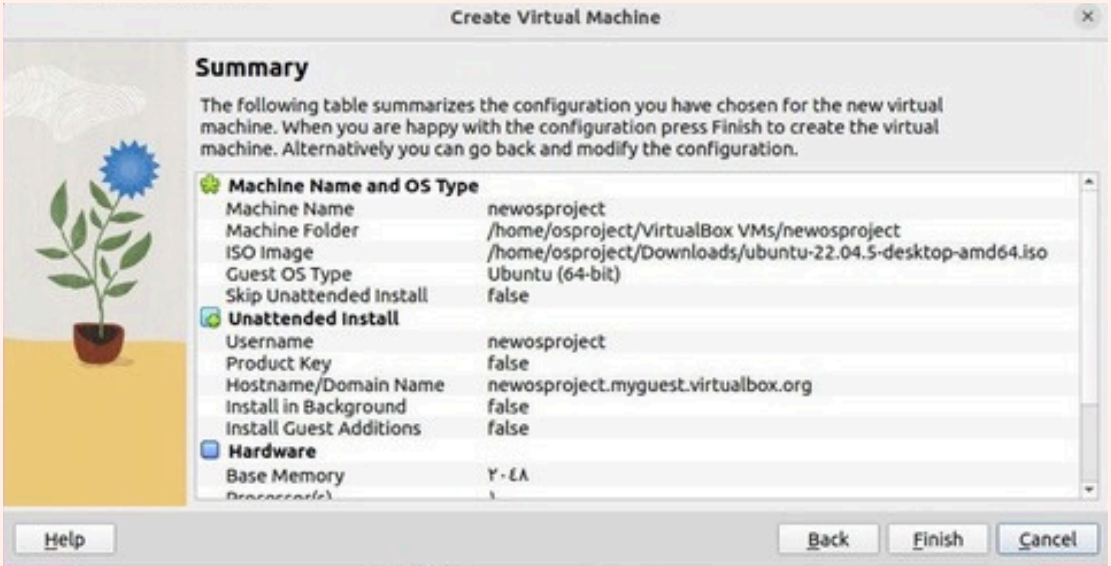
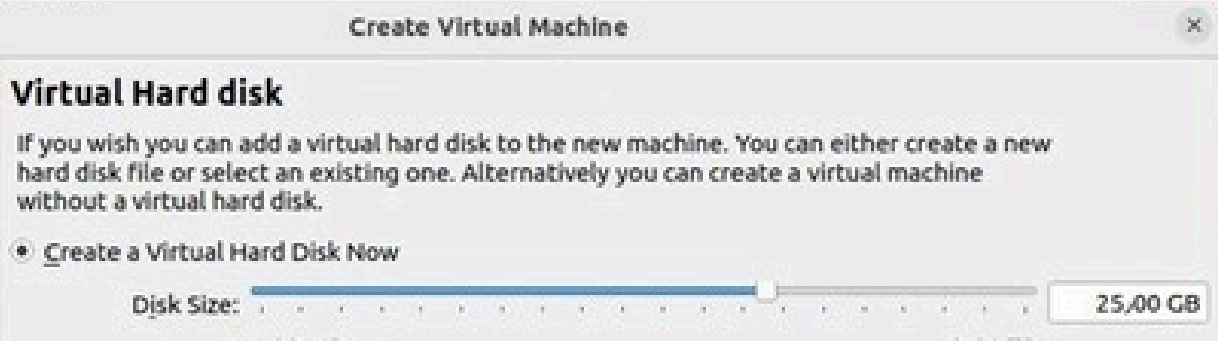
- Oracle Linux 9 / Red Hat Enterprise Linux 9
- Oracle Linux 8 / Red Hat Enterprise Linux 8
- Ubuntu 24.04
- **Ubuntu 22.04**
- Ubuntu 20.04
- Debian 12
- Debian 11
- openSUSE 15.3 / 15.4 / 15.5 / 15.6
- Fedora 40
- Fedora 36 / 37 / 38 / 39
- All distributions (built on EL6 and therefore not requiring recent system libraries)



Choose the appropriate version



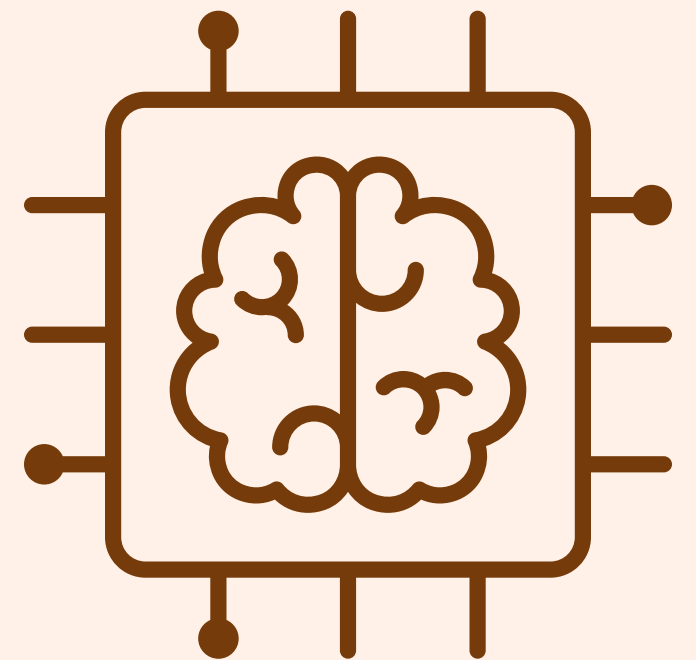
After downloading the VirtualBox successfully, this page will appear when you open it



Some issues are appeared when we want run the VM.  
-we've downloaded the ISO file successfully.  
but we think the issues appear because the storage of the RAM is full so it's can not run the VM.

## What we learn ?

- 1- There is several ways to Create Virtual Machine.
- 2- You can Create Virtual Machine inside different Virtual Machine.
- 3- The Virtual Machine used the physical computer resources.
- 4- You should making sure that you have an enough storage space Before create it.







**Thank you  
for listening**