AI TASK

What is ROS:

ROS is an open-source, meta-operating system for your robot. It provides the services you would expect from an operating system, including hardware abstraction, low-level device control, implementation of commonly-used functionality, message-passing between processes, and package management.

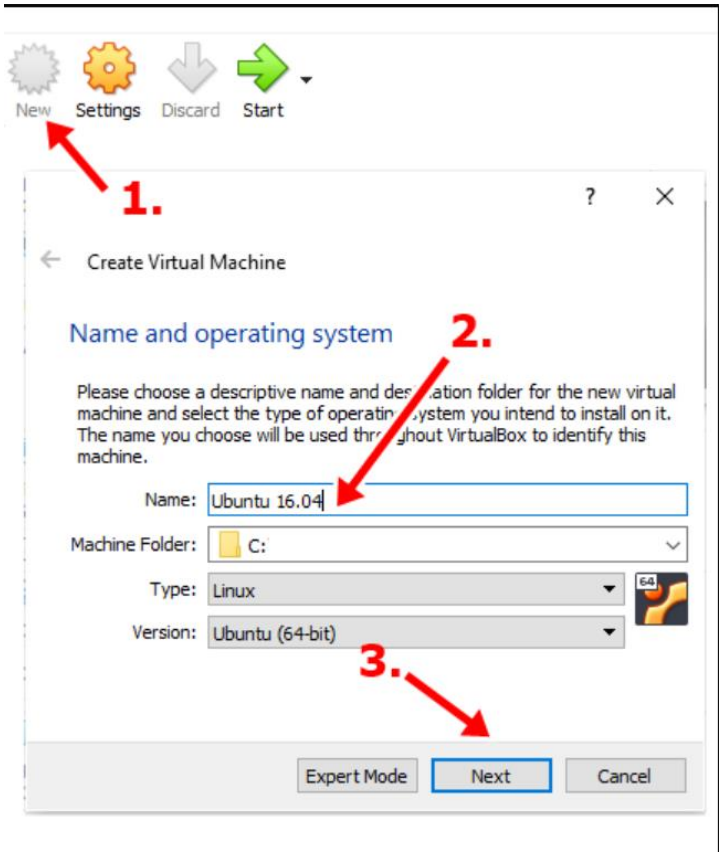
For install ROS

1: Install VirtualBox

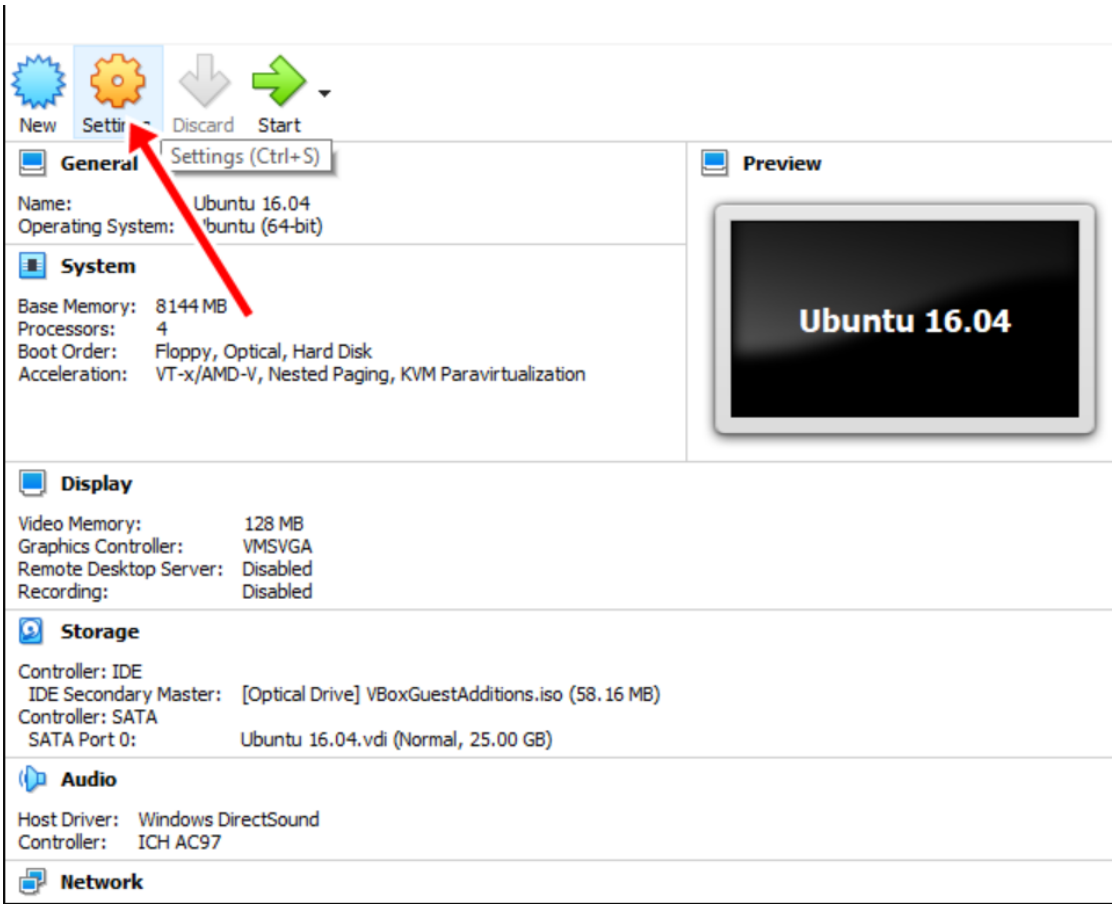
1- Go to www.virtualbox.org and download the newest version of VirtualBox

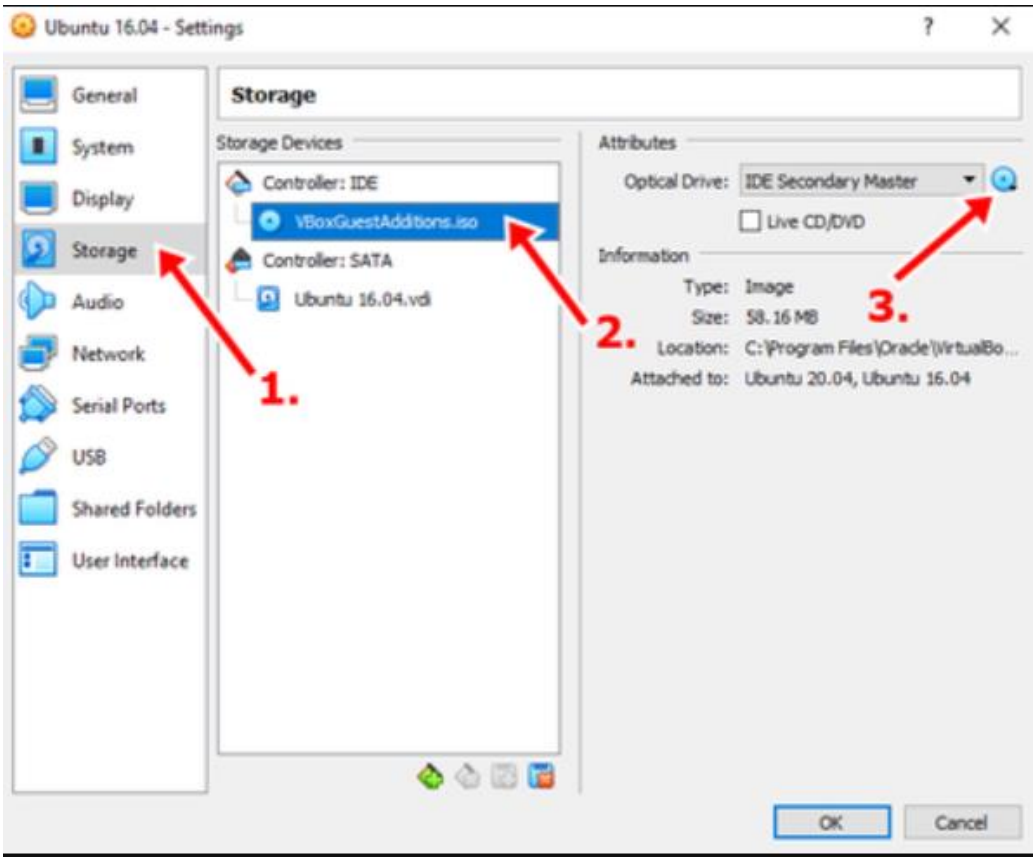
2- Install VirtualBox

3- Download Ubuntu 16.04 (Xenial) as ISO file
- https://releases.ubuntu.com/16.04/



2: Configurating the VirtualMachine





3: Booting and Installing Ubuntu on VirtualBox

4: Install ROS Kinetic Kame

5: Install Arduino IDE

6: Including ROS Library

Task 2:

Download ROS on jetson nano :

The installROS repository on the JetsonHacksNano account on Github contains convenience scripts to help us install ROS. The main script, installROS.sh, is a straightforward implementation of the install instructions taken from the ROS Wiki. The instructions install ROS Melodic on the Jetson Nano.

You can clone the repository on to the Jetson:

```
$ git clone https://github.com/JetsonHacksNano/installROS.git
$ cd installROS
```

installROS.sh

The install script installROS.sh will install the prerequisites and ROS packages you specify. Usage:

```
Usage: ./installROS.sh  [[-p package] | [-h]]
 -p | --package <packagename>  ROS package to install
                               Multiple Usage allowed
                               The first package should be a base
package. One of the following:
                                 ros-melodic-ros-base
                                 ros-melodic-desktop
                                 ros-melodic-desktop-full
```

Default is ros-melodic-ros-base if do not specify any packages. Typically people will install ros-base if they are not running any desktop applications on the robot.

Example Usage:

```
$ ./installROS.sh -p ros-melodic-desktop -p ros-melodic-rgbd-launch
```

This script installs a baseline ROS environment. There are several tasks:

- Enable repositories universe, multiverse, and restricted
- Adds the ROS sources list
- Sets the needed keys
- Loads specified ROS packages (*defaults to ros-melodic-base-ros if none specified*)
- Initializes rosdep

You can edit this file to add the ROS packages for your application.

setupCatkinWorkspace.sh

setupCatkinWorkspace.sh builds a Catkin Workspace.

Usage:

```
$ ./setupCatkinWorkspace.sh [optionalWorkspaceName]
```

where optionalWorkspaceName is the name and path of the workspace to be used. The default workspace name is catkin_ws. If a path is not specified, the default path is the current home directory. This script also sets up some ROS environment variables.

The script sets placeholders for some ROS environment variables in the file ~/.bashrc

The script .bashrc is located in the home directory. The preceding period indicates that the file is “hidden”. The names of the ROS variables that the script adds are (they should be towards the bottom of the .bashrc file):

- ROS_MASTER_URI
- ROS_IP

The script sets ROS_MASTER_URI to the local host, and basically lists the network interfaces after the ROS_IP entry. You will need to configure these variables for your robots network configuration and how you desire your network topology.

Sources:

https://www.virtualbox.org

https://www.instructables.com/How-to-Install-ROS

http://wiki.ros.org/noetic/Installation/Ubuntu

https://ubuntu.com/download/desktop

https://docs.ros.org/en/foxy/Installation/Ubuntu-Install-Debians.html#id8

https://jetsonhacks.com/2019/10/23/install-ros-on-jetson-nano

Install ROS on Jetson Nano - JetsonHacks