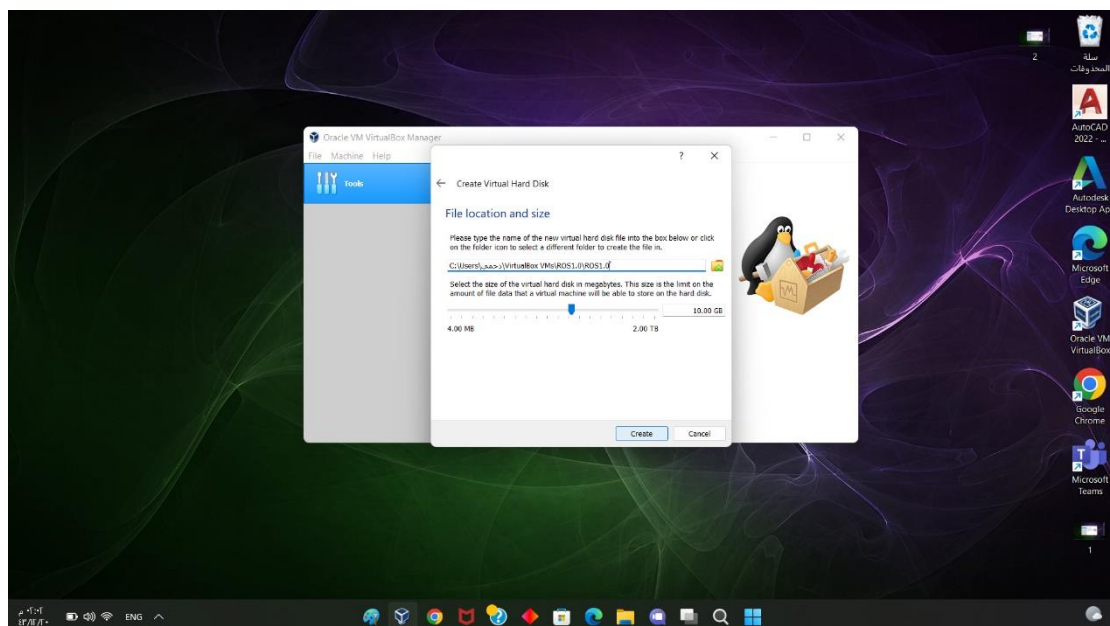
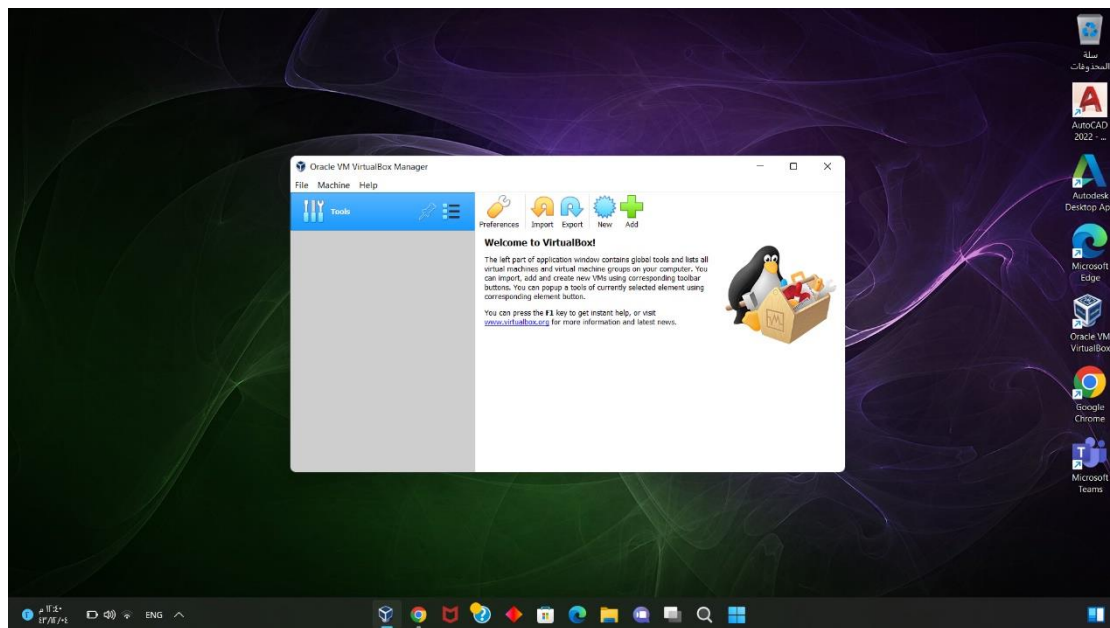


ROS download steps:

Step1: download virtualBox

Step2: download ubuntu

Step3: Create a device in virtualBox and use ubuntu to turn on Linux



## Step4: Type the commands in Terminal

```
sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc)
main" > /etc/apt/sources.list.d/ros-latest.list'

sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key
C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654

sudo apt-get update

sudo apt-get install ros-kinetic-desktop-full

apt-cache search ros-kinetic

echo "source /opt/ros/kinetic/setup.bash" >> ~/.bashrc
source ~/.bashrc

sudo apt install python-rosdep python-rosinstall python-rosinstall-generator
python-wstool build-essential

sudo apt install python-rosdep

sudo rosdep init

rosdep update

sudo apt-get install ros-noetic-catkin

mkdir -p ~/catkin_ws/src

cd ~/catkin_ws/

catkin_make

cd ~/catkin_ws/src

git clone https://github.com/smart-methods/arduino_robot_arm.git

cd ~/catkin_ws

rosdep install --from-paths src --ignore-src -r -y

sudo apt-get install ros-kinetic-moveit

sudo apt-get install ros-kinetic-joint-state-publisher ros-kinetic-joint-
state-publisher-gui

sudo apt-get install ros-kinetic-gazebo-ros-control joint-state-publisher

sudo apt-get install ros-kinetic-ros-controllers ros-kinetic-ros-control

sudo nano ~/.bashrc

at the end of the (bashrc) file add the follwing line
(source /home/wesam/catkin_ws/devel/setup.bash)
then
ctrl + o

source ~/.bashrc

roslaunch robot_arm_pkg check_motors.launch
```

Now ROS and becket arm work

