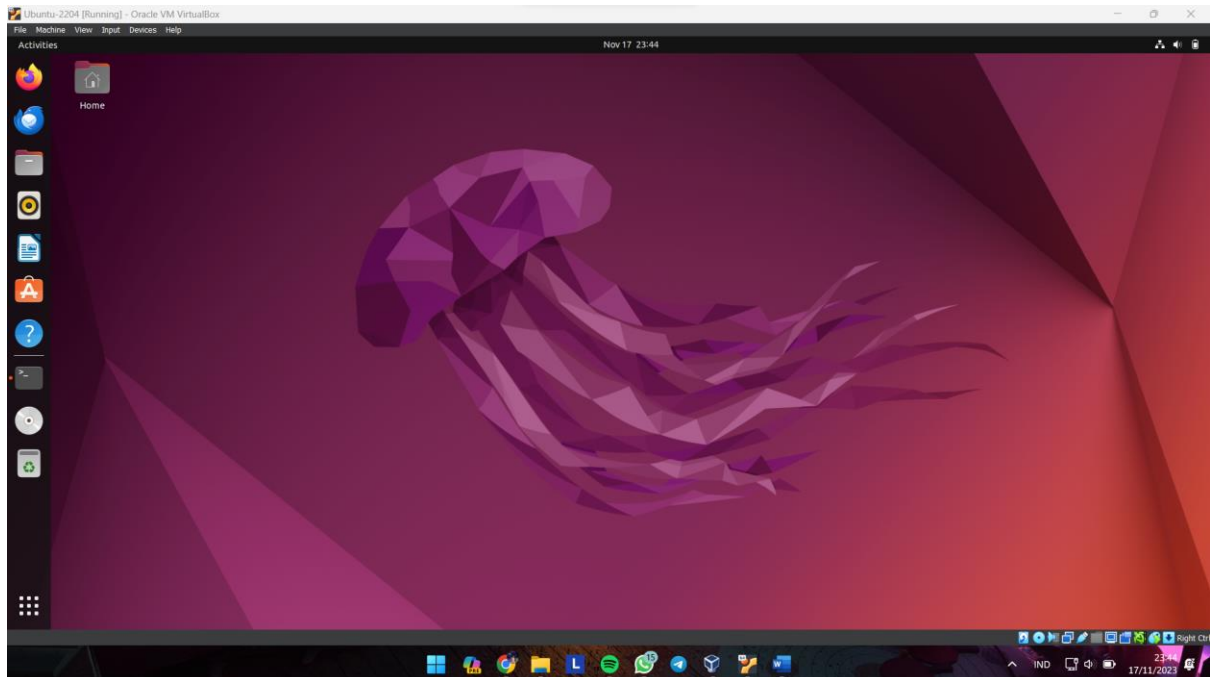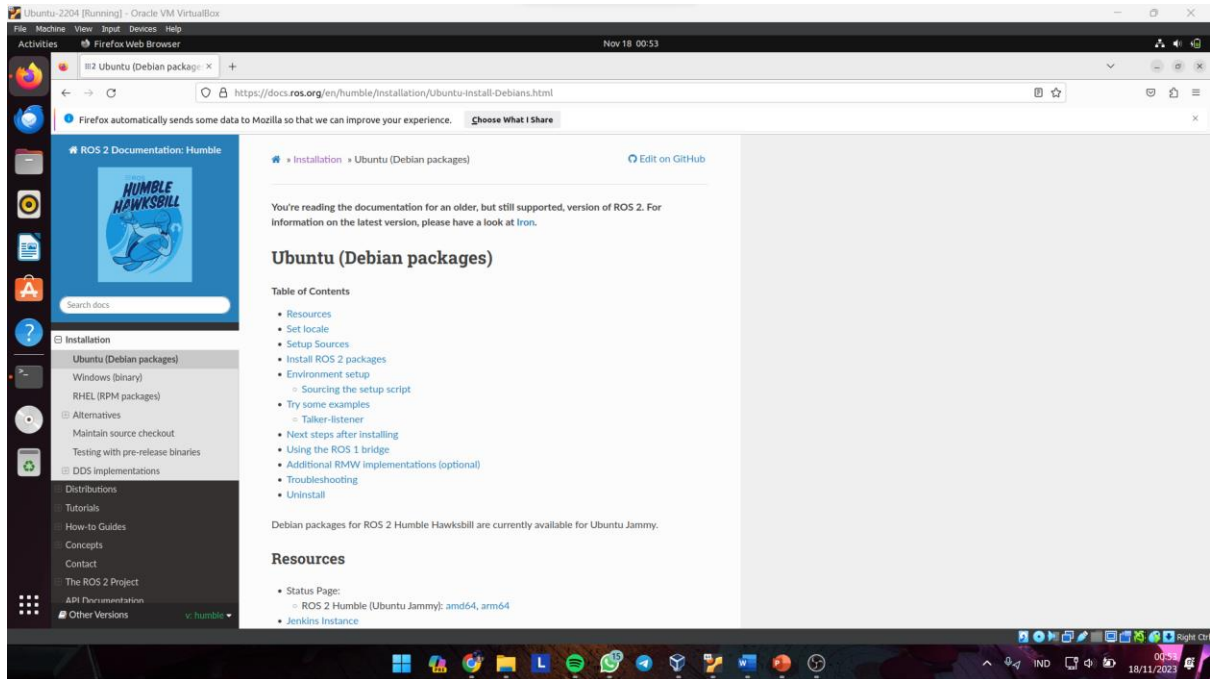MUHAMMAD IKHWAN MAULANA

1103203219

Intro: Install and Setup ROS2 Humble - ROS2 Tutorial 1

1. Siapkan virtual machine yang sudah ter install ubuntu linux terlebih dahulu, disini saya menggunakan ubuntu 22.04.3

2. Lalu buka firefox web browser dan buka link https://docs.ros.org/en/humble/Installation/Ubuntu-Install-Debians.html

3. Scroll sedikit kebawah, nanti akan ada perintah perintah yang akan digunakan pada terminal
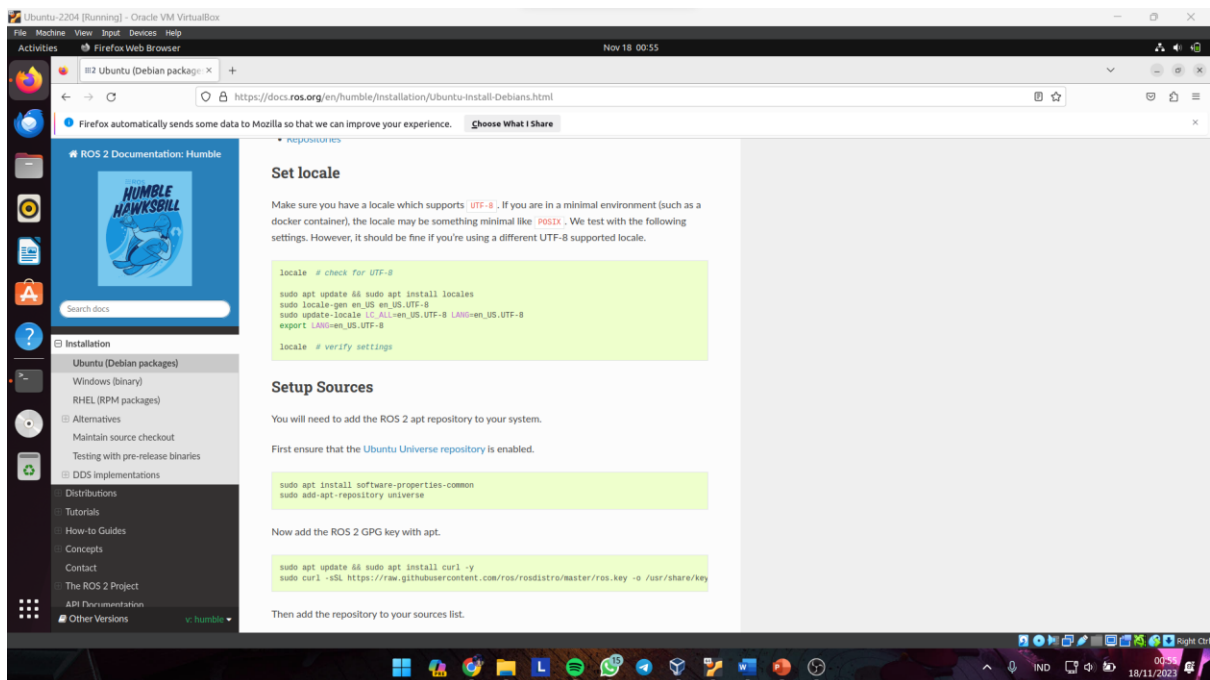
4. Buka terminal lalu ikuti langkah langkahnya
5. Langkah pertama yaitu **Set Locate**

6. Langkah selanjutnya yaitu **Setup Sources**

Ubuntu-2204 [Running] - Oracle VM VirtualBox

File   Machine   View   Input   Devices   Help

Activities   Firefox Web Browser   Nov 18 00:58

ikhwan@Ubuntu-2204: ~

```
LC_ALL=
ikhwan@Ubuntu-2204:~$ sudo apt install software-properties-common
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
software-properties-common is already the newest version (0.99.22.7).
software-properties-common set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 96 not upgraded.
ikhwan@Ubuntu-2204:~$ sudo add-apt-repository universe
Adding component(s) 'universe' to all repositories.
Press [ENTER] to continue or Ctrl-c to cancel.
Hit:1 http://id.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://id.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://id.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
ikhwan@Ubuntu-2204:~$ sudo apt update && sudo apt install curl -y
Hit:1 http://id.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://id.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://id.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
96 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libcurl4
The following NEW packages will be installed:
  curl
The following packages will be upgraded:
  libcurl4
1 upgraded, 1 newly installed, 0 to remove and 95 not upgraded.
Need to get 194 kB/484 kB of archives.
After this operation, 454 kB of additional disk space will be used.
Get:1 http://id.archive.ubuntu.com/ubuntu jammy-updates/main amd64 curl amd64 7.81.0-1ubuntu1.14 [194 kB]
Fetched 194 kB in 0s (1,099 kB/s)
(Reading database ... 204676 files and directories currently installed.)
Preparing to unpack .../libcurl4_7.81.0-1ubuntu1.14_amd64.deb ...
Unpacking libcurl4:amd64 (7.81.0-1ubuntu1.14) over (7.81.0-1ubuntu1.13) ...
Selecting previously unselected package curl.
Preparing to unpack .../curl_7.81.0-1ubuntu1.14_amd64.deb ...
Unpacking curl (7.81.0-1ubuntu1.14) ...
```
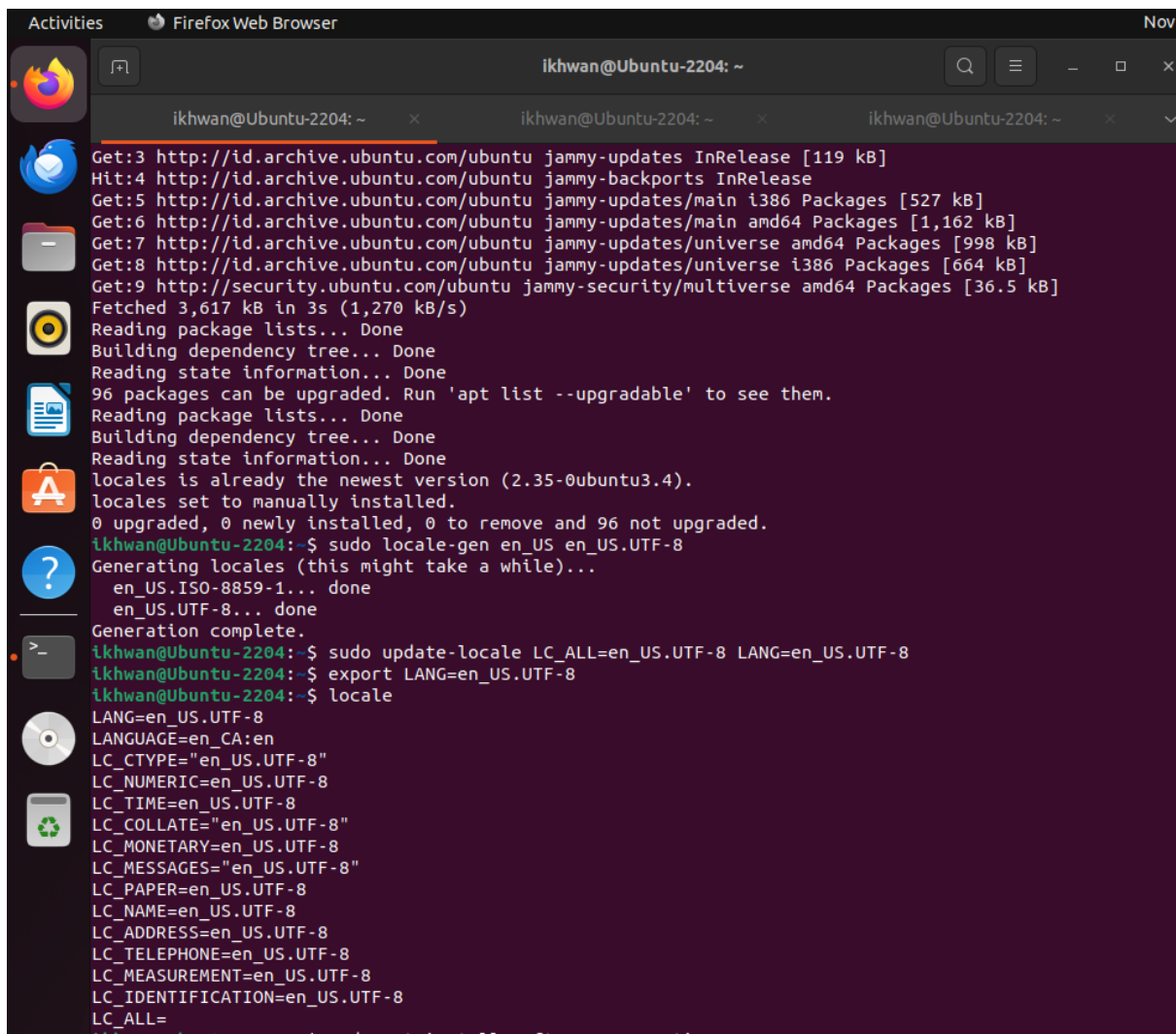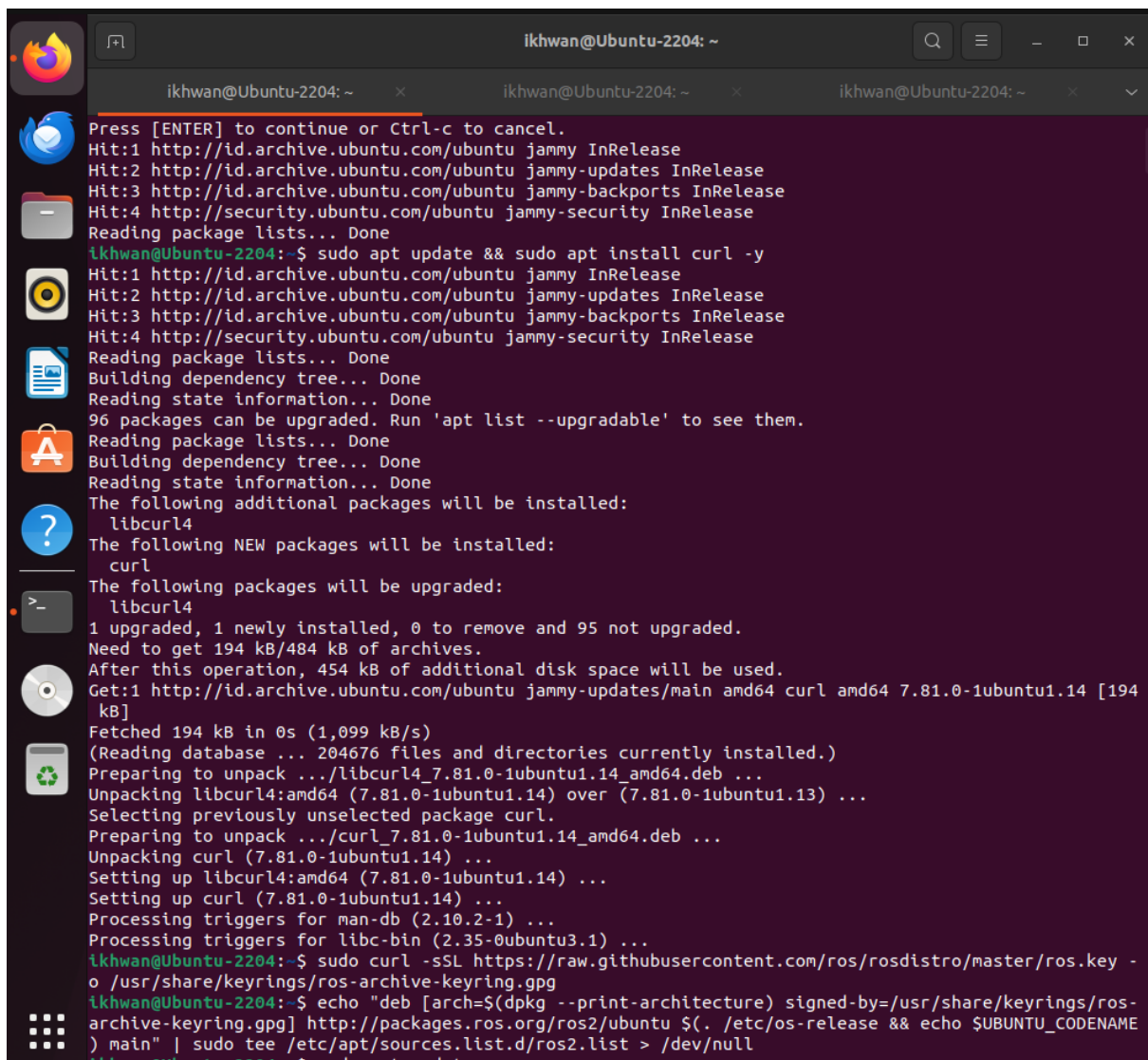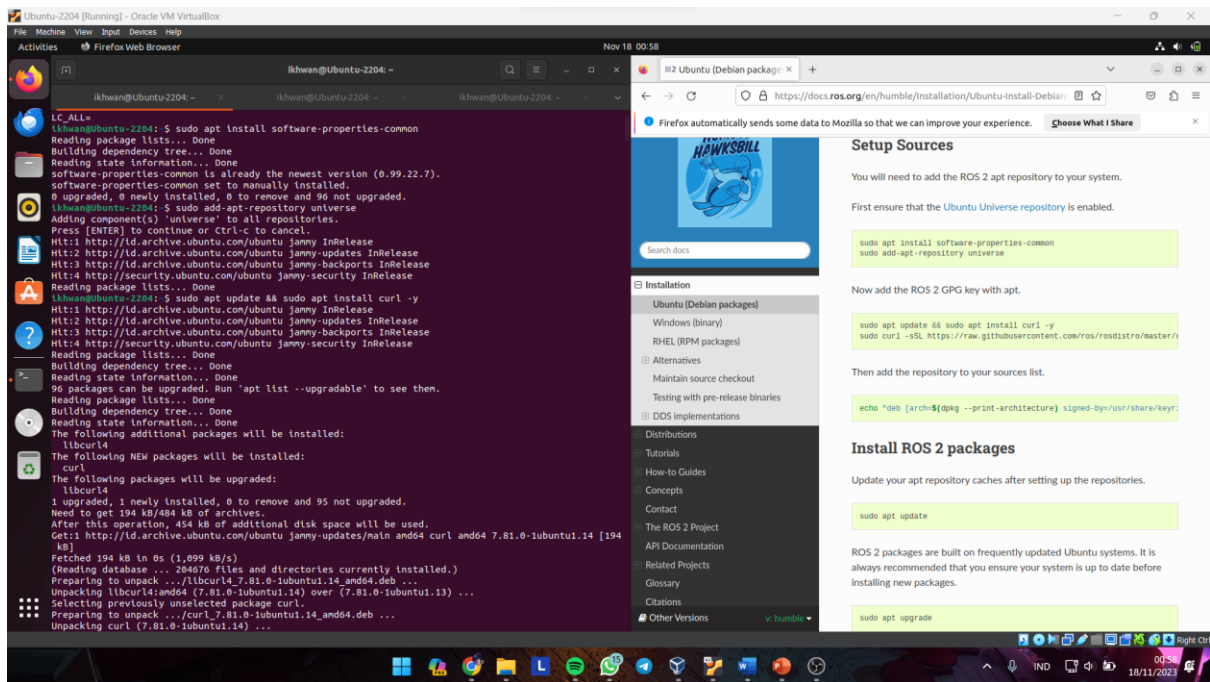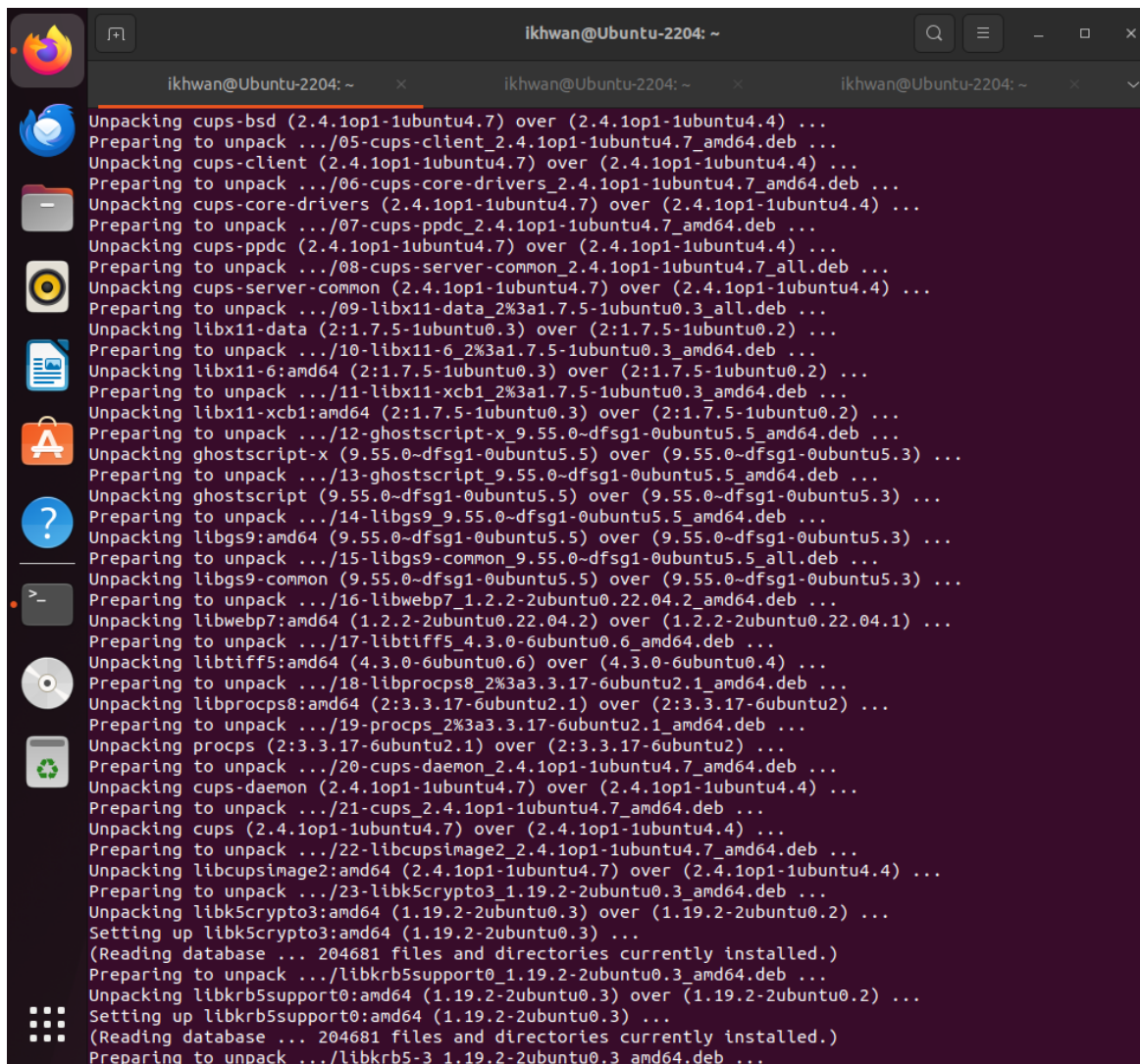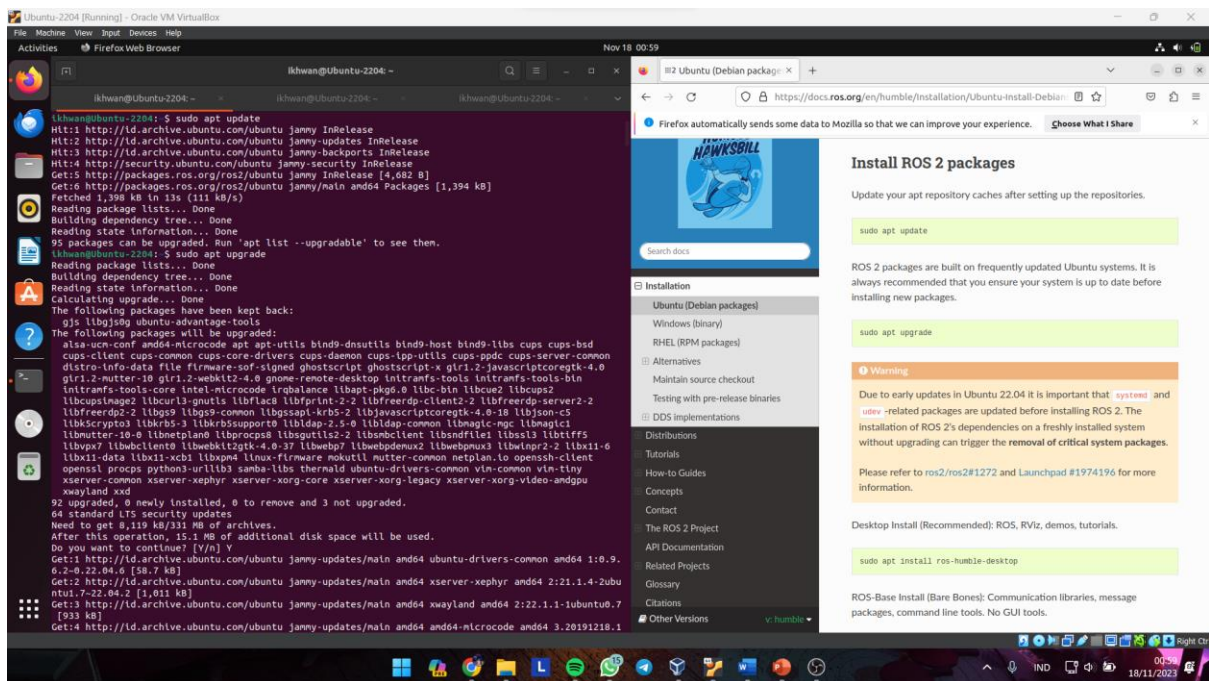
Setup Sources

You will need to add the ROS 2 apt repository to your system.

First ensure that the Ubuntu Universe repository is enabled.

```
sudo apt install software-properties-common
sudo add-apt-repository universe
```

Now add the ROS 2 GPG key with apt.

```
sudo apt update && sudo apt install curl -y
sudo curl -sSL https://raw.githubusercontent.com/ros/rosdistro/master/
```

Then add the repository to your sources list.

```
echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyr
```

Install ROS 2 packages

Update your apt repository caches after setting up the repositories.

```
sudo apt update
```

ROS 2 packages are built on frequently updated Ubuntu systems. It is always recommended that you ensure your system is up to date before installing new packages.

```
sudo apt upgrade
```

---

ikhwan@Ubuntu-2204: ~

```
Press [ENTER] to continue or Ctrl-c to cancel.
Hit:1 http://id.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://id.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://id.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
ikhwan@Ubuntu-2204:~$ sudo apt update && sudo apt install curl -y
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Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
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The following additional packages will be installed:
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After this operation, 454 kB of additional disk space will be used.
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Selecting previously unselected package curl.
Preparing to unpack .../curl_7.81.0-1ubuntu1.14_amd64.deb ...
Unpacking curl (7.81.0-1ubuntu1.14) ...
Setting up libcurl4:amd64 (7.81.0-1ubuntu1.14) ...
Setting up curl (7.81.0-1ubuntu1.14) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
ikhwan@Ubuntu-2204:~$ sudo curl -sSL https://raw.githubusercontent.com/ros/rosdistro/master/ros.key -o /usr/share/keyrings/ros-archive-keyring.gpg
ikhwan@Ubuntu-2204:~$ echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/ros-archive-keyring.gpg] http://packages.ros.org/ros2/ubuntu $(. /etc/os-release && echo $UBUNTU_CODENAME) main" | sudo tee /etc/apt/sources.list.d/ros2.list > /dev/null
ikhwan@Ubuntu-2204:~$ sudo apt update
```

7. Langkah selanjutnya adalah **Install ROS2 Packages**

8. Selanjutnya kita masuk ke **Environment Setup**
9. Kita cek apakah ROS2 sudah ter install dan atur atau belum dengan mengetik command "ros2"

10. Terlihat pesan "ros2: command not found" itu terjadi karena kita belum memasukkan command "source /opt/ros/humble/setup.bash", kita lihat setelah memasukkan command "source /opt/ros/humble/setup.bash", maka terlihat informasi bahwa ros2 sudah ter install dan sudah kita atur

```
ikhwan@Ubuntu-2204:~$ source /opt/ros/humble/setup.bash
ikhwan@Ubuntu-2204:~$ ros2
usage: ros2 [-h] [--use-python-default-buffering]
            Call `ros2 <command> -h` for more detailed usage. ...

ros2 is an extensible command-line tool for ROS 2.

options:
  -h, --help              show this help message and exit
  --use-python-default-buffering
                          Do not force line buffering in stdout and instead use the python default
                          buffering, which might be affected by PYTHONUNBUFFERED/-u and depends on
                          whatever stdout is interactive or not

Commands:
  action      Various action related sub-commands
  bag         Various rosbag related sub-commands
  component   Various component related sub-commands
  daemon      Various daemon related sub-commands
  doctor      Check ROS setup and other potential issues
  interface   Show information about ROS interfaces
  launch      Run a launch file
  lifecycle   Various lifecycle related sub-commands
  multicast   Various multicast related sub-commands
  node        Various node related sub-commands
  param       Various param related sub-commands
  pkg         Various package related sub-commands
  run         Run a package specific executable
  security    Various security related sub-commands
  service     Various service related sub-commands
  topic       Various topic related sub-commands
  wtf         Use `wtf` as alias to `doctor`

  Call `ros2 <command> -h` for more detailed usage.
ikhwan@Ubuntu-2204:~$ gedit ~/.bashrc
```

11. Kita coba buka terminal baru dan ketik comman "ros2", maka akan muncul command "ros2: command not found", agar setiap kita ketik command "ros2" keluar informasi, maka kita akan masuk ke dalam file bash dan kita masukkan command "source /opt/ros/humble/setup.bash"

```
84     alias egrep='egrep --color=auto'
85 fi
86
87 # colored GCC warnings and errors
88 #export GCC_COLORS='error=01;31:warning=01;35:note=01;36:caret=01;32:locus=01:quote=01'
89
90 # some more ls aliases
91 alias ll='ls -alF'
92 alias la='ls -A'
93 alias l='ls -CF'
94
95 # Add an "alert" alias for long running commands.  Use like so:
96 #   sleep 10; alert
97 alias alert='notify-send --urgency=low -i "$([ $? = 0 ] && echo terminal || echo error)" "$
   (history|tail -n1|sed -e '\''s/^\s*[0-9]\+\s*//;s/[;&|]\s*alert$//'\'')"'
98
99 # Alias definitions.
100 # You may want to put all your additions into a separate file like
101 # ~/.bash_aliases, instead of adding them here directly.
102 # See /usr/share/doc/bash-doc/examples in the bash-doc package.
103
104 if [ -f ~/.bash_aliases ]; then
105     . ~/.bash_aliases
106 fi
107
108 # enable programmable completion features (you don't need to enable
109 # this, if it's already enabled in /etc/bash.bashrc and /etc/profile
110 # sources /etc/bash.bashrc).
111 if ! shopt -oq posix; then
112   if [ -f /usr/share/bash-completion/bash_completion ]; then
113     . /usr/share/bash-completion/bash_completion
114   elif [ -f /etc/bash_completion ]; then
115     . /etc/bash_completion
116   fi
117 fi
118
119 source /opt/ros/humble/setup.bash
```



```
ikhwan@Ubuntu-2204:~$ ros2
usage: ros2 [-h] [--use-python-default-buffering]
            Call `ros2 <command> -h` for more detailed usage. ...

ros2 is an extensible command-line tool for ROS 2.

options:
  -h, --help            show this help message and exit
  --use-python-default-buffering
                        Do not force line buffering in stdout and instead use the python default
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  run        Run a package specific executable
  security   Various security related sub-commands
  service    Various service related sub-commands
  topic      Various topic related sub-commands
  wtf        Use `wtf` as alias to `doctor`

  Call `ros2 <command> -h` for more detailed usage.
ikhwan@Ubuntu-2204:~$
```

12. Selamat, ROS2 sudah ter install dan sudah diatur