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Reg No. : 20BRS1168

Lab-3

Ros, Gazebo, Pix 4 , QGround Control Installation

STEPS TO BE FOLLOWED :

Installing ROS

1. Open a terminal window by pressing Ctrl + Alt + T.

2. Add the ROS repository to your system by running the following command:

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

3. Download the ROS key with the following command:

```
curl -s https://raw.githubusercontent.com/ros/rosdistro/master/ros.asc | sudo apt-key add -
```

4. Update your system with the latest package information by running the following command:

```
sudo apt update
```

5. Install the ROS desktop-full package with the following command:

```
sudo apt install ros-melodic-desktop-full
```

Replace melodic with the version of ROS you want to install (e.g., kinetic, noetic, etc.).

6. Initialize ROS environment variables with the following command:

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

```
source ~/.bashrc
```

Replace melodic with the version of ROS you have installed.

7. Install additional ROS tools with the following command:

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

8. Initialize rosdep with the following command:

```
sudo rosdep init
```

```
rosdep update
```

Installing Gazebo

Open a terminal window by pressing Ctrl + Alt + T.

Add the Gazebo repository to your system by running the following command:

```
curl -sSL http://get.gazebosim.org | sh
```

Update your system with the latest package information by running the following command:

```
sudo apt update
```

Install Gazebo with the following command:

```
sudo apt install gazebo9 libgazebo9-dev
```

Replace gazebo9 with the version of Gazebo you want to install (e.g., gazebo11, gazebo7, etc.).

Verify that Gazebo has been installed by running the following command:

```
gazebo --version
```

This should display the version of Gazebo you have installed.

Step 1: Download QGroundControl

To download QGroundControl, go to the official website: https://docs.qgroundcontrol.com/master/en/getting_started/download_and_install.html

You'll see a list of available downloads for different platforms (Windows, macOS, Linux). Choose the appropriate download for your platform.

Step 2: Install QGroundControl

Once you have downloaded the QGroundControl installer, double-click on it to start the installation process.

Follow the on-screen instructions to complete the installation. If you are installing on Windows or macOS, you may need to grant administrative privileges to the installer.

Step 3: Launch QGroundControl

Once you have installed QGroundControl, you can launch it from the Start menu (Windows) or from the Applications folder (macOS).

If you are using Linux, you can launch QGroundControl by typing the following command in the terminal:

```
./QGroundControl.AppImage
```

Step 4: Connect your drone to QGroundControl

To connect your drone to QGroundControl, follow these steps:

Connect your drone to your computer using a USB cable.

Launch QGroundControl.

Click on the Connect button in the top toolbar.

In the Connect dialog box, select the appropriate communication port for your drone (e.g., /dev/ttyUSB0 for Linux, COM3 for Windows).

Click on the Connect button to establish a connection.

Step 5: Configure your drone in QGroundControl

Once you have connected your drone to QGroundControl, you can configure it by following these steps:

Click on the Vehicle Setup button in the top toolbar.

In the Vehicle Setup dialog box, select the appropriate vehicle type (e.g., Quadcopter, Fixed Wing).

Follow the on-screen instructions to configure your vehicle (e.g., calibrate the sensors, set up the radio, set up the flight modes).

Once you have configured your vehicle, click on the Save button to save the configuration.

Step 6: Fly your drone

Once you have configured your drone in QGroundControl, you can fly it by following these steps:

Click on the Fly button in the top toolbar.

In the Fly dialog box, select the appropriate flight mode (e.g., Manual, Stabilized, Altitude Hold).

Follow the on-screen instructions to arm the motors and take off.

Use the joystick or keyboard to control the drone.

When you are finished flying, land the drone and disarm the motors.

DRONES LAB ASSIGNMENT

LAB - 3

Below the detailed screenshots attached to assist the user while the installation is being done :

- 1) Give **step-by-step procedure** for installing the above simulation for drones along with prerequisites. It should be a complete manual for someone who wishes to install drone simulation software. **Give respective screenshots for successful installation.**

• Ros Install:

```
vishal@vishal-VirtualBox:~$ sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'
[sudo] password for vishal:
```

```
vishal@vishal-VirtualBox:~$ sudo apt install curl # if you haven't already installed curl
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi
  libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  curl
0 upgraded, 1 newly installed, 0 to remove and 154 not upgraded.
Need to get 161 kB of archives.
After this operation, 413 kB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 curl amd64 7.68.0-1ubuntu2.15 [161 kB]
Fetched 161 kB in 2s (73.3 kB/s)
Selecting previously unselected package curl.
(Reading database ... 266279 files and directories currently installed.)
Preparing to unpack .../curl_7.68.0-1ubuntu2.15_amd64.deb ...
Unpacking curl (7.68.0-1ubuntu2.15) ...
Setting up curl (7.68.0-1ubuntu2.15) ...
Processing triggers for man-db (2.9.1-1) ...
```

```
vishal@vishal-VirtualBox:~$ sudo apt update
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:2 http://in.archive.ubuntu.com/ubuntu focal InRelease
Get:3 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [59.9 kB]
```

```
vishal@vishal-VirtualBox:~$ sudo apt install ros-noetic-desktop-full
Reading package lists... Done
Building dependency tree
Reading state information... Done
ros-noetic-desktop-full is already the newest version (1.5.0-1focal.20221209.231810).
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi
  libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 155 not upgraded.
```

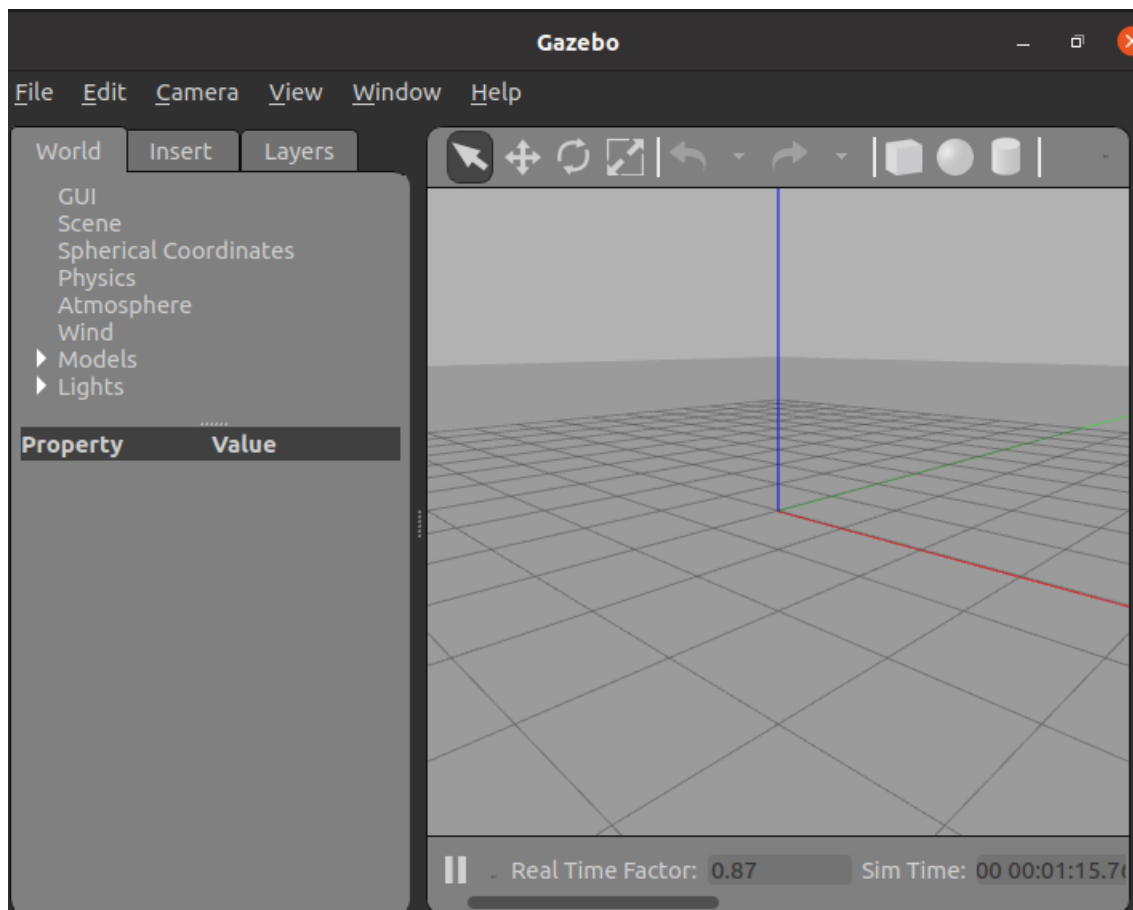
• Gazebo Install

```
vishal@vishal-VirtualBox:~$ sudo sh -c 'echo "deb http://packages.osrfoundation.org/gazebo/ubuntu-stable `lsb_release -cs` main" > /etc/apt/sources.list.d/gazebo-stable.list'
[sudo] password for vishal:
```

```
vishal@vishal-VirtualBox:~$ sudo apt install gazebo9 libgazebo9-dev
Reading package lists... Done
Building dependency tree
Reading state information... Done
Some packages could not be installed. This may mean that you have
requested an impossible situation or if you are using the unstable
distribution that some required packages have not yet been created
or been moved out of Incoming.
The following information may help to resolve the situation:

The following packages have unmet dependencies:
 gazebo9 : Depends: libgazebo9 (= 9.12.0+dfsg-1build2) but it is not going to be installed
           Depends: gazebo9-common (= 9.12.0+dfsg-1build2) but it is not going to be installed
           Recommends: gazebo9-plugin-base but it is not going to be installed
 libgazebo9-dev : Depends: libgazebo9 (= 9.12.0+dfsg-1build2) but it is not going to be installed
                  Depends: gazebo9-common (= 9.12.0+dfsg-1build2) but it is not going to be installed
                  Depends: gazebo9-plugin-base (= 9.12.0+dfsg-1build2) but it is not going to be installed
```

```
vishal@vishal-VirtualBox:~$ gazebo
```



- **Pix 4 Install**

```

Submodule path 'src/modules/mavlink/mavlink/pymavlink': checked out '2ca2c13b54b
4c75dd71c79acafc7ec40d9cb4965'
Submodule path 'src/modules/microdds_client/Micro-XRCE-DDS-Client': checked out
'4248559f3b111155c783e524e461ccc83e768103'
vishal@vishal-VirtualBox:~$ cd Firmware
vishal@vishal-VirtualBox:~/Firmware$ bash ./Tools/setup/ubuntu.sh
Ubuntu 20.04

Installing PX4 general dependencies
[sudo] password for vishal:
Hit:1 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:3 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Get:5 https://download.mono-project.com/repo/ubuntu stable-focal InRelease [4,41
6 B]
Hit:6 http://packages.ros.org/ros/ubuntu focal InRelease
Err:5 https://download.mono-project.com/repo/ubuntu stable-focal InRelease
The following signatures couldn't be verified because the public key is not av
ailable: NO_PUBKEY A6A19B38D3D831EF
Hit:7 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Reading package lists...
W: GPG error: https://download.mono-project.com/repo/ubuntu stable-focal InRelea
se: The following signatures couldn't be verified because the public key is not

```

```

ros-noetic-roscpp-core ros-noetic-roscpp-tutorials ros-noetic-roslang
ros-noetic-roslint ros-noetic-roslz4 ros-noetic-rosmake ros-noetic-rosmaster
ros-noetic-rosout ros-noetic-rosparam ros-noetic-self-test
ros-noetic-sensor-msgs ros-noetic-shape-msgs ros-noetic-smach
ros-noetic-smach-msgs ros-noetic-smclib ros-noetic-stage
ros-noetic-stereo-msgs ros-noetic-tf2 ros-noetic-tf2-eigen
ros-noetic-tf2-msgs ros-noetic-topic-tools ros-noetic-trajectory-msgs
ros-noetic-urdf-parser-plugin ros-noetic-vision-opencv
ros-noetic-visualization-marker-tutorials ros-noetic-visualization-msgs
ros-noetic-webkit-dependency ruby ruby-minitest ruby-net-telnet
ruby-power-assert ruby-test-unit ruby-xmlrpc ruby2.7 rubygems-integration
sbcl sdformat9-sdf shiboken2 sip-dev tcl-dev tcl-vtk7 tcl8.6-dev tk-dev
tk8.6-dev ttf-dejavu-core unixodbc-dev usb-modeswitch usb-modeswitch-data
vtk7 x11proto-input-dev x11proto-randr-dev x11proto-scrnsaver-dev
x11proto-xext-dev x11proto-xinerama-dev
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 35 not upgraded.
vishal@vishal-VirtualBox:~$ git clone https://github.com/PX4/Firmware.git --recu
rsive
Cloning into 'Firmware'...
remote: Enumerating objects: 434375, done.
remote: Counting objects: 100% (521/521), done.
remote: Compressing objects: 100% (296/296), done.
Receiving objects: 42% (182438/434375), 99.06 MiB | 4.75 MiB/s

```

```

test.list:1
W: Target Translations (main/i18n/Translation-en) is configured multiple times in
/etc/apt/sources.list.d/ros-focal.list:1 and /etc/apt/sources.list.d/ros-lates
t.list:1
W: Target DEP-11 (main/dep11/Components-amd64.yml) is configured multiple times
in /etc/apt/sources.list.d/ros-focal.list:1 and /etc/apt/sources.list.d/ros-late
st.list:1
W: Target DEP-11 (main/dep11/Components-all.yml) is configured multiple times in
/etc/apt/sources.list.d/ros-focal.list:1 and /etc/apt/sources.list.d/ros-latest
.list:1
W: Target DEP-11-icons-small (main/dep11/icons-48x48.tar) is configured multiple
times in /etc/apt/sources.list.d/ros-focal.list:1 and /etc/apt/sources.list.d/r
os-latest.list:1
W: Target DEP-11-icons (main/dep11/icons-64x64.tar) is configured multiple times
in /etc/apt/sources.list.d/ros-focal.list:1 and /etc/apt/sources.list.d/ros-lat
est.list:1
W: Target DEP-11-icons-hidpi (main/dep11/icons-64x64@2.tar) is configured multip
le times in /etc/apt/sources.list.d/ros-focal.list:1 and /etc/apt/sources.list.d
/ros-latest.list:1
W: Target CNF (main/cnf/Commands-amd64) is configured multiple times in /etc/apt
/sources.list.d/ros-focal.list:1 and /etc/apt/sources.list.d/ros-latest.list:1
W: Target CNF (main/cnf/Commands-all) is configured multiple times in /etc/apt/s
ources.list.d/ros-focal.list:1 and /etc/apt/sources.list.d/ros-latest.list:1
vishal@vishal-VirtualBox:~/Firmware$ sudo reboot now

```

```

vishal@vishal-VirtualBox:~/Firmware$ make px4_sitl jmafsim
[223/872] Performing configure step for 'libmicroxrceddsclient_project'
-- libmicroxrceddsclient_project configure command succeeded. See also /home/ad
mini/Firmware/build/px4_sitl_default/src/modules/microdds_client/src/libmicroxrc
eddsclient_project-stamp/libmicroxrceddsclient_project-configure-*.log
[253/872] Performing build step for 'libmicroxrceddsclient_project'
-- libmicroxrceddsclient_project build command succeeded. See also /home/admini
1/Firmware/build/px4_sitl_default/src/modules/microdds_client/src/libmicroxrcedds
client_project-stamp/libmicroxrceddsclient_project-build-*.log
[559/872] Performing install step for 'libmicroxrceddsclient_project'
-- libmicroxrceddsclient_project install command succeeded. See also /home/admi
n1/Firmware/build/px4_sitl_default/src/modules/microdds_client/src/libmicroxrce
dsclient_project-stamp/libmicroxrceddsclient_project-install-*.log
[871/872] launching px4 jmafsim_iris (SYS_AUTOSTART=10017)

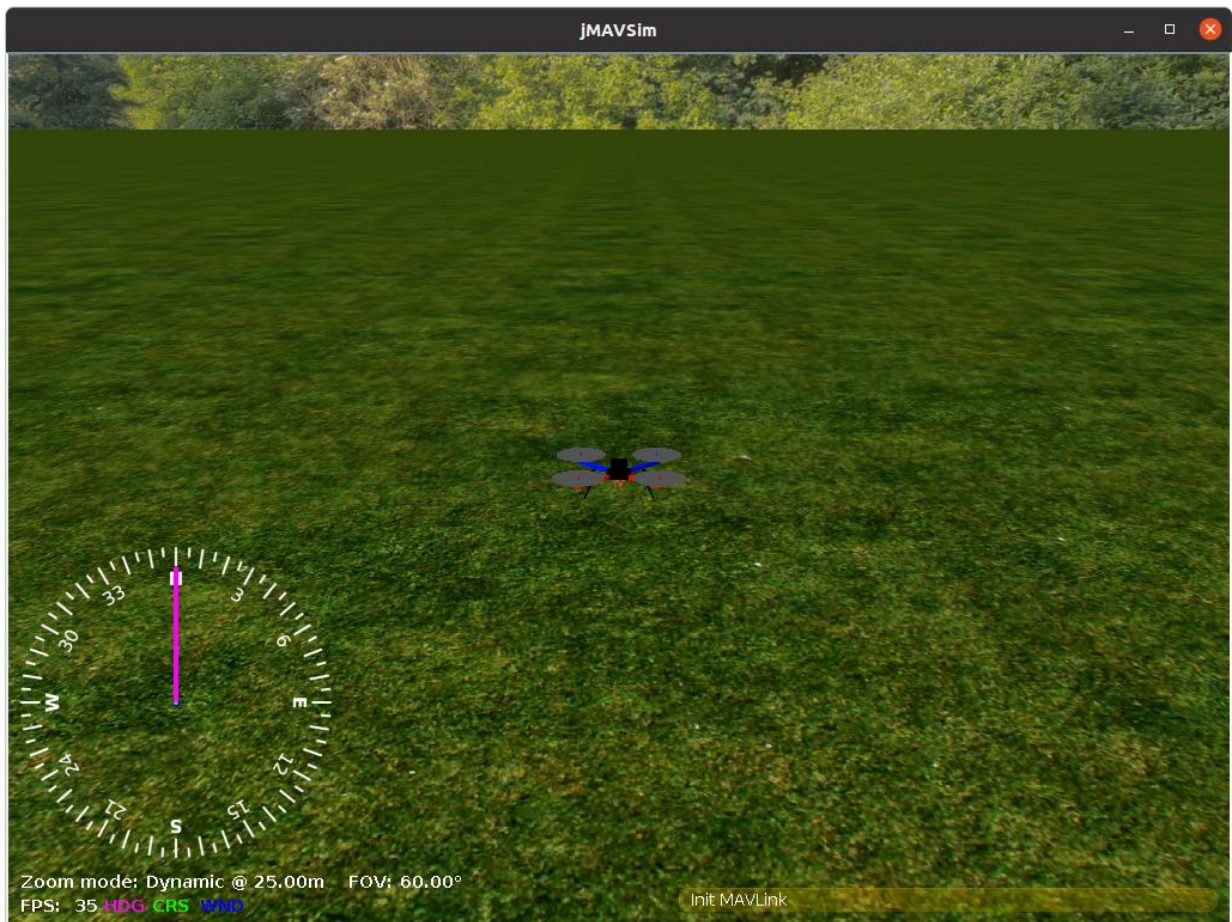
```

```

  _ _ _ _ _
 /_/_/_/_/_\
/_/_/_/_/_\
/_/_/_/_/_\
/_/_/_/_/_\

```

px4 starting.



- **QGroundControl Install**


```

bash: /opt/ros/melodic/setup.bash: No such file or directory
vishal@vishal-VirtualBox:~$ sudo usermod -a -G dialout $USER
[sudo] password for vishal:
Sorry, try again.
[sudo] password for vishal:
vishal@vishal-VirtualBox:~$ sudo apt-get remove modemmanager -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
Package 'modemmanager' is not installed, so not removed
The following packages were automatically installed and are no longer required:
  cython3 default-libmysqlclient-dev fltk1.3-doc fluid fonts-lato freeglut3
  freeglut3-dev gazebo11 gazebo11-common gazebo11-plugin-base gir1.2-gtk-2.0
  gir1.2-harfbuzz-0.0 hddtemp ignition-tools libarmadillo-dev libarpack2-dev
  libassimp-dev libassimp5 libassuan-dev libatk1.0-dev libavdevice-dev
  libavdevice58 libavfilter-dev libblas-dev libblkid-dev libboost-all-dev
  libboost-atomic-dev libboost-container-dev libboost-context-dev
  libboost-coroutine-dev libboost-dev libboost-exception-dev
  libboost-fiber-dev libboost-graph-dev libboost-graph-parallel-dev
  libboost-iostreams-dev libboost-locale-dev libboost-log-dev
  libboost-math-dev libboost-mpi-dev libboost-mpi-python-dev
  libboost-numpy-dev libboost-python-dev libboost-random-dev
  libboost-serialization-dev libboost-stacktrace-dev libboost-test-dev
  libboost-timer-dev libboost-tools-dev libboost-type-erasure-dev

```

```

ros-noetic-image-geometry ros-noetic-kdl-conversions ros-noetic-map-msgs
ros-noetic-media-export ros-noetic-message-filters ros-noetic-nav-msgs
ros-noetic-pcl-conversions ros-noetic-pcl-msgs ros-noetic-python-qt-binding
ros-noetic-qt-dotgraph ros-noetic-qt-gui ros-noetic-qt-gui-py-common
ros-noetic-qwt-dependency ros-noetic-roscpp-migration-rule
ros-noetic-roscpp-cfg ros-noetic-rosclean ros-noetic-rosconsole-bridge
ros-noetic-roscpp-core ros-noetic-roscpp-tutorials ros-noetic-roslang
ros-noetic-roslint ros-noetic-roslz4 ros-noetic-rosmake ros-noetic-rosmaster
ros-noetic-rosout ros-noetic-roscpp-param ros-noetic-self-test
ros-noetic-sensor-msgs ros-noetic-shape-msgs ros-noetic-smach
ros-noetic-smach-msgs ros-noetic-smclib ros-noetic-stage
ros-noetic-stereo-msgs ros-noetic-tf2 ros-noetic-tf2-eigen
ros-noetic-tf2-msgs ros-noetic-topic-tools ros-noetic-trajectory-msgs
ros-noetic-urdf-parser-plugin ros-noetic-vision-opencv
ros-noetic-visualization-marker-tutorials ros-noetic-visualization-msgs
ros-noetic-webkit-dependency ruby ruby-minitest ruby-net-telnet
ruby-power-assert ruby-test-unit ruby-xmlrpc ruby2.7 rubygems-integration
sbcl sdfORMAT9-sdf shiboken2 sip-dev tcl-dev tcl-vtk7 tcl8.6-dev tk-dev
tk8.6-dev ttf-dejavu-core unixodbc-dev usb-modeswitch usb-modeswitch-data
vtk7 x11proto-input-dev x11proto-randr-dev x11proto-scrnsaver-dev
x11proto-xext-dev x11proto-xinerama-dev
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 33 not upgraded.
vishal@vishal-VirtualBox:~$

```

```

0 upgraded, 0 newly installed, 0 to remove and 33 not upgraded.
vishal@vishal-VirtualBox:~$ sudo apt install gstreamer1.0-plugins-bad gstreamer1
.0-libav gstreamer1.0-gl -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
gstreamer1.0-libav is already the newest version (1.16.2-2).
gstreamer1.0-gl is already the newest version (1.16.3-0ubuntu1.1).
gstreamer1.0-plugins-bad is already the newest version (1.16.3-0ubuntu1).
The following packages were automatically installed and are no longer required:
  cython3 default-libmysqlclient-dev fltk1.3-doc fluid fonts-lato freeglut3
  freeglut3-dev gazebo11 gazebo11-common gazebo11-plugin-base gir1.2-gtk-2.0
  gir1.2-harfbuzz-0.0 hddtemp ignition-tools libarmadillo-dev libarpack2-dev
  libassimp-dev libassimp5 libassuan-dev libatk1.0-dev libavdevice-dev
  libavdevice58 libavfilter-dev libblas-dev libblkid-dev libboost-all-dev
  libboost-atomic-dev libboost-container-dev libboost-context-dev
  libboost-coroutine-dev libboost-dev libboost-exception-dev
  libboost-fiber-dev libboost-graph-dev libboost-graph-parallel-dev
  libboost-iostreams-dev libboost-locale-dev libboost-log-dev
  libboost-math-dev libboost-mpi-dev libboost-mpi-python-dev
  libboost-numpy-dev libboost-python-dev libboost-random-dev
  libboost-serialization-dev libboost-stacktrace-dev libboost-test-dev
  libboost-timer-dev libboost-tools-dev libboost-type-erasure-dev
  libboost-wave-dev libbullet-dev libbullet2.88 libbz2-dev

```

```

ros-noetic-image-geometry ros-noetic-kdl-conversions ros-noetic-map-msgs
ros-noetic-media-export ros-noetic-message-filters ros-noetic-nav-msgs
ros-noetic-pcl-conversions ros-noetic-pcl-msgs ros-noetic-python-qt-binding
ros-noetic-qt-dotgraph ros-noetic-qt-gui ros-noetic-qt-gui-py-common
ros-noetic-qwt-dependency ros-noetic-roscpp-migration-rule
ros-noetic-roscpp-cfg ros-noetic-rosclean ros-noetic-rosconsole-bridge
ros-noetic-roscpp-core ros-noetic-roscpp-tutorials ros-noetic-roslang
ros-noetic-roslint ros-noetic-roslz4 ros-noetic-rosmake ros-noetic-rosmaster
ros-noetic-rosout ros-noetic-roscpp-param ros-noetic-self-test
ros-noetic-sensor-msgs ros-noetic-shape-msgs ros-noetic-smach
ros-noetic-smach-msgs ros-noetic-smclib ros-noetic-stage
ros-noetic-stereo-msgs ros-noetic-tf2 ros-noetic-tf2-eigen
ros-noetic-tf2-msgs ros-noetic-topic-tools ros-noetic-trajectory-msgs
ros-noetic-urdf-parser-plugin ros-noetic-vision-opencv
ros-noetic-visualization-marker-tutorials ros-noetic-visualization-msgs
ros-noetic-webkit-dependency ruby ruby-minitest ruby-net-telnet
ruby-power-assert ruby-test-unit ruby-xmlrpc ruby2.7 rubygems-integration
sbcl sdfORMAT9-sdf shiboken2 sip-dev tcl-dev tcl-vtk7 tcl8.6-dev tk-dev
tk8.6-dev ttf-dejavu-core unixodbc-dev usb-modeswitch usb-modeswitch-data
vtk7 x11proto-input-dev x11proto-randr-dev x11proto-scrnsaver-dev
x11proto-xext-dev x11proto-xinerama-dev
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 33 not upgraded.
vishal@vishal-VirtualBox:~$

```

```

0 upgraded, 0 newly installed, 0 to remove and 33 not upgraded.
vishal@vishal-VirtualBox:~$ sudo apt install libqt5gui5 -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
libqt5gui5 is already the newest version (5.12.8+dfsg-0ubuntu2.1).
The following packages were automatically installed and are no longer required:
  cython3 default-libmysqlclient-dev fltk1.3-doc fluid fonts-lato freeglut3
  freeglut3-dev gazebo11 gazebo11-common gazebo11-plugin-base gir1.2-gtk-2.0
  gir1.2-harfbuzz-0.0 hddtemp ignition-tools libarmadillo-dev libarpack2-dev
  libassimp-dev libassimp5 libassuan-dev libatk1.0-dev libavdevice-dev
  libavdevice58 libavfilter-dev libblas-dev libblkid-dev libboost-all-dev
  libboost-atomic-dev libboost-container-dev libboost-context-dev
  libboost-coroutine-dev libboost-dev libboost-exception-dev
  libboost-fiber-dev libboost-graph-dev libboost-graph-parallel-dev
  libboost-iostreams-dev libboost-locale-dev libboost-log-dev
  libboost-math-dev libboost-mpi-dev libboost-mpi-python-dev
  libboost-numpy-dev libboost-python-dev libboost-random-dev
  libboost-serialization-dev libboost-stacktrace-dev libboost-test-dev
  libboost-timer-dev libboost-tools-dev libboost-type-erasure-dev
  libboost-wave-dev libbullet-dev libbullet2.88 libbz2-dev
  libcairo-script-interpreter2 libcairo2-dev libccd-dev libccd2 libcfitsio-dev
  libcfitsio-doc libcharls-dev libclang1-10 libdap-dev libdapserver7v5
  libdart-collision-bullet-dev libdart-collision-ode-dev libdart-dev

```

```

ros-noetic-image-geometry ros-noetic-kdl-conversions ros-noetic-map-msgs
ros-noetic-media-export ros-noetic-message-filters ros-noetic-nav-msgs
ros-noetic-pcl-conversions ros-noetic-pcl-msgs ros-noetic-python-qt-binding
ros-noetic-qt-dotgraph ros-noetic-qt-gui ros-noetic-qt-gui-py-common
ros-noetic-qwt-dependency ros-noetic-roscpp-migration-rule
ros-noetic-roscpp-cfg ros-noetic-rosclean ros-noetic-rosconsole-bridge
ros-noetic-roscpp-core ros-noetic-roscpp-tutorials ros-noetic-roslang
ros-noetic-roslint ros-noetic-roslz4 ros-noetic-rosmake ros-noetic-rosmaster
ros-noetic-rosout ros-noetic-roscpp-param ros-noetic-self-test
ros-noetic-sensor-msgs ros-noetic-shape-msgs ros-noetic-smach
ros-noetic-smach-msgs ros-noetic-smclib ros-noetic-stage
ros-noetic-stereo-msgs ros-noetic-tf2 ros-noetic-tf2-eigen
ros-noetic-tf2-msgs ros-noetic-topic-tools ros-noetic-trajectory-msgs
ros-noetic-urdf-parser-plugin ros-noetic-vision-opencv
ros-noetic-visualization-marker-tutorials ros-noetic-visualization-msgs
ros-noetic-webkit-dependency ruby ruby-minitest ruby-net-telnet
ruby-power-assert ruby-test-unit ruby-xmlrpc ruby2.7 rubygems-integration
sbcl sdf-format9-sdf shiboken2 sip-dev tcl-dev tcl-vtk7 tcl8.6-dev tk-dev
tk8.6-dev ttf-dejavu-core unixodbc-dev usb-modeswitch usb-modeswitch-data
vtk7 x11proto-input-dev x11proto-randr-dev x11proto-scrnsaver-dev
x11proto-xext-dev x11proto-xinerama-dev
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 33 not upgraded.
vishal@vishal-VirtualBox:~$

```



```

0 upgraded, 0 newly installed, 0 to remove and 33 not upgraded.
vishal@vishal-VirtualBox:~$ sudo apt install libfuse2 -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
libfuse2 is already the newest version (2.9.9-3).
The following packages were automatically installed and are no longer required:
  cython3 default-libmysqlclient-dev fltk1.3-doc fluid fonts-lato freeglut3
  freeglut3-dev gazebo11 gazebo11-common gazebo11-plugin-base gir1.2-gtk-2.0
  gir1.2-harfbuzz-0.0 hddtemp ignition-tools libarmadillo-dev libarpack2-dev
  libassimp-dev libassimp5 libassuan-dev libatk1.0-dev libavdevice-dev
  libavdevice58 libavfilter-dev libblas-dev libblkid-dev libboost-all-dev
  libboost-atomic-dev libboost-container-dev libboost-context-dev
  libboost-coroutine-dev libboost-dev libboost-exception-dev
  libboost-fiber-dev libboost-graph-dev libboost-graph-parallel-dev
  libboost-iostreams-dev libboost-locale-dev libboost-log-dev
  libboost-math-dev libboost-mpi-dev libboost-mpi-python-dev
  libboost-numeric-dev libboost-python-dev libboost-random-dev
  libboost-serialization-dev libboost-stacktrace-dev libboost-test-dev
  libboost-timer-dev libboost-tools-dev libboost-type-erasure-dev
  libboost-wave-dev libbullet-dev libbullet2.88 libbz2-dev
  libcairo-script-interpreter2 libcairo2-dev libccd-dev libccd2 libcfitsio-dev
  libcfitsio-doc libcharls-dev libclang1-10 libdap-dev libdapserver7v5
  libdart-collision-bullet-dev libdart-collision-ode-dev libdart-dev

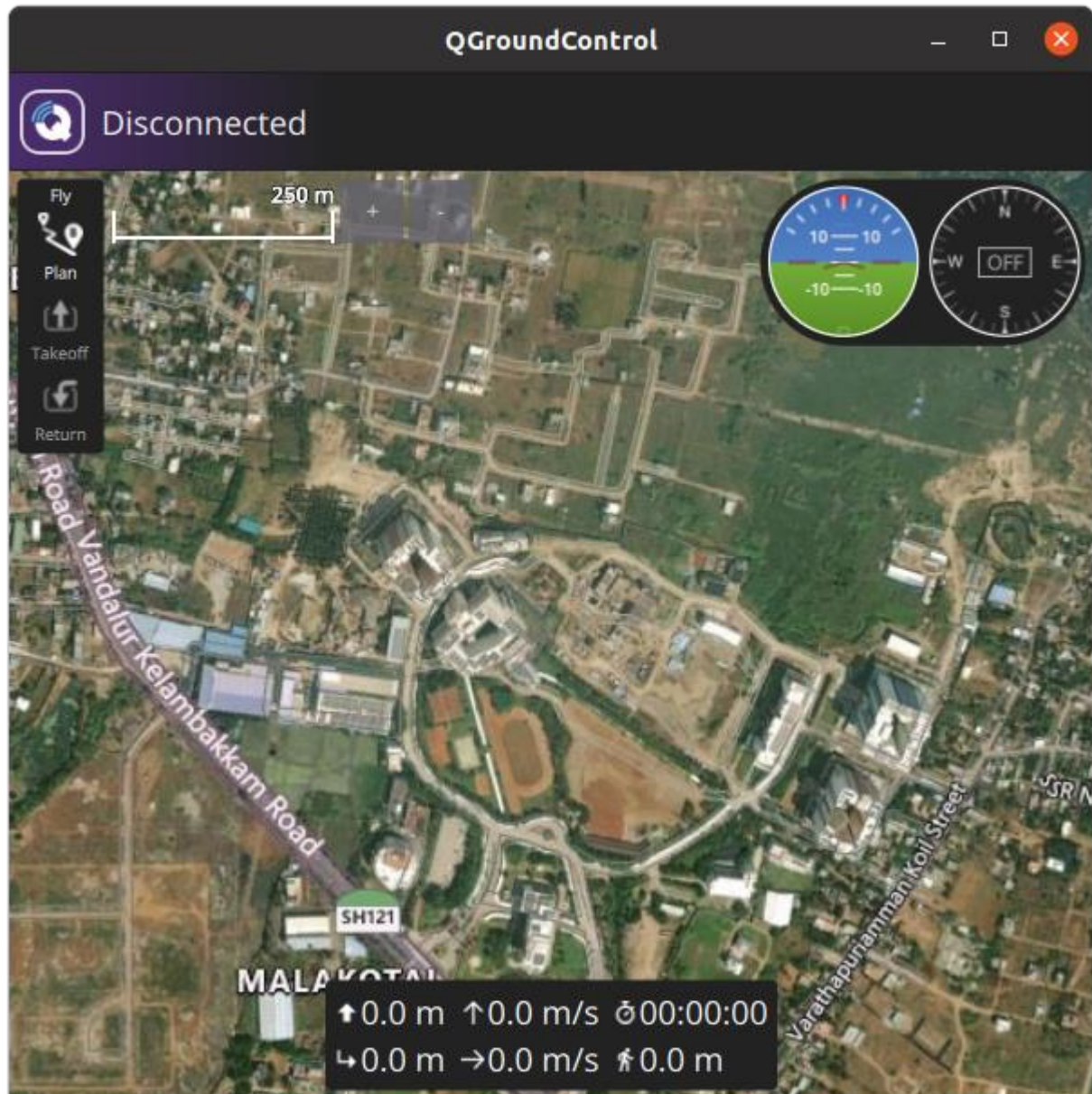
```

```

ros-noetic-image-geometry ros-noetic-kdl-conversions ros-noetic-map-msgs
ros-noetic-media-export ros-noetic-message-filters ros-noetic-nav-msgs
ros-noetic-pcl-conversions ros-noetic-pcl-msgs ros-noetic-python-qt-binding
ros-noetic-qt-dotgraph ros-noetic-qt-gui ros-noetic-qt-gui-py-common
ros-noetic-qwt-dependency ros-noetic-roscpp-migration-rule
ros-noetic-roscpp-cfg ros-noetic-rosclean ros-noetic-rosconsole-bridge
ros-noetic-roscpp-core ros-noetic-roscpp-tutorials ros-noetic-roslang
ros-noetic-roslint ros-noetic-roslz4 ros-noetic-rosmake ros-noetic-rosmaster
ros-noetic-rosout ros-noetic-roscpp-param ros-noetic-self-test
ros-noetic-sensor-msgs ros-noetic-shape-msgs ros-noetic-smach
ros-noetic-smach-msgs ros-noetic-smclib ros-noetic-stage
ros-noetic-stereo-msgs ros-noetic-tf2 ros-noetic-tf2-eigen
ros-noetic-tf2-msgs ros-noetic-topic-tools ros-noetic-trajectory-msgs
ros-noetic-urdf-parser-plugin ros-noetic-vision-opencv
ros-noetic-visualization-marker-tutorials ros-noetic-visualization-msgs
ros-noetic-webkit-dependency ruby ruby-minitest ruby-net-telnet
ruby-power-assert ruby-test-unit ruby-xmlrpc ruby2.7 rubygems-integration
sbcl sdf-format9 sdf shiboken2 sip-dev tcl-dev tcl-vtk7 tcl8.6-dev tk-dev
tk8.6-dev ttf-dejavu-core unixodbc-dev usb-modeswitch usb-modeswitch-data
vtk7 x11proto-input-dev x11proto-randr-dev x11proto-scrnsaver-dev
x11proto-xext-dev x11proto-xinerama-dev
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 33 not upgraded.
vishal@vishal-VirtualBox:~$

```

```
vishal@vishal-VirtualBox:~$ cd Downloads
vishal@vishal-VirtualBox:~/Downloads$ chmod +x ./QGroundControl.AppImage
vishal@vishal-VirtualBox:~/Downloads$ ./QGroundControl.AppImage
Settings location "/home/admin1/.config/QGroundControl.org/QGroundControl.ini" is
writable?: true
Filter rules "*Log.debug=false\nGStreamerAPILog.debug=true\nqml.connections=f
alse"
System reported locale: QLocale(English, Latin, India) ; Name "en_IN" ; Preffere
d (used in maps): "en-IN"
LocalizationLog: Qt lib localization for "en_IN" is not present
LocalizationLog: Error loading source localization for "en_IN"
LocalizationLog: Error loading json localization for "en_IN"
MAVLinkLogManagerLog: MAVLink logs directory: "/home/admin1/Documents/QGroundCon
trol/Logs"
VideoReceiverLog: Stop called on empty URI
VideoReceiverLog: Stop called on empty URI
Map Cache in: "/home/admin1/.cache/QGCMapCache300" / "qgcMapCache.db"
qml: QGCCorePlugin(0x55eb2138e330) []
setCurrentPlanViewSeqNum
setCurrentPlanViewSeqNum
_recalcFlightPathSegments homePositionValid false
_recalcFlightPathSegments homePositionValid false
"v4.2.0"
```



Prerequisites :

Before installing the simulation software for drones, you need to make sure that your system meets the following prerequisites:

Ubuntu 20.04: The simulation software we are installing in this guide is tested and confirmed to work with Ubuntu 20.04. If you are using a different version of Ubuntu or a different operating system, the installation steps may be different.

Sufficient hardware resources: Running a simulation requires a significant amount of processing power and memory. Make sure that your system has enough RAM, CPU, and storage to run the simulation software.

Internet connection: You need an active internet connection to download and install the necessary software packages.

Administrative privileges: You need administrative privileges to install software packages on your system.