Gazebo Installation Guide

ROS2 Humble(LTS) + (GZ Fortress(LTS) / GZ Harmonic(LTS))

Ubuntu 22.04

1. Install ROS 2 Humble (if not already installed)

```
# Add ROS 2 repository
sudo apt install software-properties-common
sudo add-apt-repository universe
sudo apt update && sudo apt install curl -y
sudo curl -sSL https://raw.githubusercontent.com/ros/rosdistro/master/ros.key -o
/usr/share/keyrings/ros-archive-keyring.gpg

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

# Install ROS 2 Humble Desktop
sudo apt update
sudo apt install ros-humble-desktop
```

1.1 Check ROS 2 Humble

```
# Check ROS 2 version
ls /opt/ros/
source /opt/ros/humble/setup.bash

printenv | grep ROS

#Make it automatic so you don’t need to run source every time, add it permanently to your bash
configuration:

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


# Should show:
# ROS_VERSION=2
# ROS_DISTRO=humble
```

i can not see anything from the output *solved*

Test ROS 2 command
ros2 --version

Run a simple test node
ros2 run demo_nodes_cpp talker
(Press Ctrl+C to stop)

2. Install Gazebo Harmonic

sudo apt-get update
sudo apt-get install curl lsb-release gnupg
sudo curl https://packages.osrfoundation.org/gazebo.gpg --output
/usr/share/keyrings/pkgs-osrf-archive-keyring.gpg
echo "deb [arch=$(dpkg --print-architecture)
signed-by=/usr/share/keyrings/pkgs-osrf-archive-keyring.gpg]
http://packages.osrfoundation.org/gazebo/ubuntu-stable $(lsb_release -cs) main" | sudo tee
/etc/apt/sources.list.d/gazebo-stable.list > /dev/null
sudo apt-get update
sudo apt-get install gz-harmonic

2.1 Check Gazebo Harmonic

Check Gazebo version
gz sim --version

Should show version 8.x.x (Harmonic)

Launch Gazebo GUI (should open a window)
gz sim

Or test with a world
gz sim shapes.sdf
(Press Ctrl+C to stop)

3. Install ROS 2 - Gazebo Bridge

sudo apt-get install ros-humble-ros-gz

3.1 Check ROS 2 - Gazebo Bridge

```
# Check if bridge packages are installed
ros2 pkg list | grep ros_gz
# Should show packages like:
# ros_gz
# ros_gz_bridge
# ros_gz_sim
# ros_gz_image
# Test the bridge
ros2 run ros_gz_bridge parameter_bridge
```

4. Install PX4 Autopilot

```
# Clone PX4 repository
cd ~
git clone https://github.com/PX4/PX4-Autopilot.git --recursive
cd PX4-Autopilot

# Run the setup script (installs all dependencies)
bash ./Tools/setup/ubuntu.sh

# This installs:
# - Build toolchain (gcc, cmake, etc.)
# - Python dependencies
# - Simulation tools
# - MAVSDK dependencies
```

5. Build PX4 with Gazebo Support

```
cd ~/PX4-Autopilot
make px4_sitl gz_x500
```

SIMPLE PX4 COMMANDS TO WRITE IN THE SAME TERMINAL AS THE MAKE COMMAND TO FLY THE DRONE

commander arm -f
commander takeoff
commander land

6. Install MAVSDK (Python & C++)

Python MAVSDK
pip3 install mavsdk

# C++ MAVSDK (optional, for development) **THIS MIGHT NOT WORK IDK WHY**
sudo apt install libmavsdk-dev

U might need to add them to env variables but im not sure 🙂

One More thing is **QGroundControl** **(dont really know how we are going to use it yet or what is it for but it seems important 🙂)**

sudo apt install gstreamer1.0-plugins-bad gstreamer1.0-libav gstreamer1.0-gl -y
sudo apt install libfuse2 -y
sudo apt install libxcb-xinerama0 libxkbcommon-x11-0 libxcb-cursor-dev -y
Download QGroundControl-x86_64.AppImage.
Then
chmod +x QGroundControl-x86_64.AppImage
Then
./QGroundControl-x86_64.AppImage