

Ros 2 installation

WSL 2 Installation

Step 1: Open PowerShell as Administrator

powershell
`wsl --install`

This installs the latest WSL version with the default Ubuntu image.

Step 2: Install Ubuntu 22.04 Explicitly (if needed)

powershell
`wsl --install -d Ubuntu-22.04`

Step 3: Restart the System

After installation, reboot your computer.

3. Installing Ubuntu 22.04 via WSL

- Launch "**Ubuntu 22.04**" from the Start menu.
- Set up your **username** and **password**.
- Update system:

bash
`sudo apt update && sudo apt upgrade -y`

4. Installing ROS 2 Humble in Ubuntu 22.04 (WSL Terminal)

Step 1: Set Locale

bash

```
sudo locale-gen en_US en_US.UTF-8
sudo update-locale LC_ALL=en_US.UTF-8 LANG=en_US.UTF-8
export LANG=en_US.UTF-8
```

Step 2: Add ROS 2 GPG Key

bash

```
sudo apt install curl gnupg lsb-release -y
sudo curl -sSL https://raw.githubusercontent.com/ros/rosdistro/master/ros.key \
  -o /usr/share/keyrings/ros-archive-keyring.gpg
```

Step 3: Add ROS 2 Repository

bash

```
echo "deb [arch=$(dpkg --print-architecture)
signed-by=/usr/share/keyrings/ros-archive-keyring.gpg] \
http://packages.ros.org/ros2/ubuntu $(lsb_release -cs) main" | \
sudo tee /etc/apt/sources.list.d/ros2.list > /dev/null
```

Step 4: Install ROS 2 Humble

bash

```
sudo apt update
sudo apt install ros-humble-desktop -y
```

Step 5: Source ROS 2

To source ROS 2 every time the terminal opens:

bash

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

5. Testing ROS 2 Communication

Terminal 1:

bash

```
ros2 run demo_nodes_cpp talker
```

Terminal 2:

bash

ros2 run demo_nodes_cpp listener

```
skyharp@DESKTOP-05B5VRA x + - [INFO] [1751611850.654432715] [talker]: Publishing: 'Hello World: 24' [INFO] [1751611851.6322389297] [talker]: Publishing: 'Hello World: 25' [INFO] [1751611852.566941851] [talker]: Publishing: 'Hello World: 26' [INFO] [1751611853.594740977] [talker]: Publishing: 'Hello World: 27' [INFO] [1751611854.441850134] [talker]: Publishing: 'Hello World: 28' [INFO] [1751611855.379427343] [talker]: Publishing: 'Hello World: 29' [INFO] [1751611856.344802397] [talker]: Publishing: 'Hello World: 30' [INFO] [1751611857.344804572] [talker]: Publishing: 'Hello World: 31' [INFO] [1751611858.34481969] [talker]: Publishing: 'Hello World: 32' [INFO] [1751611859.344558666] [talker]: Publishing: 'Hello World: 33' [INFO] [1751611860.313323801] [talker]: Publishing: 'Hello World: 34' [INFO] [1751611861.282882461] [talker]: Publishing: 'Hello World: 35' [INFO] [1751611862.252594392] [talker]: Publishing: 'Hello World: 36' [INFO] [1751611863.222350131] [talker]: Publishing: 'Hello 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73]
```

6. Optional: Enable GUI Apps like RViz in WSL

Step 1: Install Windows X Server

- Download & install VcXsrv or X410.

Step 2: Configure WSL for Display

In WSL terminal:

bash

echo "export DISPLAY=\$(cat /etc/resolv.conf | grep nameserver | awk '{print \$2}'):0.0" >> ~/.bashrc

echo "export LIBGL_ALWAYS_INDIRECT=1" >> ~/.bashrc

source ~/.bashrc

Step 3: Launch RViz or Gazebo

bash

rviz2

Install Gazebo (Fortress)

Gazebo Fortress is recommended for ROS 2 Humble.

Install Fortress

```
bash
```

```
sudo apt update
```

```
sudo apt install gazebo11 libgazebo11-dev -y
```

If you want latest version:

```
bash
```

```
sudo sh -c 'echo "deb
```

```
http://packages.osrfoundation.org/gazebo/ubuntu-stable $(lsb_release  
-cs) main" \
```

```
> /etc/apt/sources.list.d/gazebo-stable.list'
```

```
wget https://packages.osrfoundation.org/gazebo.key -O - | sudo apt-key  
add -
```

```
sudo apt update
```

```
sudo apt install gazebo11 -y
```

ROS 2 Gazebo Integration

```
bash
```

```
sudo apt install ros-humble-gazebo-ros-pkgs  
ros-humble-gazebo-ros2-control -y
```