

Setup developer PC

This is a description how to setup a developer PC with Ubuntu 18.04, ROS Melodic Morenia and Eclipse IDE.

Install Ubuntu 18.04 LTS (Bionic Beaver)

Download and install the desktop image which is appropriate for your machine:

<http://releases.ubuntu.com/18.04/>

Comprehensive installation instructions can be found here:

<https://tutorials.ubuntu.com/tutorial/tutorial-install-ubuntu-desktop>

Important! For the later installation of ROS you have to configure your Ubuntu repositories to allow "restricted," "universe," and "multiverse". Please follow the Ubuntu guide for instructions on how to do this: <https://help.ubuntu.com/community/Repositories/Ubuntu>

If you are not familiar with how to use the Linux command line, have a look at this tutorial before continuing with the installation:

<https://tutorials.ubuntu.com/tutorial/command-line-for-beginners#0>

Update your installation to the newest version:

- > sudo apt update
- > sudo apt upgrade

We recommend you to use terminator, that allows you to have multiple terminals in one window. It can be installed with:

- > sudo apt update
- > sudo apt install terminator

Install git (<https://www.atlassian.com/git/tutorials/what-is-git>):

- > sudo apt update
- > sudo apt install git

Install ROS Melodic

Install ROS Melodic (recommended: "Desktop-Full Install") following these instructions:

<http://wiki.ros.org/melodic/Installation/Ubuntu>

We work with Catkin Command Line Tools (catkin build instead of catkin_make) to build packages in your workspace. They can be installed with apt-get

<http://catkin-tools.readthedocs.io/en/latest/installing.html#installing-on-ubuntu-with-apt-get>

Setup your catkin workspace in which your packages will be built as follows:

Source the environment:

```
> source /opt/ros/melodic/setup.bash
```

Create workspace:

```
> mkdir -p ~/catkin_ws/src
> cd ~/catkin_ws
> catkin init
```

Build the workspace:

```
> cd ~/catkin_ws/
> catkin build
```

Source your workspace:

```
> cd ~/catkin_ws/
> source devel/setup.bash
```

Add your workspace to the .bashrc file such that it is sourced every time you start a new shell (terminal).

```
> echo "source ~/catkin_ws/devel/setup.bash" >> ~/.bashrc
```

To build your packages in release mode add the build type to the catkin config:

```
> cd ~/catkin_ws/
> catkin config -DCMAKE_BUILD_TYPE=Release
```

Install Eclipse IDE

As a prerequisite you need to install Java:

```
> sudo apt update
> sudo apt install -y openjdk-8-jdk
```

Verify the Java version on your machine with:

```
> java -version
```

which should show the output (or similar):

```
openjdk version "1.8.0_232"
OpenJDK Runtime Environment (build 1.8.0_232-8u232-b09-0ubuntu1~18.04.1-b09)
OpenJDK 64-Bit Server VM (build 25.232-b09, mixed mode)
```

Download Eclipse 2019-12 from

https://www.eclipse.org/downloads/download.php?file=/technology/epp/downloads/release/2019-12/R/eclipse-cpp-2019-12-R-linux-gtk-x86_64.tar.gz to your download directory.

Navigate to the downloaded file:

```
> cd ~/Downloads
```

Unpack and install:

```
> tar -zxvf eclipse-cpp-2019-12-R-linux-gtk-x86_64.tar.gz
> sudo mv eclipse /opt
> sudo chown $USER -R /opt/eclipse/
> sudo ln -s /opt/eclipse/eclipse /usr/sbin/eclipse
> rm eclipse-cpp-2019-12-R-linux-gtk-x86_64.tar.gz
```

Give eclipse more space:

```
> sudo sed -i "s/-XX:MaxPermSize=256m/-XX:MaxPermSize=1024m/g" /opt/eclipse/eclipse.ini
> sudo sed -i "s/-Xms40m/-Xms512m/g" /opt/eclipse/eclipse.ini
> sudo sed -i "s/-Xmx512m/-Xmx1024m/g" /opt/eclipse/eclipse.ini
```

Create Eclipse Launcher Icon (copy/paste line by line):

```
> cat > eclipse.desktop << "EOF"
[Desktop Entry]
Name=Eclipse
Type=Application
Exec=eclipse
Terminal=false
Icon=eclipse
Comment=Integrated Development Environment
NoDisplay=false
Categories=Development;IDE;
Name[en]=Eclipse
EOF
```

Move and install the Launcher:

```
> sudo mv eclipse.desktop /opt/eclipse/  
> sudo desktop-file-install /opt/eclipse/eclipse.desktop  
> sudo cp /opt/eclipse/icon.xpm /usr/share/pixmaps/eclipse.xpm
```

Import the google coding style settings to Eclipse:

- Download the style sheet to some location:
<https://github.com/google/styleguide/blob/gh-pages/eclipse-cpp-google-style.xml>
- Start Eclipse.
- Select Window->Preferences->C/C++->Code Style->Formatter.
- Click Import...
- Select the downloaded sheet.
- Click Apply and Close

Add additional build flags to your catkin config to generate the eclipse related files

```
> cd ~/catkin_ws  
> catkin config -G"Eclipse CDT4 - Unix Makefiles"  
-DCMAKE_BUILD_TYPE=Release -DCMAKE_CXX_COMPILER_ARG1=-std=c++11  
-D__cplusplus=201103L -D__GXX_EXPERIMENTAL_CXX0X__=1
```