

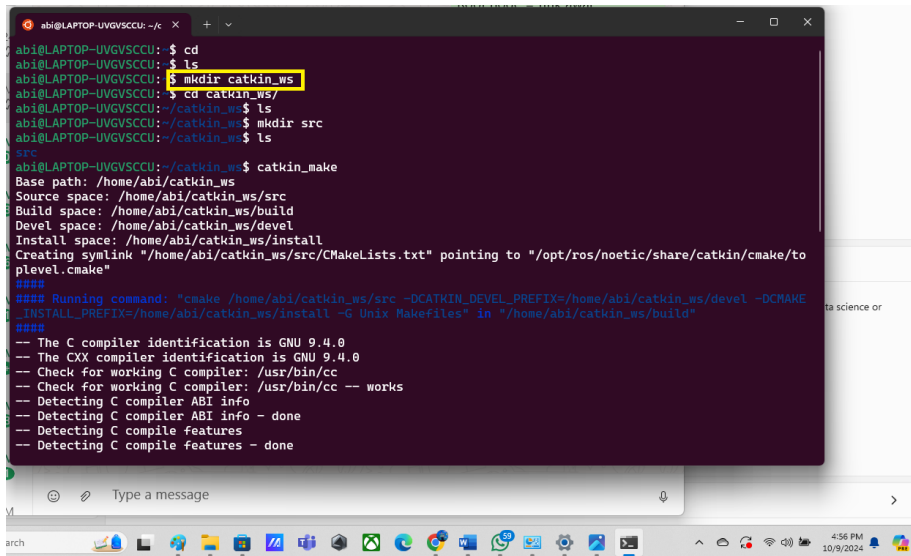
Langkah-Langkah ROS Tutorial 3 (ROS1)

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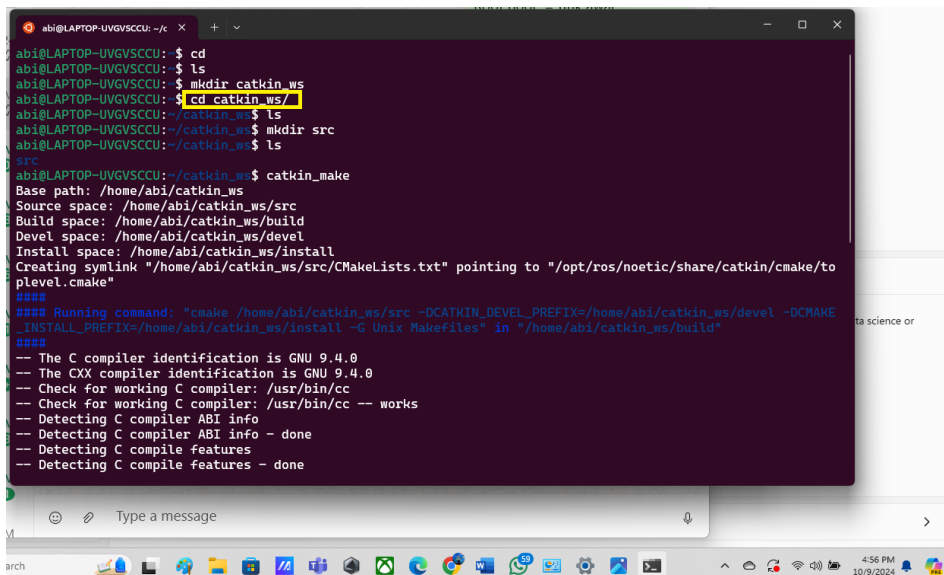
Kelas : TK-45-G09

1. Masukkan syntax **mkdir catkin_ws** untuk membuat direktori workspace baru yang akan digunakan sebagai tempat kerja proyek ROS.



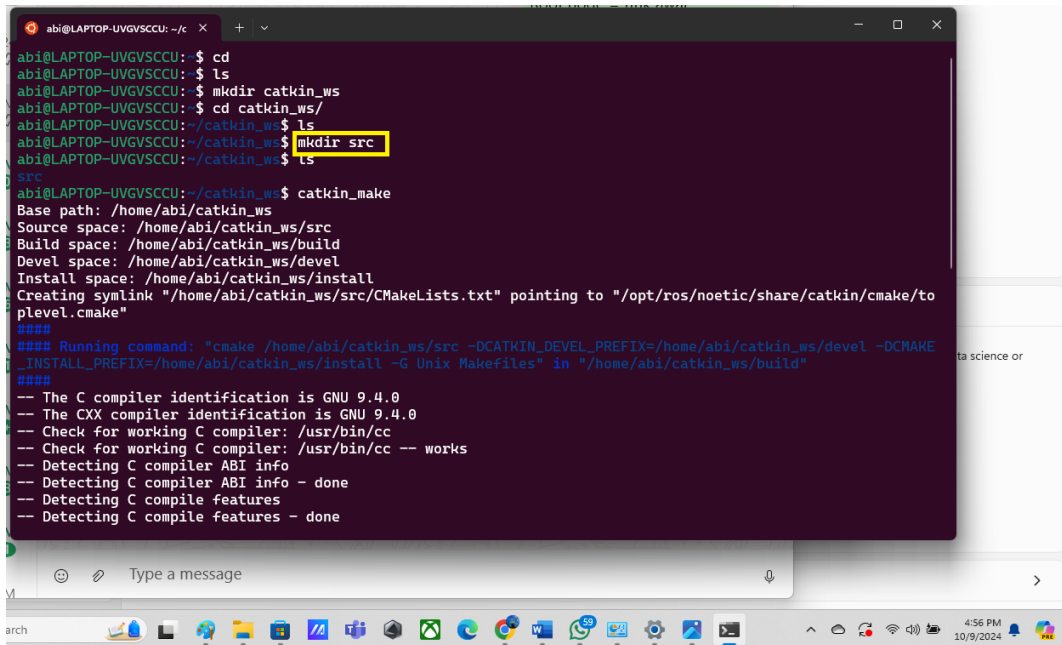
```
abi@LAPTOP-UVGVSCCU: ~/$ cd
abi@LAPTOP-UVGVSCCU: ~/$ ls
abi@LAPTOP-UVGVSCCU: ~/$ mkdir catkin_ws
abi@LAPTOP-UVGVSCCU: ~/$ cd catkin_ws/
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ ls
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ mkdir src
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ ls
src
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ catkin_make
Base path: /home/abi/catkin_ws
Source space: /home/abi/catkin_ws/src
Build space: /home/abi/catkin_ws/build
Devel space: /home/abi/catkin_ws/devel
Install space: /home/abi/catkin_ws/install
Creating symlink "/home/abi/catkin_ws/src/CMakeLists.txt" pointing to "/opt/ros/noetic/share/catkin/cmake/to
plevel.cmake"
####
#### Running command: "cmake /home/abi/catkin_ws/src -DCATKIN_DEVEL_PREFIX=/home/abi/catkin_ws/devel -DCMAKE
_INSTALL_PREFIX=/home/abi/catkin_ws/install -G Unix Makefiles" in "/home/abi/catkin_ws/build"
####
-- The C compiler identification is GNU 9.4.0
-- The CXX compiler identification is GNU 9.4.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
```

2. Masukkan syntax **cd catkin_ws** untuk berpindah ke direktori workspace yang baru saja dibuat



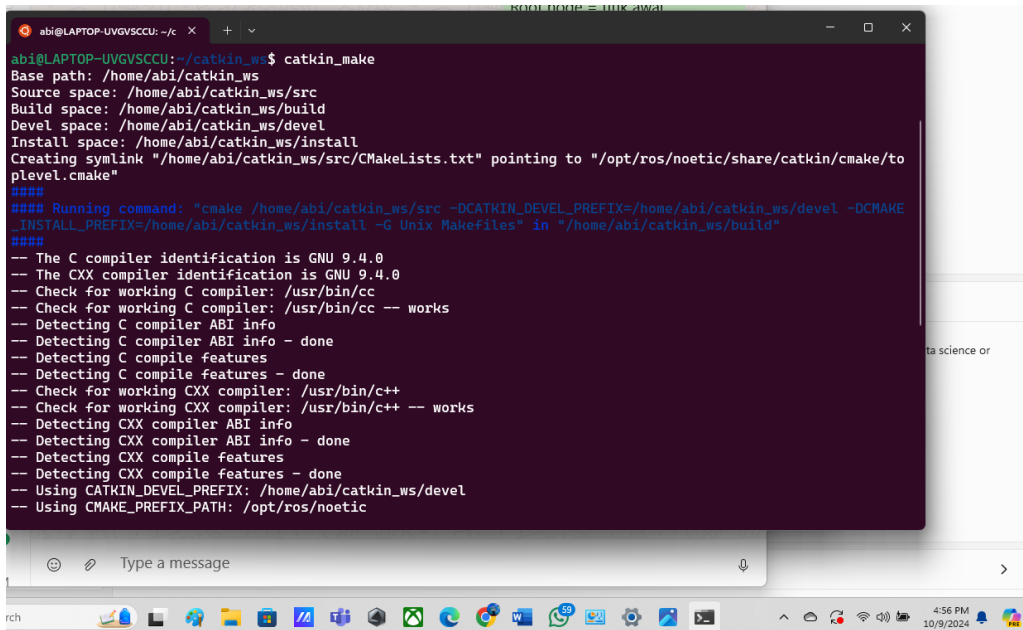
```
abi@LAPTOP-UVGVSCCU: ~/$ cd
abi@LAPTOP-UVGVSCCU: ~/$ ls
abi@LAPTOP-UVGVSCCU: ~/$ mkdir catkin_ws
abi@LAPTOP-UVGVSCCU: ~/$ cd catkin_ws/
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ ls
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ mkdir src
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ ls
src
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ catkin_make
Base path: /home/abi/catkin_ws
Source space: /home/abi/catkin_ws/src
Build space: /home/abi/catkin_ws/build
Devel space: /home/abi/catkin_ws/devel
Install space: /home/abi/catkin_ws/install
Creating symlink "/home/abi/catkin_ws/src/CMakeLists.txt" pointing to "/opt/ros/noetic/share/catkin/cmake/to
plevel.cmake"
####
#### Running command: "cmake /home/abi/catkin_ws/src -DCATKIN_DEVEL_PREFIX=/home/abi/catkin_ws/devel -DCMAKE
_INSTALL_PREFIX=/home/abi/catkin_ws/install -G Unix Makefiles" in "/home/abi/catkin_ws/build"
####
-- The C compiler identification is GNU 9.4.0
-- The CXX compiler identification is GNU 9.4.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
```

3. Masukkan syntax **mkdir src** untuk membuat direktori src di dalam workspace



```
abi@LAPTOP-UVGVSCCU: ~/catkin_ws
abi@LAPTOP-UVGVSCCU:~$ cd
abi@LAPTOP-UVGVSCCU:~$ ls
abi@LAPTOP-UVGVSCCU:~$ mkdir catkin_ws
abi@LAPTOP-UVGVSCCU:~$ cd catkin_ws/
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ ls
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ mkdir src
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ ls
src
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ catkin_make
Base path: /home/abi/catkin_ws
Source space: /home/abi/catkin_ws/src
Build space: /home/abi/catkin_ws/build
Devel space: /home/abi/catkin_ws/devel
Install space: /home/abi/catkin_ws/install
Creating symlink "/home/abi/catkin_ws/src/CMakeLists.txt" pointing to "/opt/ros/noetic/share/catkin/cmake/to
plevel.cmake"
####
#### Running command: "cmake /home/abi/catkin_ws/src -DCATKIN_DEVEL_PREFIX=/home/abi/catkin_ws/devel -DCMAKE
_INSTALL_PREFIX=/home/abi/catkin_ws/install -G Unix Makefiles" in "/home/abi/catkin_ws/build"
####
-- The C compiler identification is GNU 9.4.0
-- The CXX compiler identification is GNU 9.4.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
```

4. Masukkan syntax **catkin_make** untuk menginisialisasi Catkin Workspace dengan membangun struktur dasar proyek yang akan menghasilkan direktori build/ dan devel/ di dalam workspace



```
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ catkin_make
Base path: /home/abi/catkin_ws
Source space: /home/abi/catkin_ws/src
Build space: /home/abi/catkin_ws/build
Devel space: /home/abi/catkin_ws/devel
Install space: /home/abi/catkin_ws/install
Creating symlink "/home/abi/catkin_ws/src/CMakeLists.txt" pointing to "/opt/ros/noetic/share/catkin/cmake/to
plevel.cmake"
####
#### Running command: "cmake /home/abi/catkin_ws/src -DCATKIN_DEVEL_PREFIX=/home/abi/catkin_ws/devel -DCMAKE
_INSTALL_PREFIX=/home/abi/catkin_ws/install -G Unix Makefiles" in "/home/abi/catkin_ws/build"
####
-- The C compiler identification is GNU 9.4.0
-- The CXX compiler identification is GNU 9.4.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Using CATKIN_DEVEL_PREFIX: /home/abi/catkin_ws/devel
-- Using CMAKE_PREFIX_PATH: /opt/ros/noetic
```

```
abi@LAPTOP-UVGVSCCU: ~/catkin_ws
-- Detecting CXX compile features - done
-- Using CATKIN_DEVEL_PREFIX: /home/abi/catkin_ws/devel
-- Using CMAKE_PREFIX_PATH: /opt/ros/noetic
-- This workspace overlays: /opt/ros/noetic
-- Found PythonInterp: /usr/bin/python3 (found suitable version "3.8.10", minimum required is "3")
-- Using PYTHON_EXECUTABLE: /usr/bin/python3
-- Using Debian Python package layout
-- Found PY_em: /usr/lib/python3/dist-packages/em.py
-- Using empy: /usr/lib/python3/dist-packages/em.py
-- Using CATKIN_ENABLE_TESTING: ON
-- Call enable_testing()
-- Using CATKIN_TEST_RESULTS_DIR: /home/abi/catkin_ws/build/test_results
-- Forcing gtest/gmock from source, though one was otherwise available.
-- Found gtest sources under '/usr/src/gtest': gtests will be built
-- Found gmock sources under '/usr/src/gtest': gmock will be built
-- Found PythonInterp: /usr/bin/python3 (found version "3.8.10")
-- Found Threads: TRUE
-- Using Python nosetests: /usr/bin/nosetests3
-- catkin 0.8.10
-- BUILD_SHARED_LIBS is on
-- BUILD_SHARED_LIBS is on
-- Configuring done
-- Generating done
-- Build files have been written to: /home/abi/catkin_ws/build
####
#### Running command: "make -j12 -l12" in "/home/abi/catkin_ws/build"
####
abi@LAPTOP-UVGVSCCU:~/catkin_ws$
```

5. Masukkan syntax **catkin_make** lagi untuk menjalankan workspace namun dengan output yang lebih sedikit

```
abi@LAPTOP-UVGVSCCU: ~/catkin_ws
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ ls
build devel src
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ catkin make
catkin: command not found
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ catkin_make
Base path: /home/abi/catkin_ws
Source space: /home/abi/catkin_ws/src
Build space: /home/abi/catkin_ws/build
Devel space: /home/abi/catkin_ws/devel
Install space: /home/abi/catkin_ws/install
####
#### Running command: "make cmake_check_build_system" in "/home/abi/catkin_ws/build"
####
####
#### Running command: "make -j12 -l12" in "/home/abi/catkin_ws/build"
####
abi@LAPTOP-UVGVSCCU:~/catkin_ws$
```

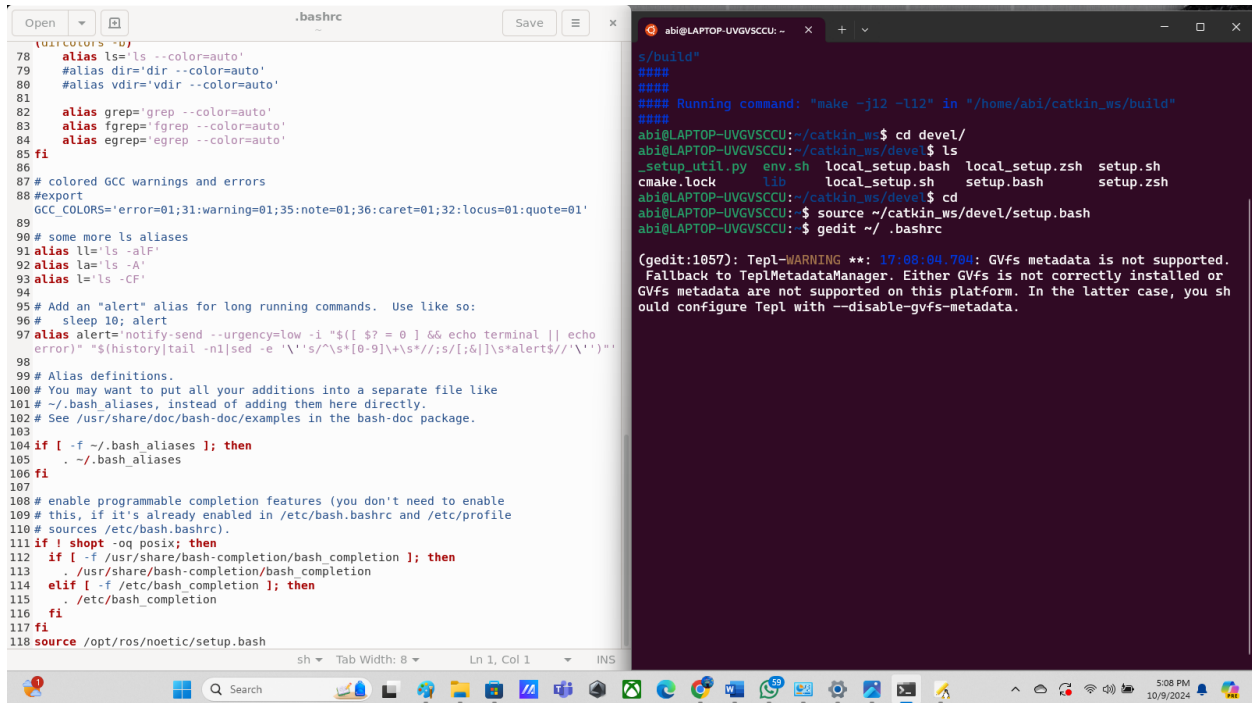
6. Masukkan syntax **cd devel/** untuk berpindah ke direktori devel/ yang dihasilkan setelah menjalankan catkin_make

```
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ ls
build devel src
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ catkin make
catkin: command not found
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ catkin_make
Base path: /home/abi/catkin_ws
Source space: /home/abi/catkin_ws/src
Build space: /home/abi/catkin_ws/build
Devel space: /home/abi/catkin_ws/devel
Install space: /home/abi/catkin_ws/install
####
#### Running command: "make cmake_check_build_system" in "/home/abi/catkin_ws/build"
####
####
#### Running command: "make -j12 -l12" in "/home/abi/catkin_ws/build"
####
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ cd devel/
abi@LAPTOP-UVGVSCCU:~/catkin_ws/devel$
```

7. Masukkan syntax **source ~/catkin_ws/devel/setup.bash** untuk membuat konfigurasi Catkin Workspace ke dalam lingkungan shell saat ini

```
abi@LAPTOP-UVGVSCCU: ~/catkin_ws$ ls
build devel src
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ catkin make
catkin: command not found
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ catkin_make
Base path: /home/abi/catkin_ws
Source space: /home/abi/catkin_ws/src
Build space: /home/abi/catkin_ws/build
Devel space: /home/abi/catkin_ws/devel
Install space: /home/abi/catkin_ws/install
####
#### Running command: "make cmake_check_build_system" in "/home/abi/catkin_ws/build"
####
####
#### Running command: "make -j12 -l12" in "/home/abi/catkin_ws/build"
####
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ cd devel/
abi@LAPTOP-UVGVSCCU:~/catkin_ws/devel$ ls
_setup_util.py env.sh local_setup.bash local_setup.zsh setup.sh
cmake.lock lib local_setup.sh setup.bash setup.zsh
abi@LAPTOP-UVGVSCCU:~/catkin_ws/devel$ cd
abi@LAPTOP-UVGVSCCU:~$ source ~/catkin_ws/devel/setup.bash
abi@LAPTOP-UVGVSCCU:~$
```

8. Masukkan syntax **gedit ~/.bashrc** lalu tambahkan **source ~/catkin_ws/devel/setup.bash** agar setiap kali membuka terminal baru, konfigurasi Catkin Workspace akan secara otomatis dimuat..



```
78 alias ls='ls --color=auto'
79 #alias dir='dir --color=auto'
80 #alias vdir='vdir --color=auto'
81
82 alias grep='grep --color=auto'
83 alias fgrep='fgrep --color=auto'
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 -lF'
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 source /opt/ros/noetic/setup.bash
```

```
s/build"
####
#### Running command: "make -j12 -l12" in "/home/abi/catkin_ws/build"
####
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ cd devel/
abi@LAPTOP-UVGVSCCU:~/catkin_ws/devel$ ls
_setup_util.py env.sh local_setup.bash local_setup.zsh setup.sh
cmake.lock lib local_setup.sh setup.bash setup.zsh
abi@LAPTOP-UVGVSCCU:~/catkin_ws/devel$ cd
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ source ~/catkin_ws/devel/setup.bash
abi@LAPTOP-UVGVSCCU:~/catkin_ws$ gedit ~/.bashrc

(gedit:1957): Tepl-WARNING **: 17:08:04.700: GVfs metadata is not supported.
Fallback to TeplMetadataManager. Either GVfs is not correctly installed or
GVfs metadata are not supported on this platform. In the latter case, you sh
ould configure Tepl with --disable-gvfs-metadata.
```