

## ROS Beginner Tutorial #11: Writing a Simple Publisher and Subscriber (C++)

If you are starting this tutorial from scratch, do the following:

- Open a new terminal
- `cd ~/catkin_ws`
- `source devel/setup.bash`

Now start the steps of the beginner tutorial #11, “Writing the Publisher Node”

- `roscd beginner_tutorials`
- `mkdir -p src` % make a standard msg subdirectory for the package
- Then you are to copy the “talker.cpp” tutorial text into `src/talker.cpp`
  - The tutorial text seems to be error free for ROS Melodic.
- Then copy the “listener.cpp” tutorial text into `listener.cpp` within the `src` directory
  - The tutorial text seems to be error free for ROS Melodic

In part 3 of the tutorial (Building your nodes), you are first asked to modify the `CMakeLists.txt` file (which directs the C++ compiler to properly include, compile, and link all of the bits and pieces)

- The first step of adding 6 lines to the end of the file is correct
- BUT, the complete `CMakeLists.txt` example is IN ERROR (the file after “Your resulting `CMakeLists.txt` File should look like this:”)
  - This code is probably left over from a much older version of ROS. Note, that
  - The file uses the ROS function “`genmsg`” instead of the ROS function “`message_generation`” which has been used in the most previous tutorials. It is possible to use `genmsg`, but then you want have to change the `package.xml` file to use `genmsg`.
  - The text below is the `CMakeLists.txt` with the `message_generation` function used instead of `genmsg`. This approach does not require modification of the `packages.xml` file.

```
cmake_minimum_required(VERSION 2.8.3)
project(beginner_tutorials)
```

```
## Find catkin macros and libraries
find_package(catkin REQUIRED COMPONENTS roscpp rospy std_msgs
message_generation)
```

```
## Generate messages in the 'msg' folder
#add_message_files(DIRECTORY msg FILES Num.msg)
add_message_files(FILES Num.msg)
```

```
## Generate services in the 'srv' folder
# add_service_files(DIRECTORY srv FILES AddTwoInts.srv)
```

```

add_service_files(FILESD AddTwoInts.srv)

## Generate added messages and services
generate_messages(DEPENDENCIES std_msgs)

## catkin specific configuration
catkin_package()

#####
## Build ##
#####

include_directories(include ${catkin_INCLUDE_DIRS})

add_executable(talker src/talker.cpp)
target_link_libraries(talker ${catkin_LIBRARIES})
add_dependencies(talker beginner_tutorials_generate_message_cpp)

add_executable(listener src/listener.cpp)
target_link_libraries(listener ${catkin_LIBRARIES})
add_dependencies(listener beginner_tutorials_generate_message_cpp)

```

**Continue with the tutorial, which asks you to compile the code**

- `cd ~/catkin_ws` % move to the top directory of the package
- `catkin_make` % use the ROS catkin “Make” system
  - **Catkin\_make is really just a script that takes info from the package.xml and CMakeLists.txt files, and prepares the compilation process.**