Creating a Publisher and Subscriber Nodes using Python

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Before starting, please complete this tutorial

Writing the Publisher Node

1. First, type the following command then click enter.

```
cd /home/youruser/catkin_ws/src/beginner_tutorials/
```

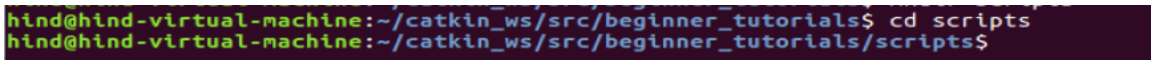
Hint: Don't forget to replace the word "youruser" in the previous command with youruser.

2. Then, type the following command then click enter.

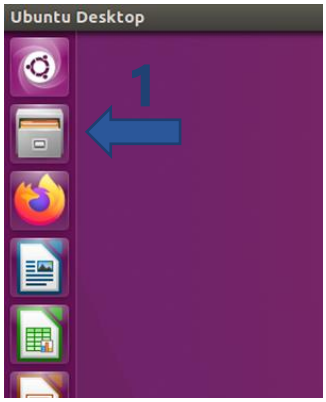
```
mkdir scripts
```

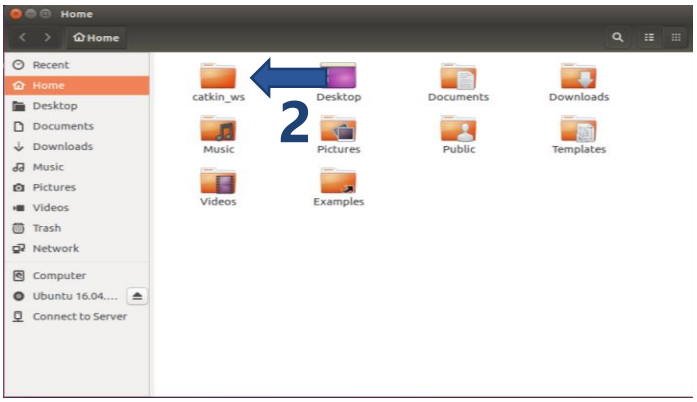
3. After that, type the following command then click enter.

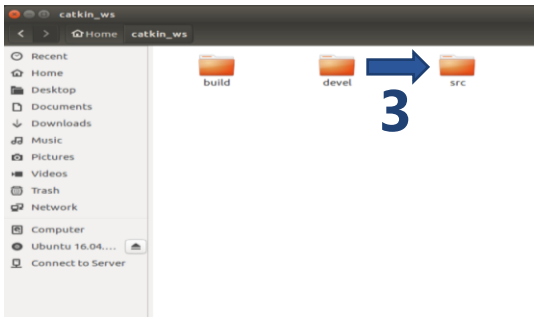
```
cd scripts
```

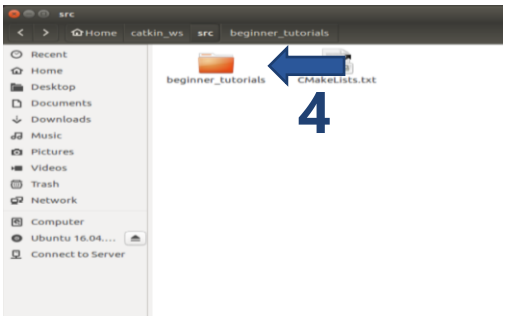


4. Now click the second icon. Then open the catkin_ws package and follow the steps in the following pictures.





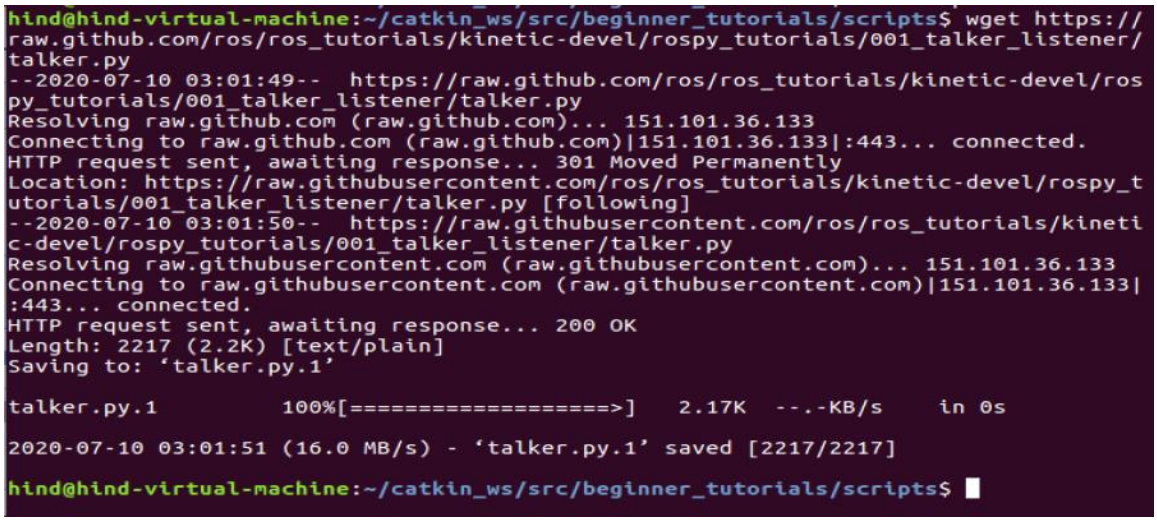




After open scripts package, create a new document and rename it to “talker.py”. Then click here and copy the code and paste it in the “talker.py”.

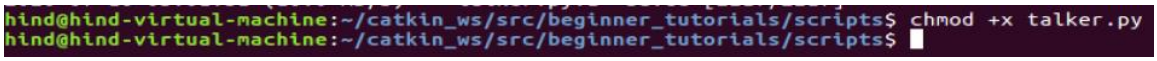
5. Next, return to the terminal and type the following command then click enter.

```
wget https://raw.github.com/ros/ros_tutorials/kinetic-
devel/rospy_tutorials/001_talker_listener/talker.py
```



6. Finally, type the following command then click enter.

```
chmod +x talker.py
```

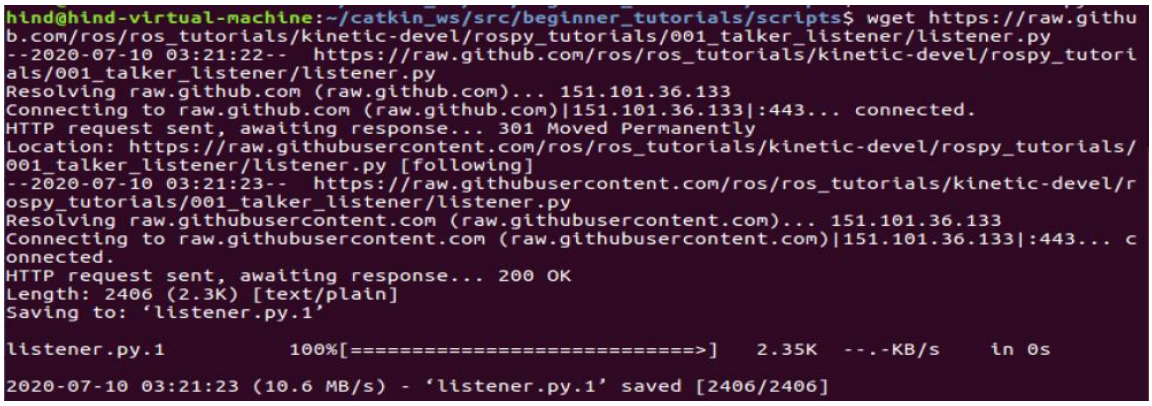


Writing the Subscriber Node

1. Like the steps of creating a "talker.py" file in step 4, create a new document, and rename it to "listener.py". Then click here and copy the code and paste it in the "listener.py".

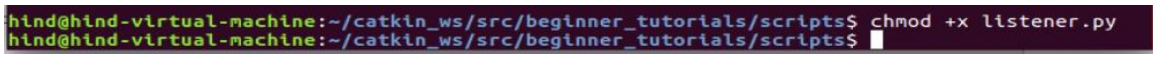
2. Next, type the following command then click enter.

```
wget https://raw.github.com/ros/ros_tutorials/kinetic-
devel/rospy_tutorials/001_talker_listener/listener.py
```



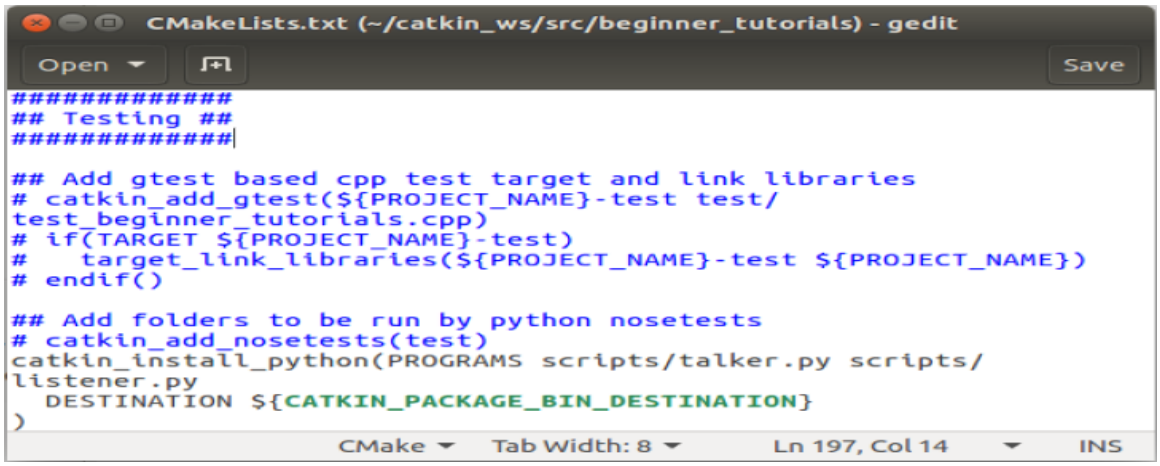
3. After that, type the following command then click enter.

```
chmod +x listener.py
```



4. Now open "CMakeLists.txt" that exists in the beginner_tutorials folder and add the following command then click save.

```
catkin_install_python(PROGRAMS scripts/talker.py scripts/listener.py
DESTINATION ${CATKIN_PACKAGE_BIN_DESTINATION} )
```



Building your nodes

1. First, type (or copy and paste) the following command then click enter.

```
cd ~/catkin_ws
```

```
hind@hind-virtual-machine:~$ cd ~/catkin_ws
hind@hind-virtual-machine:~/catkin_ws$
```

2. Then, type the following command then click enter.

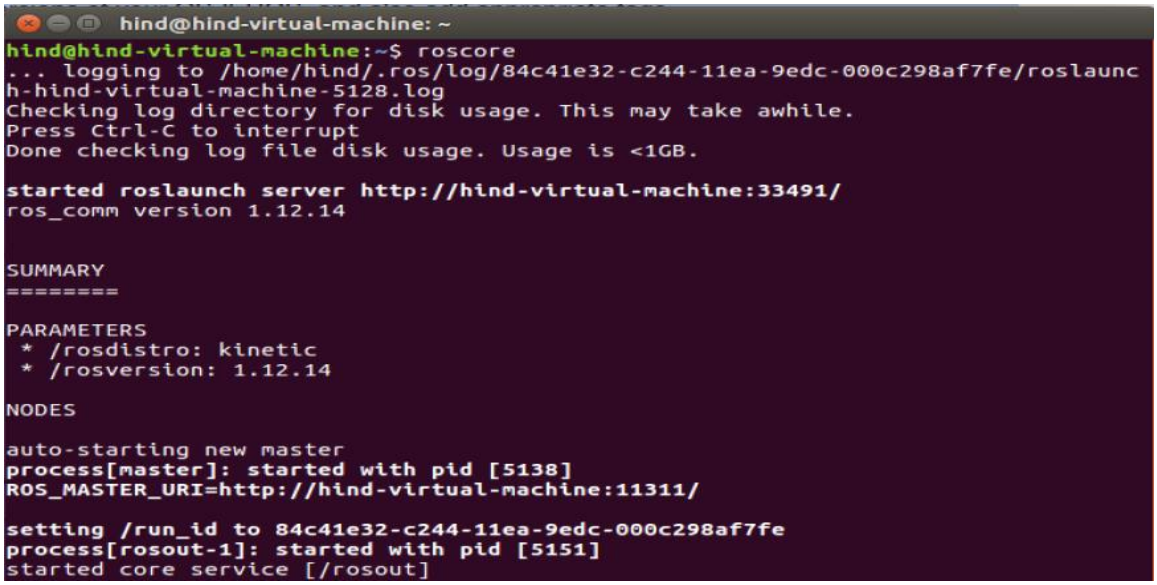
```
catkin_make
```

```
hind@hind-virtual-machine:~/catkin_ws$ catkin_make
Base path: /home/hind/catkin_ws
Source space: /home/hind/catkin_ws/src
Build space: /home/hind/catkin_ws/build
Devel space: /home/hind/catkin_ws/devel
Install space: /home/hind/catkin_ws/install
####
#### Running command: "make cmake_check_build_system" in "/home/hind/catkin_ws/build"
####
-- Using CATKIN_DEVEL_PREFIX: /home/hind/catkin_ws/devel
-- Using CMAKE_PREFIX_PATH: /opt/ros/kinetic
-- This workspace overlays: /opt/ros/kinetic
-- Found PythonInterp: /usr/bin/python2 (found suitable version "2.7.12", minimum required is "2")
-- Using PYTHON_EXECUTABLE: /usr/bin/python2
-- Using Debian Python package layout
-- Using empy: /usr/bin/empy
-- Using CATKIN_ENABLE_TESTING: ON
-- Call enable_testing()
-- Using CATKIN_TEST_RESULTS_DIR: /home/hind/catkin_ws/build/test_results
-- Found gtest sources under '/usr/src/gmock': gtests will be built
-- Found gmock sources under '/usr/src/gmock': gmock will be built
-- Found PythonInterp: /usr/bin/python2 (found version "2.7.12")
-- Using Python nosetests: /usr/bin/nosetests-2.7
-- catkin 0.7.20
-- BUILD_SHARED_LIBS is on
-- BUILD_SHARED_LIBS is on
--
-- ~~  traversing 1 packages in topological order:
-- ~~  - beginner_tutorials
--
-- +++ processing catkin package: 'beginner_tutorials'
-- ==> add_subdirectory(beginner_tutorials)
-- Configuring done
-- Generating done
-- Build files have been written to: /home/hind/catkin_ws/build
####
#### Running command: "make -j2 -l2" in "/home/hind/catkin_ws/build"
####
hind@hind-virtual-machine:~/catkin_ws$
```

Running the Publisher

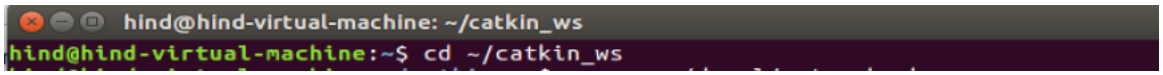
1. Open a new terminal and type the following command then click enter.

```
roscore
```



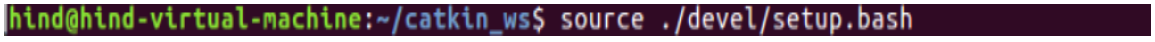
2. Then, open another new terminal and type the following command then click enter.

```
cd ~/catkin_ws
```



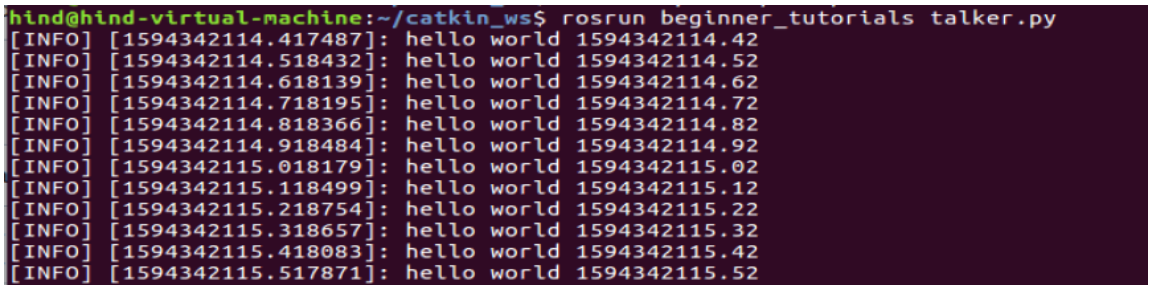
3. Next, type the following command then click enter.

```
source ./devel/setup.bash
```



4. After that, type the following command then click enter.

```
rosrun beginner_tutorials talker.py
```

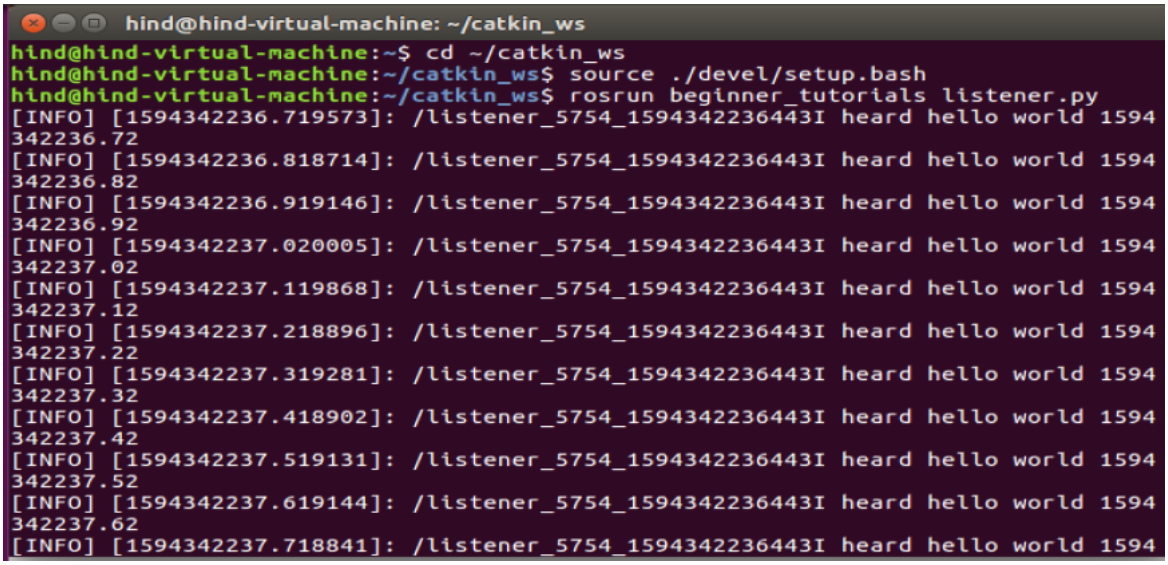


Running the Subscriber

1. Open a new terminal and repeat the second and third steps from the previous steps.

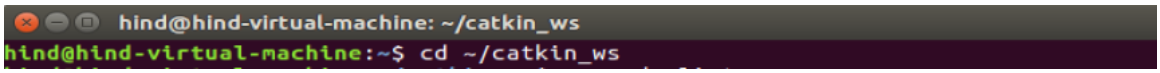
2. Then, type the following command then click enter.

```
rosrun beginner_tutorials listener.py
```



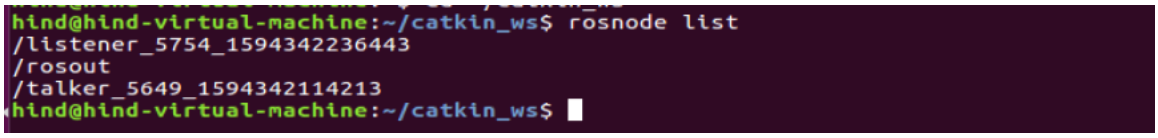
3. Next, open another new terminal and type the following command then click enter.

```
cd ~/catkin_ws
```



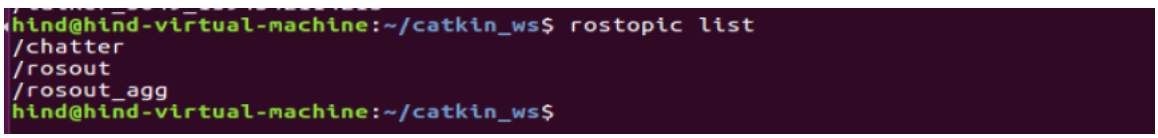
4. After that, type the following command then click enter.

```
rosnode list
```



5. Now, type the following command then click enter.

```
rostopic list
```

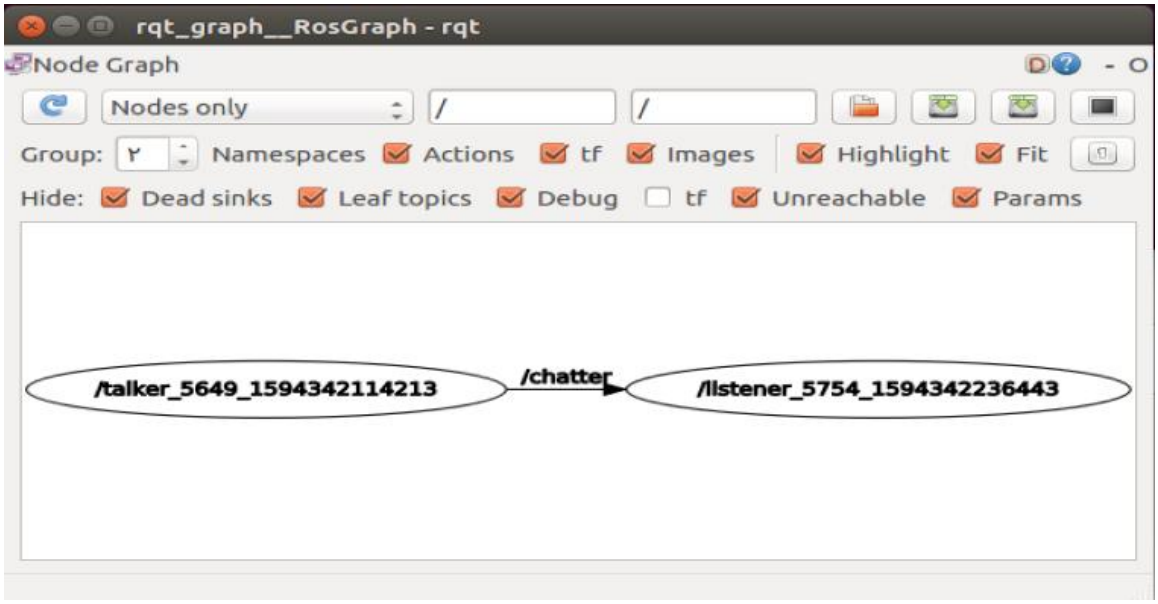


6. Finally, type the following command then click enter.

```
rqt_graph
```

```
hind@hind-virtual-machine:~/catkin_ws$ rqt_graph
```

After click enter, this window will appear.



References

http://wiki.ros.org/ROS/Tutorials/WritingPublisherSubscriber%28python%29

http://wiki.ros.org/ROS/Tutorials/ExaminingPublisherSubscriber

https://www.youtube.com/watch?v=GBtKo_pXrJQ&feature=youtu.be