

BAHRIA UNIVERSITY ISLAMABAD

ROBOTICS LAB

LAB 3: ROBOT OPERATING SYSTEM - 2

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Date of Experiment: ………………………………………………….

Report submitted on: ………………………………………………..

Marks obtained: ……………………………………

Remarks: ……………………………………………

Instructor’s Signature: ……………………………...

Fall 2021

# **OBJECTIVES:**

* To Set up simple publisher and subscriber nodes and visualize their working in terminal.
* Create a custom message.
* Run multiple nodes at once using roslaunch.
* Record your experiment in .bag file.

# **Tasks**

* Create a publisher and subscriber node, compile it using “catkin\_make” and run the nodes. Attach the screenshots and describe publishing node is publishing which message to what topic and similarly subscribing node is subscribing to which topic.
* Create a custom message, publish it from one node and subscribe it from another node.
* Create launch a launch file and run both publisher/subscriber node using single command.  Capture the environment using rosbag and run it and attach the screenshots.

**CODE:**

$ mkdir scripts

$ cd scripts

$ wget https://raw.github.com/ros/ros\_tutorials/kinetic-devel/rospy\_tutorials

/001\_talker\_listener/talker.py

$ chmod +x talker.py

catkin\_install\_python(PROGRAMS scripts/talker.py

DESTINATION ${CATKIN\_PACKAGE\_BIN\_DESTINATION}

)

$ roscd beginner\_tutorials/scripts/

$ wget https://raw.github.com/ros/ros\_tutorials/kinetic-devel/rospy\_tutorials /001\_talker\_listener/listener.py

$ chmod +x listener.py

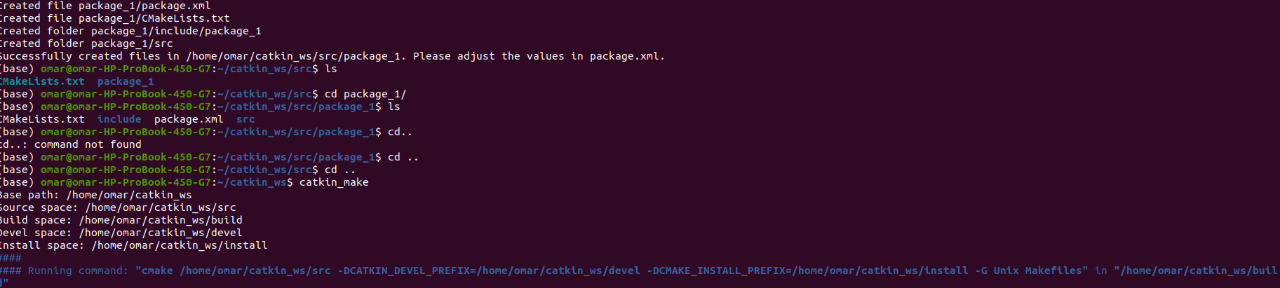
catkin\_install\_python(PROGRAMS scripts/talker.py scripts/listener.py

DESTINATION ${CATKIN\_PACKAGE\_BIN\_DESTINATION}

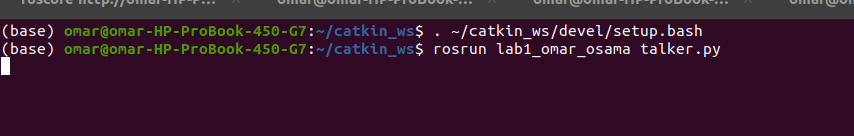
$ roslaunch [package] [filename.launch]

TASKS:

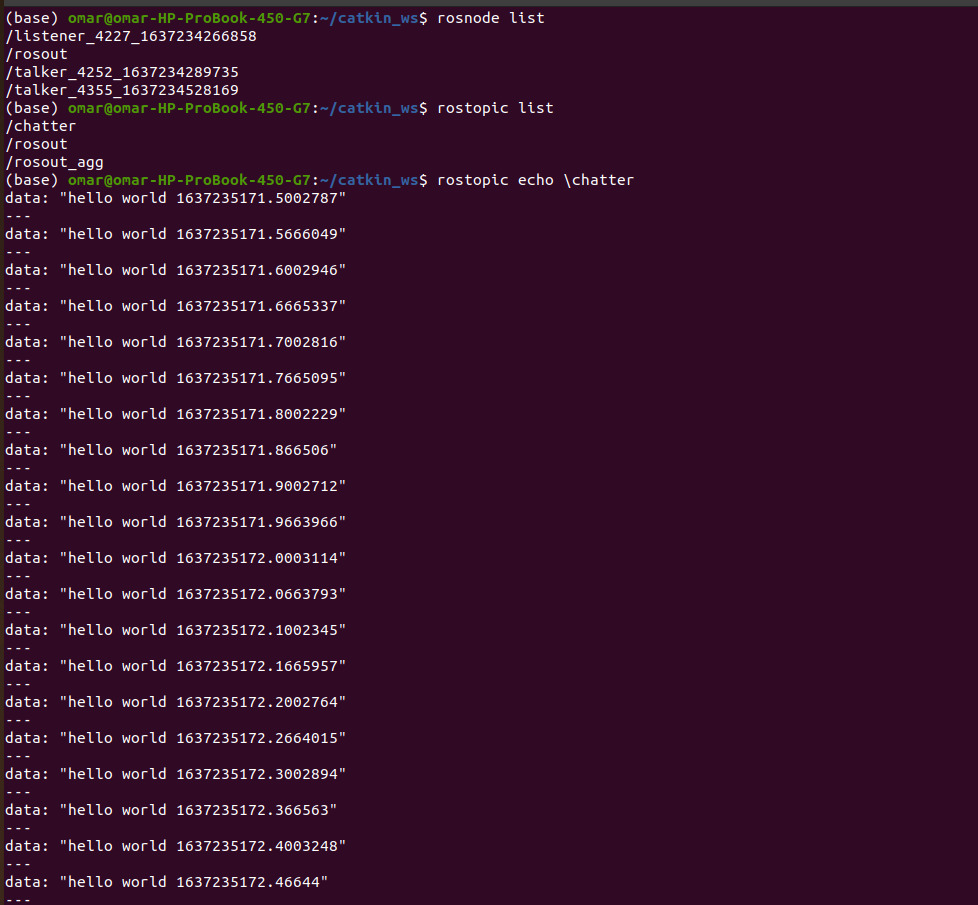
**1-Making CMake lists:**



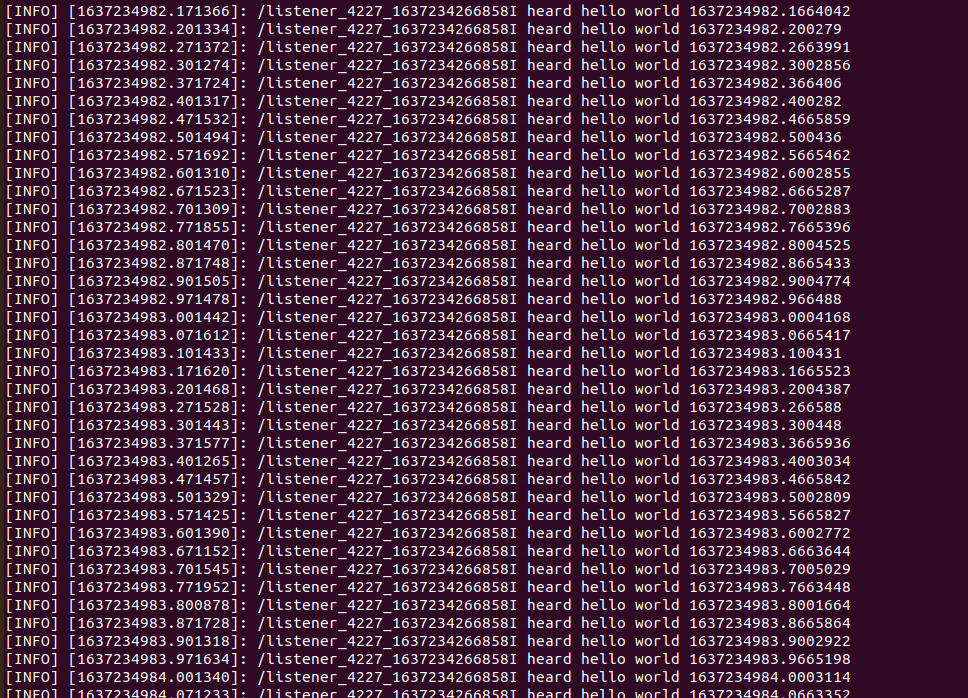
**2-To run BASH command:**



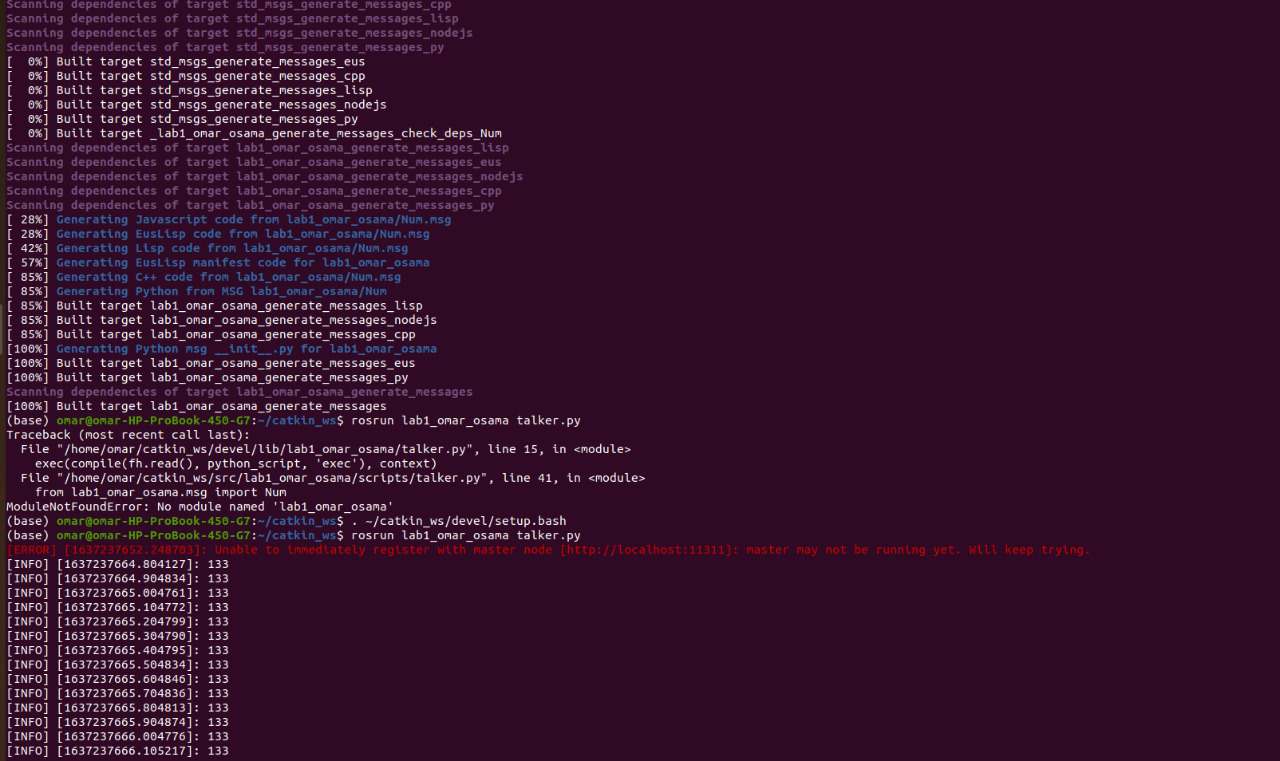
# **3-ros node , ros list & displaying our own created random message:**



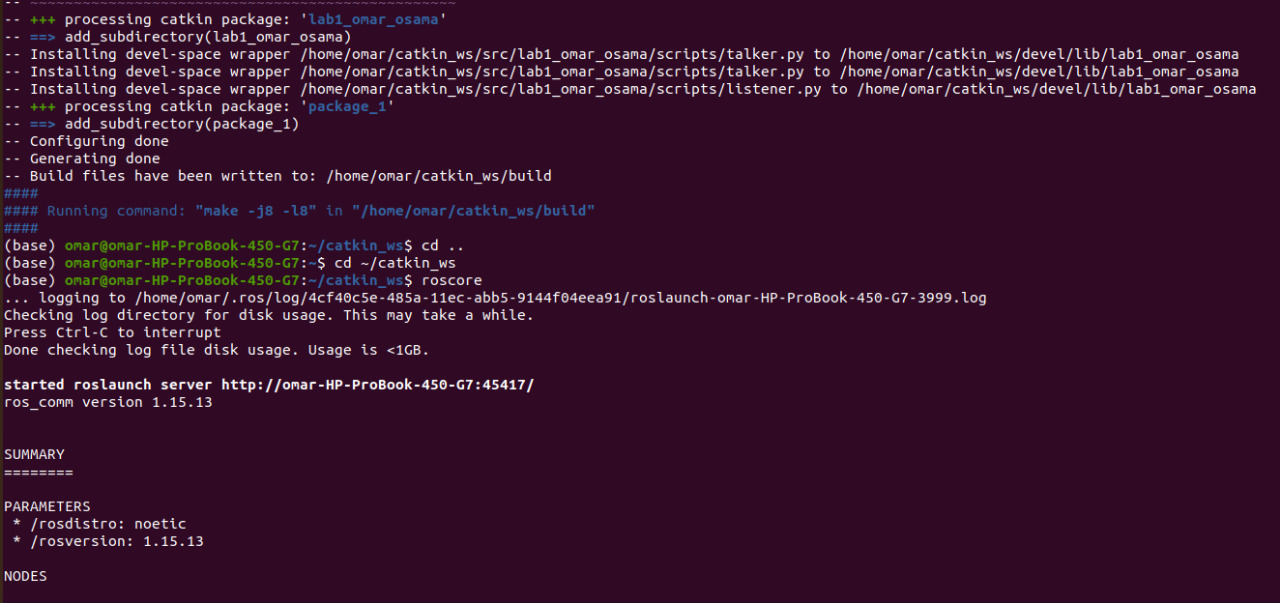
**4-Reading our message at subscriber node:**



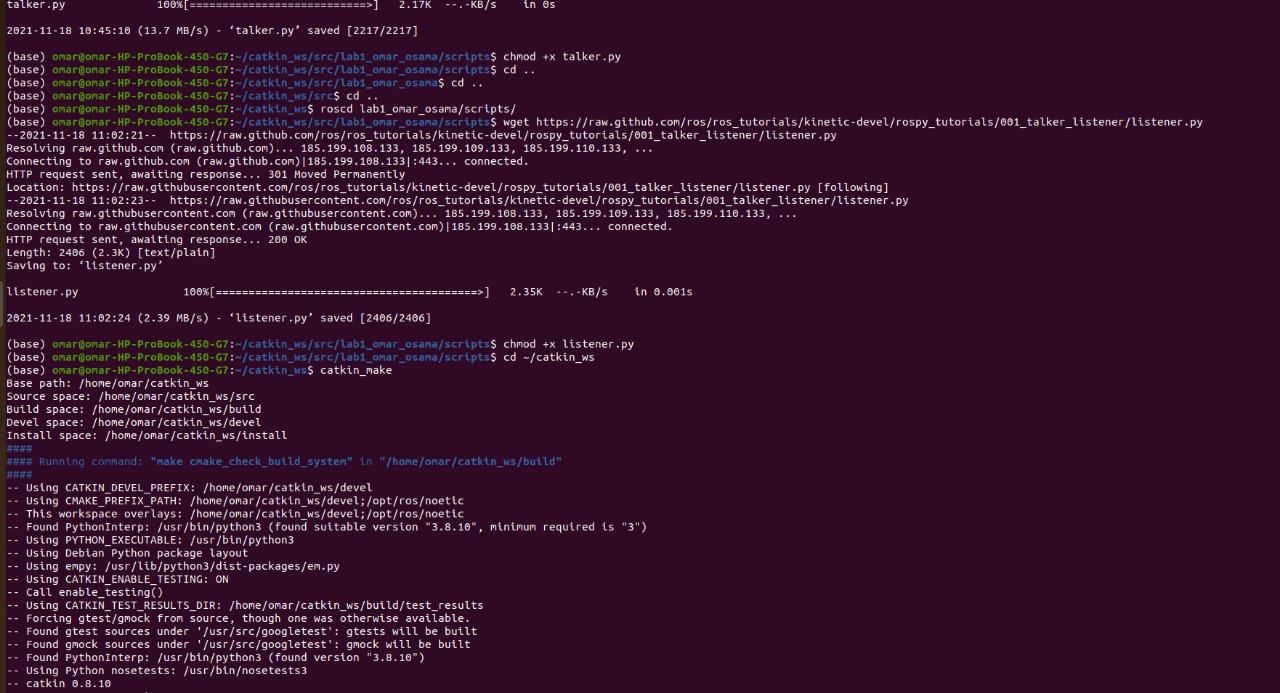
# **5-running our talker.py our publisher node:**



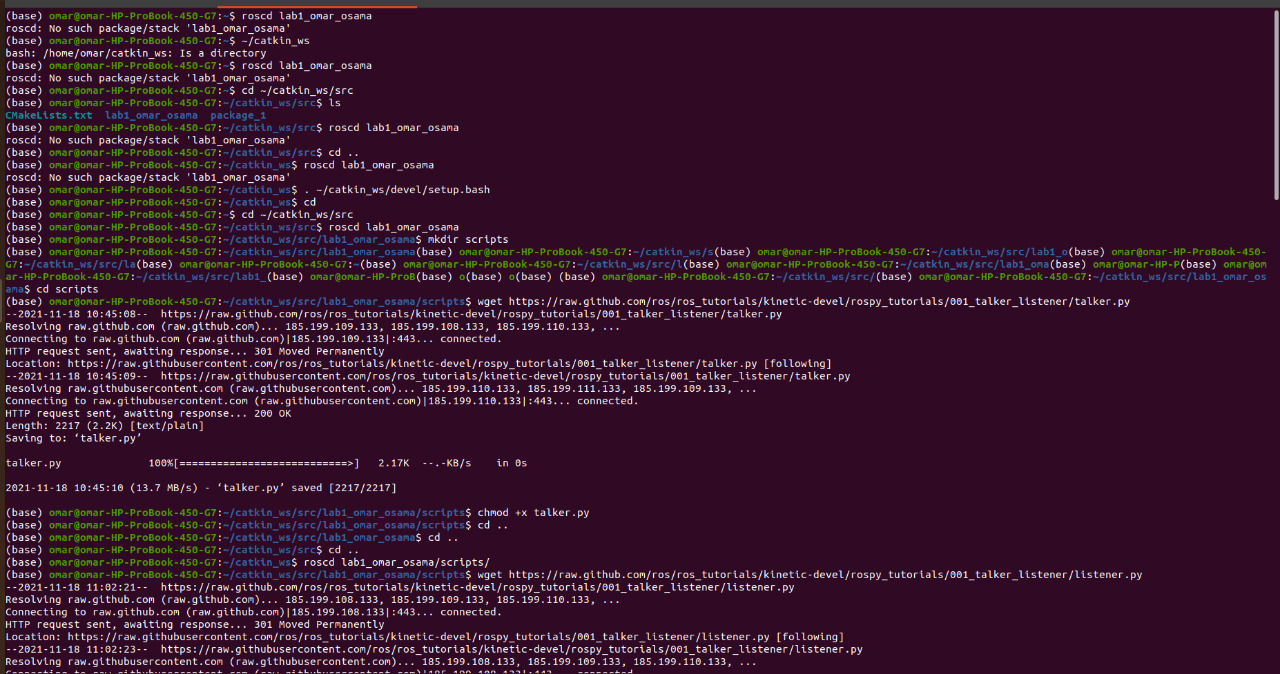
# **6-Processing our catkin package:**



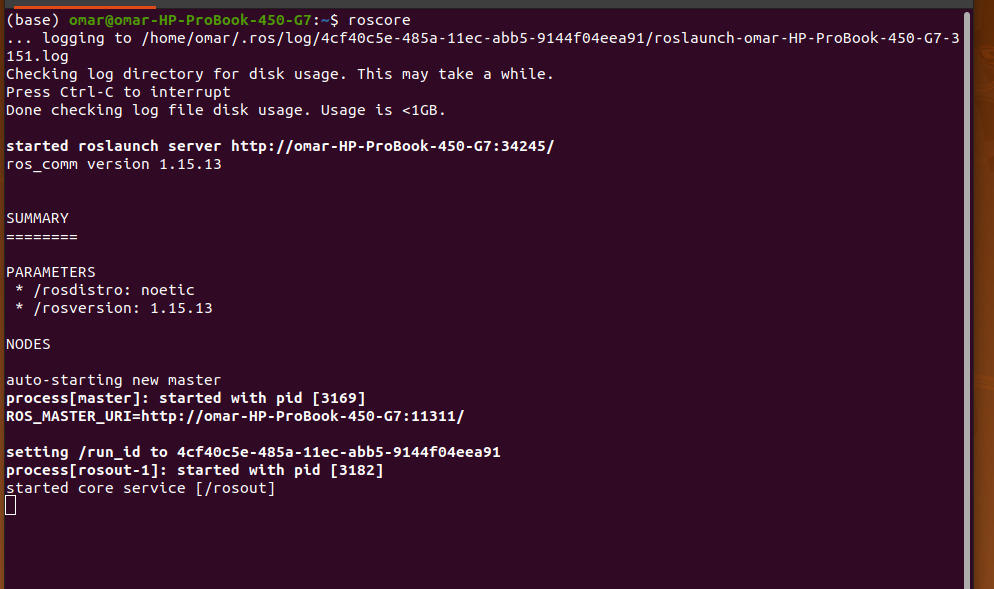
**7-chmod talker.py:**



# **8-making directory scripts:**



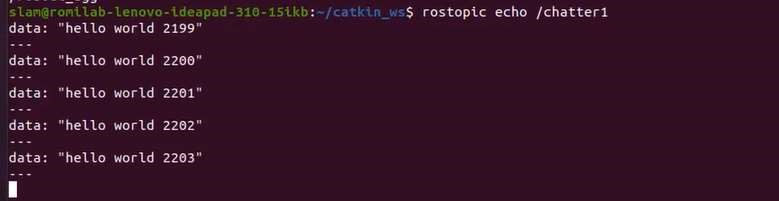
# **9-Building our environment by7 running roscore:**



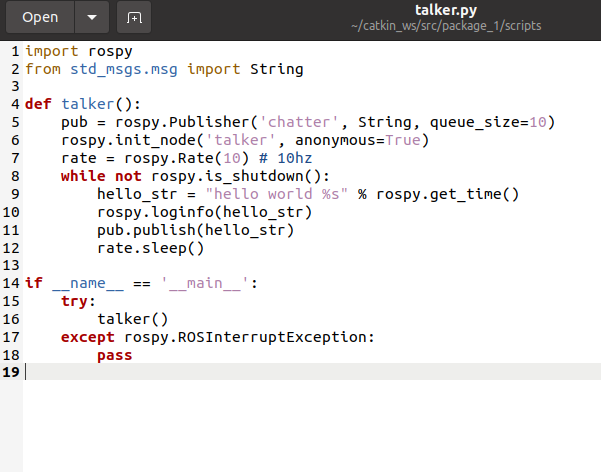
**10- Output of rosnode list :**



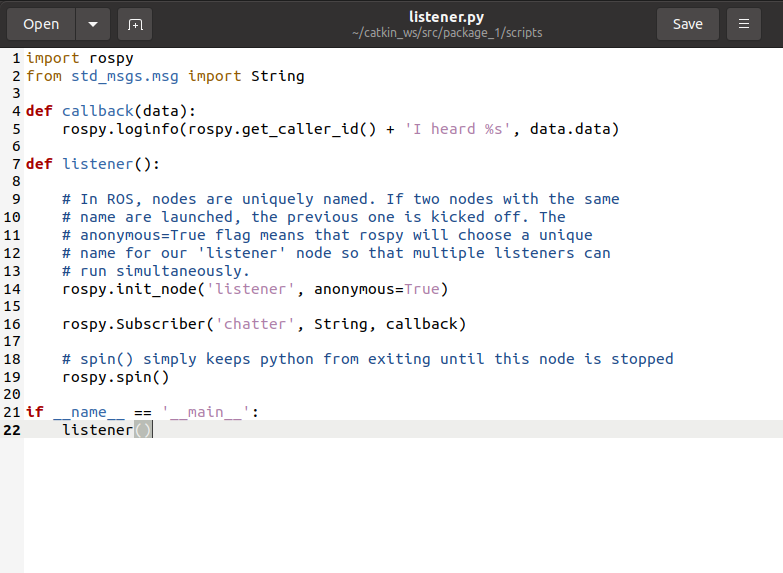
**11-Output of rostopic echo /chatter**



# **10-talker.py**

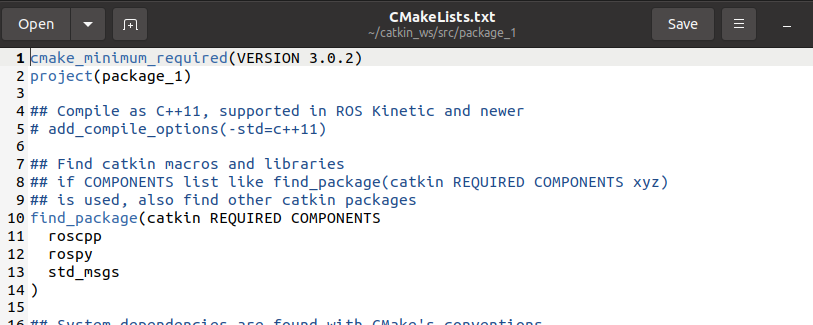


11-Listener.py



# 

**12-Cmakelists.txt :**



* **Conclusion:** Today we learne3d about how to establish subscriber and publisher nodes and then allow them to communicate together using a topic. And the message used in communication was also generated by me (custom message).