

Create 2 nodes shared a string message

ROS workspace

```
asrar@asrar-VirtualBox: ~/Documents/wallE_ws
asrar@asrar-VirtualBox:~$ cd Documents/wallE_ws/src/
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src$ catkin_init_workspace
Creating symlink "/home/asrar/Documents/wallE_ws/src/CMakeLists.txt" pointing to
"/opt/ros/noetic/share/catkin/cmake/toplevel.cmake"

asrar@asrar-VirtualBox:~/Documents/wallE_ws/src$ cd ..
asrar@asrar-VirtualBox:~/Documents/wallE_ws$ catkin_make
Base path: /home/asrar/Documents/wallE_ws
Source space: /home/asrar/Documents/wallE_ws/src
Build space: /home/asrar/Documents/wallE_ws/build
Devel space: /home/asrar/Documents/wallE_ws/devel
Install space: /home/asrar/Documents/wallE_ws/install
####
#### Running command: "cmake /home/asrar/Documents/wallE_ws/src -DCATKIN_DEVEL_
PREFIX=/home/asrar/Documents/wallE_ws/devel -DCMAKE_INSTALL_PREFIX=/home/asrar/
Documents/wallE_ws/install -G Unix Makefiles" in "/home/asrar/Documents/wallE_w
s/build"
####
```

New package

```
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src$ catkin_create_pkg --roscpp
noetic tutorial roscpp std_msgs
Created file tutorial/package.xml
Created file tutorial/CMakeLists.txt
Created folder tutorial/include/tutorial
Created folder tutorial/src
Successfully created files in /home/asrar/Documents/wallE_ws/src/tutorial. Plea
se adjust the values in package.xml.
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src$ cd ..
asrar@asrar-VirtualBox:~/Documents/wallE_ws$ catkin_make
Base path: /home/asrar/Documents/wallE_ws
Source space: /home/asrar/Documents/wallE_ws/src
Build space: /home/asrar/Documents/wallE_ws/build
Devel space: /home/asrar/Documents/wallE_ws/devel
Install space: /home/asrar/Documents/wallE_ws/install
####
#### Running command: "cmake /home/asrar/Documents/wallE_ws/src -DCATKIN_DEVEL_
PREFIX=/home/asrar/Documents/wallE_ws/devel -DCMAKE_INSTALL_PREFIX=/home/asrar/
Documents/wallE_ws/install -G Unix Makefiles" in "/home/asrar/Documents/wallE_w
s/build"
####
```

```
asrar@asrar-VirtualBox: ~/Documents/wallE_ws
-- Using Debian Python package layout
-- Using empy: /usr/lib/python3/dist-packages/em.py
-- Using CATKIN_ENABLE_TESTING: ON
-- Call enable_testing()
-- Using CATKIN_TEST_RESULTS_DIR: /home/asrar/Documents/wallE_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 "3.8.2")
-- Using Python nosetests: /usr/bin/nosetests3
-- catkin 0.8.6
-- BUILD_SHARED_LIBS is on
-- BUILD_SHARED_LIBS is on
--
-- traversing 2 packages in topological order:
--   - turtlebot3_msgs
--   - tutorial
--
-- ++ processing catkin package: 'turtlebot3_msgs'
-- ==> add_subdirectory(turtlebot3_msgs)
-- Using these message generators: gencpp;geneus;genlisp;gennodejs;genpy
-- turtlebot3_msgs: 3 messages, 0 services
-- ++ processing catkin package: 'tutorial'
-- ==> add_subdirectory(tutorial)
-- Configuring done
-- Generating done
-- Build files have been written to: /home/asrar/Documents/wallE_ws/build
####
```

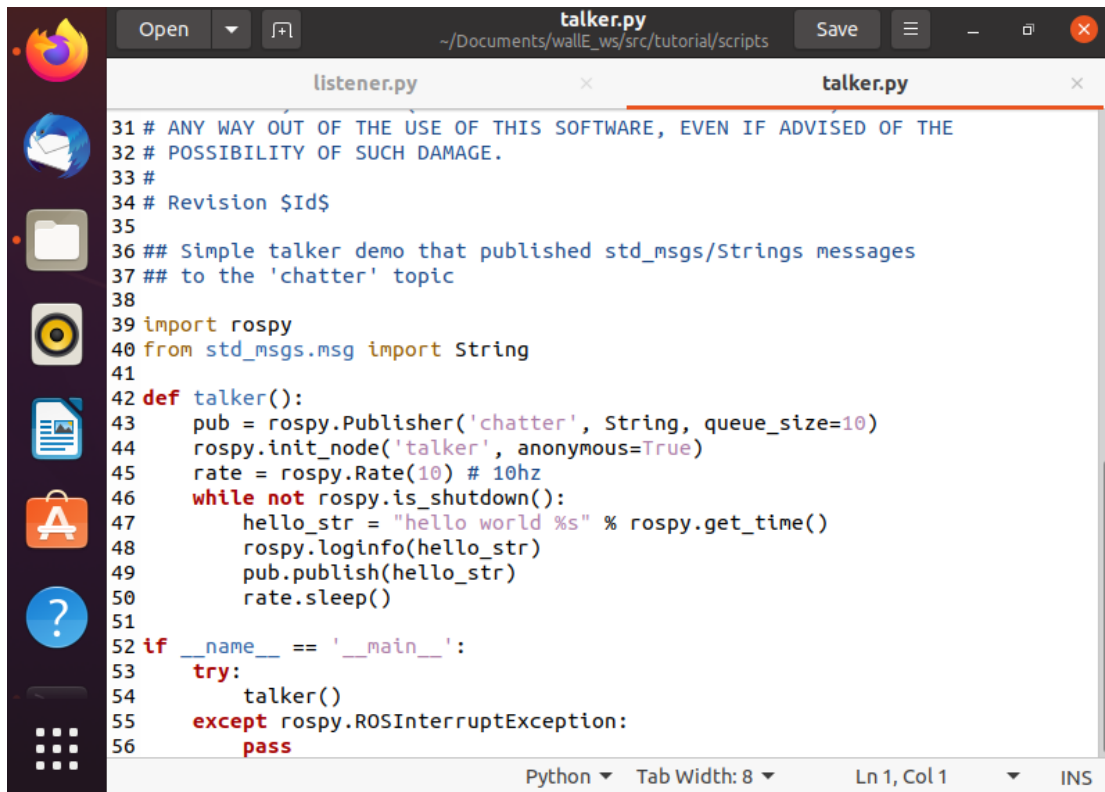
Publisher nodes using python

```
Activities Terminal 22:53 9 يوليو
asrar@asrar-VirtualBox: ~/Documents/wallE_ws/src/tutorial/s...
asrar@asrar-VirtualBox:~/Documents/wallE_ws$ cd src/tutorial/
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src/tutorial$ mkdir scripts
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src/tutorial$ cd scripts
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src/tutorial/scripts$ wget https://raw.githubusercontent.com/ros/ros_tutorials/kinetic-devel/rospy_tutorials/001_talker_listener/talker.py
--2020-07-09 22:53:22-- https://raw.githubusercontent.com/ros/ros_tutorials/kinetic-devel/rospy_tutorials/001_talker_listener/talker.py
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 151.101.140.133
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|151.101.140.133|:443... connected
.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://raw.githubusercontent.com/ros/ros_tutorials/kinetic-devel/rospy_tutorials/001_talker_listener/talker.py [following]
--2020-07-09 22:53:24-- https://raw.githubusercontent.com/ros/ros_tutorials/kinetic-devel/rospy_tutorials/001_talker_listener/talker.py
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 151.101.140.133
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|151.101.140.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2217 (2.2K) [text/plain]
Saving to: 'talker.py'

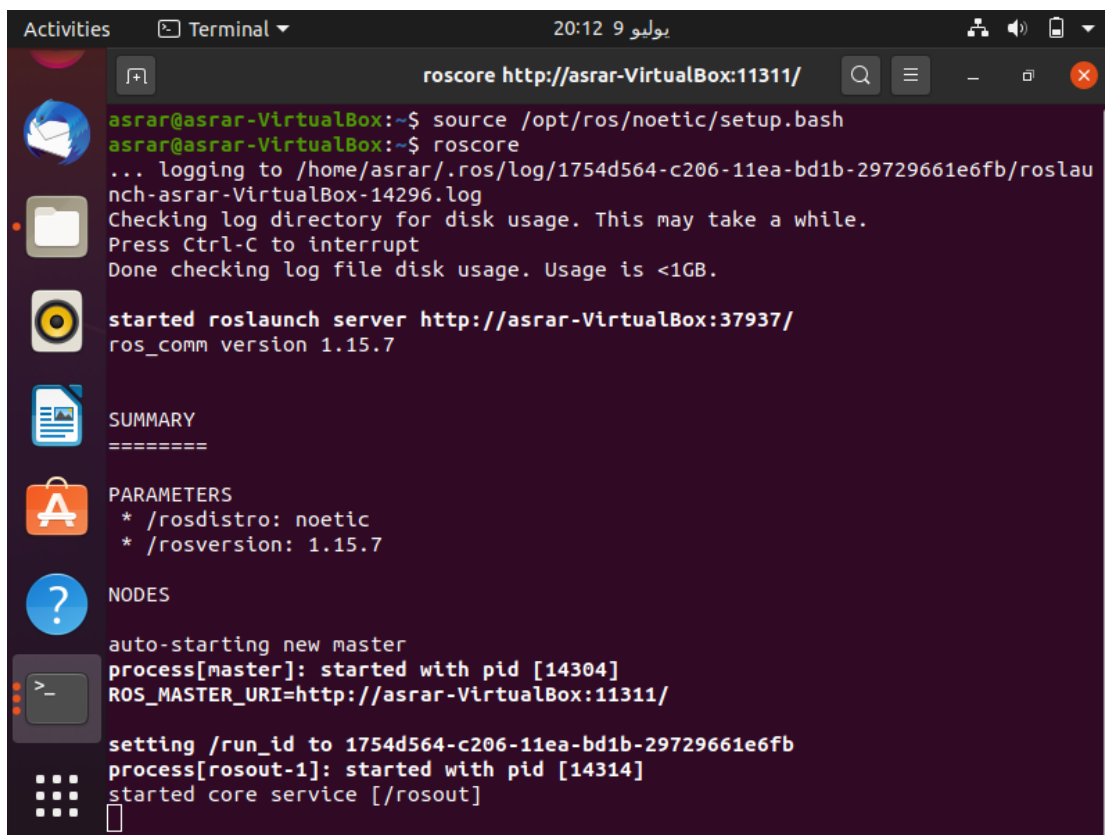
talker.py          100%[=====] 2.17K --.-KB/s in 0.003s

2020-07-09 22:53:25 (652 KB/s) - 'talker.py' saved [2217/2217]

asrar@asrar-VirtualBox:~/Documents/wallE_ws/src/tutorial/scripts$
```



```
31 # ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
32 # POSSIBILITY OF SUCH DAMAGE.
33 #
34 # Revision $Id$
35
36 ## Simple talker demo that published std_msgs/Strings messages
37 ## to the 'chatter' topic
38
39 import rclpy
40 from std_msgs.msg import String
41
42 def talker():
43     pub = rclpy.Publisher('chatter', String, queue_size=10)
44     rclpy.init_node('talker', anonymous=True)
45     rate = rclpy.Rate(10) # 10hz
46     while not rclpy.is_shutdown():
47         hello_str = "hello world %s" % rclpy.get_time()
48         rclpy.loginfo(hello_str)
49         pub.publish(hello_str)
50         rate.sleep()
51
52 if __name__ == '__main__':
53     try:
54         talker()
55     except rclpy.RoSInterruptException:
56         pass
```



```
asrar@asrar-VirtualBox:~$ source /opt/ros/noetic/setup.bash
asrar@asrar-VirtualBox:~$ roscore
... logging to /home/asrar/.ros/log/1754d564-c206-11ea-bd1b-29729661e6fb/roslau
nch-asrar-VirtualBox-14296.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://asrar-VirtualBox:37937/
ros_comm version 1.15.7

SUMMARY
=====

PARAMETERS
* /rostdistro: noetic
* /rosversion: 1.15.7

NODES
auto-starting new master
process[master]: started with pid [14304]
ROS_MASTER_URI=http://asrar-VirtualBox:11311/

setting /run_id to 1754d564-c206-11ea-bd1b-29729661e6fb
process[rosout-1]: started with pid [14314]
started core service [/rosout]
```

```
Activities Terminal 22:54 9 يوليو
asarar@asarar-VirtualBox: ~/Documents/wallE_ws/src/tutorial/s...
netic-devel/rospy_tutorials/001_talker_listener/talker.py
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 151.101.140.133
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|151.101.140.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2217 (2.2K) [text/plain]
Saving to: 'talker.py'

talker.py          100%[=====] 2.17K --.-KB/s in 0.003s

2020-07-09 22:53:25 (652 KB/s) - 'talker.py' saved [2217/2217]

asarar@asarar-VirtualBox:~/Documents/wallE_ws/src/tutorial/scripts$ chmod +x talker.py
asarar@asarar-VirtualBox:~/Documents/wallE_ws/src/tutorial/scripts$ python3 talker.py
[INFO] [1594324441.655428]: hello world 1594324441.6552181
[INFO] [1594324441.755613]: hello world 1594324441.7554498
[INFO] [1594324441.855525]: hello world 1594324441.8553636
[INFO] [1594324441.955637]: hello world 1594324441.9554775
[INFO] [1594324442.055618]: hello world 1594324442.0555996
[INFO] [1594324442.155710]: hello world 1594324442.1555479
[INFO] [1594324442.255612]: hello world 1594324442.255448
[INFO] [1594324442.355858]: hello world 1594324442.3556974
[INFO] [1594324442.455615]: hello world 1594324442.4554522
[INFO] [1594324442.555564]: hello world 1594324442.5553298
[INFO] [1594324442.655474]: hello world 1594324442.6553068
[INFO] [1594324442.755612]: hello world 1594324442.7559617
[INFO] [1594324442.855611]: hello world 1594324442.8554518
```

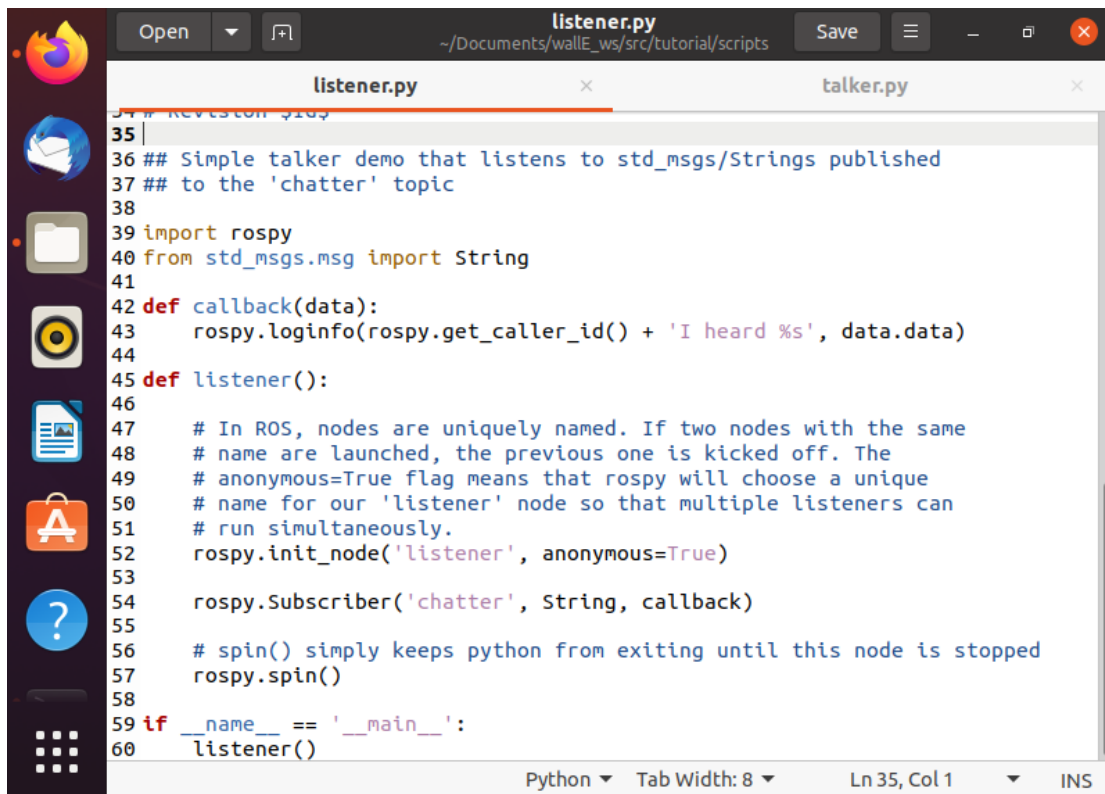
Subscriber nodes using Python

```
Activities Terminal 23:10 9 يوليو
asarar@asarar-VirtualBox: ~/Documents/wallE_ws/src/tutorial/s...
asarar@asarar-VirtualBox:~/Documents/wallE_ws/src/tutorial/scripts$ wget https://raw.githubusercontent.com/ros/ros_tutorials/kinetic-devel/rospy_tutorials/001_talker_listener/listener.py
--2020-07-09 23:09:15-- https://raw.githubusercontent.com/ros/ros_tutorials/kinetic-devel/rospy_tutorials/001_talker_listener/listener.py
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 151.101.140.133
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|151.101.140.133|:443... connected
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://raw.githubusercontent.com/ros/ros_tutorials/kinetic-devel/rospy_tutorials/001_talker_listener/listener.py [following]
--2020-07-09 23:09:16-- https://raw.githubusercontent.com/ros/ros_tutorials/kinetic-devel/rospy_tutorials/001_talker_listener/listener.py
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 151.101.140.133
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|151.101.140.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2406 (2.3K) [text/plain]
Saving to: 'listener.py'

listener.py        100%[=====] 2.35K --.-KB/s in 0.002s

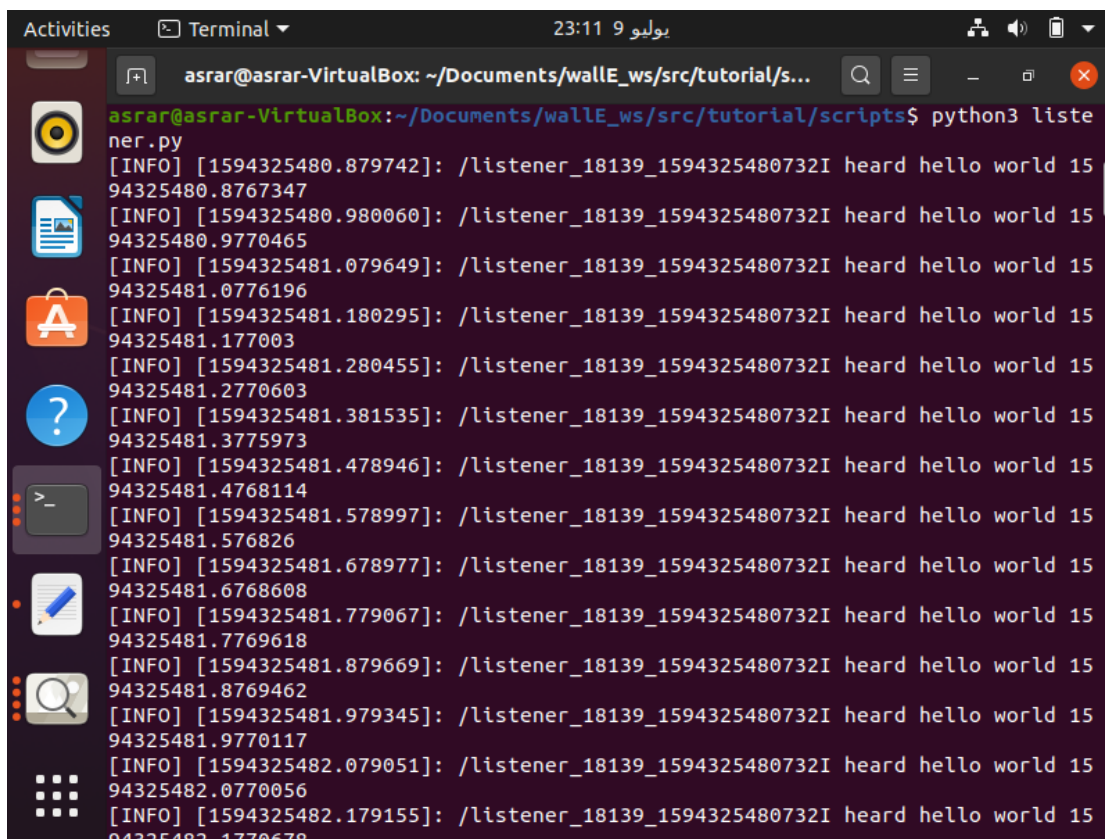
2020-07-09 23:09:17 (1.36 MB/s) - 'listener.py' saved [2406/2406]

asarar@asarar-VirtualBox:~/Documents/wallE_ws/src/tutorial/scripts$ chmod +x listener.py
asarar@asarar-VirtualBox:~/Documents/wallE_ws/src/tutorial/scripts$ python3 listener.py
```



```
35 |
36 ## Simple talker demo that listens to std_msgs/Strings published
37 ## to the 'chatter' topic
38
39 import rospy
40 from std_msgs.msg import String
41
42 def callback(data):
43     rospy.loginfo(rospy.get_caller_id() + 'I heard %s', data.data)
44
45 def listener():
46
47     # In ROS, nodes are uniquely named. If two nodes with the same
48     # name are launched, the previous one is kicked off. The
49     # anonymous=True flag means that rospy will choose a unique
50     # name for our 'listener' node so that multiple listeners can
51     # run simultaneously.
52     rospy.init_node('listener', anonymous=True)
53
54     rospy.Subscriber('chatter', String, callback)
55
56     # spin() simply keeps python from exiting until this node is stopped
57     rospy.spin()
58
59 if __name__ == '__main__':
60     listener()
```

Python Tab Width: 8 Ln 35, Col 1 INS



```
asrar@asrar-VirtualBox: ~/Documents/wallE_ws/src/tutorial/s...
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src/tutorial/scripts$ python3 liste
ner.py
[INFO] [1594325480.879742]: /listener_18139_1594325480732I heard hello world 15
94325480.8767347
[INFO] [1594325480.980060]: /listener_18139_1594325480732I heard hello world 15
94325480.9770465
[INFO] [1594325481.079649]: /listener_18139_1594325480732I heard hello world 15
94325481.0776196
[INFO] [1594325481.180295]: /listener_18139_1594325480732I heard hello world 15
94325481.177003
[INFO] [1594325481.280455]: /listener_18139_1594325480732I heard hello world 15
94325481.2770603
[INFO] [1594325481.381535]: /listener_18139_1594325480732I heard hello world 15
94325481.3775973
[INFO] [1594325481.478946]: /listener_18139_1594325480732I heard hello world 15
94325481.4768114
[INFO] [1594325481.578997]: /listener_18139_1594325480732I heard hello world 15
94325481.576826
[INFO] [1594325481.678977]: /listener_18139_1594325480732I heard hello world 15
94325481.6768608
[INFO] [1594325481.779067]: /listener_18139_1594325480732I heard hello world 15
94325481.7769618
[INFO] [1594325481.879669]: /listener_18139_1594325480732I heard hello world 15
94325481.8769462
[INFO] [1594325481.979345]: /listener_18139_1594325480732I heard hello world 15
94325481.9770117
[INFO] [1594325482.079051]: /listener_18139_1594325480732I heard hello world 15
94325482.0770056
[INFO] [1594325482.179155]: /listener_18139_1594325480732I heard hello world 15
94325482.1770678
```