


Lesson 6 Write A Simple Subscriber

The creation of subscriber is based on the edited publisher. The subscription are only possible as long as the message is published. If you have not edited the publisher, you can view the content in “Lesson 4 Write A Simple Subscriber” and follow the steps to edit it.

1. Write Subscriber Node

This section takes the creation of a pose_subscriber.py node as an example to explain.

- 1) Input “cd catkin_ws/src/beginner_hiwonder/scripts/” command and press “Enter”.



```
Terminal - ubuntu@ubuntu: ~  
File Edit View Terminal Tabs Help  
ubuntu@ubuntu:~$ cd catkin_ws/src/beginner_hiwonder/scripts/
```

- 2) Enter “vi pose_subscriber.py” command to edit the program, and then copy the following program. If need to modify, press “i”. After modifying, press “Esc” and input “:wq” to save and exit.



```
Terminal - ubuntu@ubuntu: ~/catkin_ws/src/beginner_hiwonder/scripts  
File Edit View Terminal Tabs Help  
ubuntu@ubuntu:~/catkin_ws/src/beginner_hiwonder/scripts$ vi pose_subscriber.py
```

```
#!/usr/bin/env python  
  
# -*- coding: utf-8 -*-  
  
import rospy  
  
from turtlesim.msg import Pose
```

```
def poseCallback(msg):

    rospy.loginfo("Turtle pose: x:%0.6f, y:%0.6f", msg.x, msg.y)


def pose_subscriber():

    # Initialize ROS node

    rospy.init_node('pose_subscriber', anonymous=True)

    # Create a subscriber, subscribe to the topic named /turtle1/pose, and register callback
function poseCallback rospy.Subscriber("/turtle1/pose", Pose, poseCallback)


    # Loop and wait callback function

    rospy.spin()


if __name__ == '__main__':

    pose_subscriber()
```

```
Terminal - ubuntu@ubuntu: ~/catkin_ws/src/beginner_hiwonder/scripts
File Edit View Terminal Tabs Help
1 #!/usr/bin/env python
2 # -*- coding: utf-8 -*-
3
4 import rospy
5 from turtlesim.msg import Pose
6
7 def poseCallback(msg):
8     rospy.loginfo("Turtle pose: x:%0.6f, y:%0.6f", msg.x, msg.y)
9
10 def pose_subscriber():
11     # ROS节点初始化
12     rospy.init_node('pose_subscriber', anonymous=True)
13
14     # 创建一个Subscriber, 订阅名为 /turtle1/pose的 topic, 注册回调函数 pose
    Callback
15     rospy.Subscriber("/turtle1/pose", Pose, poseCallback)
16
17     # 循环等待回调函数
18     rospy.spin()
19
20 if __name__ == '__main__':
21     pose_subscriber()W
: wq
```

- 3) Input “chmod +x pose_subscriber.py” command and press “Enter” to give the executable permission to saved pose_subscriber.py.

```
Terminal - ubuntu@ubuntu: ~/catkin_ws/src/beginner_hiwonder/scripts
File Edit View Terminal Tabs Help
ubuntu@ubuntu:~/catkin_ws/src/beginner_hiwonder/scripts$ chmod +x pose_subscrib
r.py
```

2. Test Publisher and Subscriber

- 1) Input “roscore” command to start the node manager.

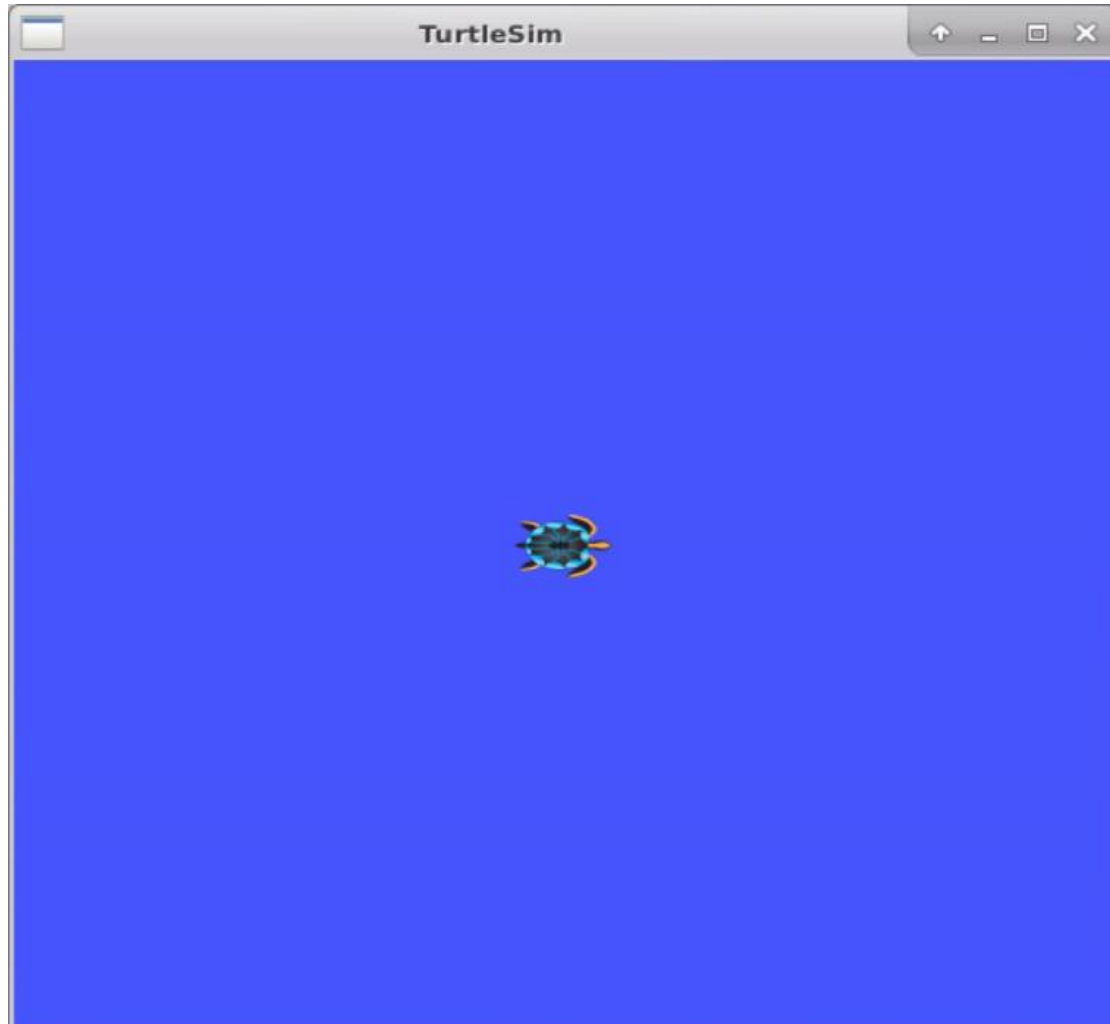
```
ubuntu@ubuntu:~/catkin_ws$ roscore
```

After starting, the following prompt will appear:

```
RLEException: roscore cannot run as another roscore/master is already running.
Please kill other roscore/master processes before relaunching.
The ROS_MASTER_URI is http://ubuntu:11311/
The traceback for the exception was written to the log file
ubuntu@ubuntu:~/catkin_ws$
```

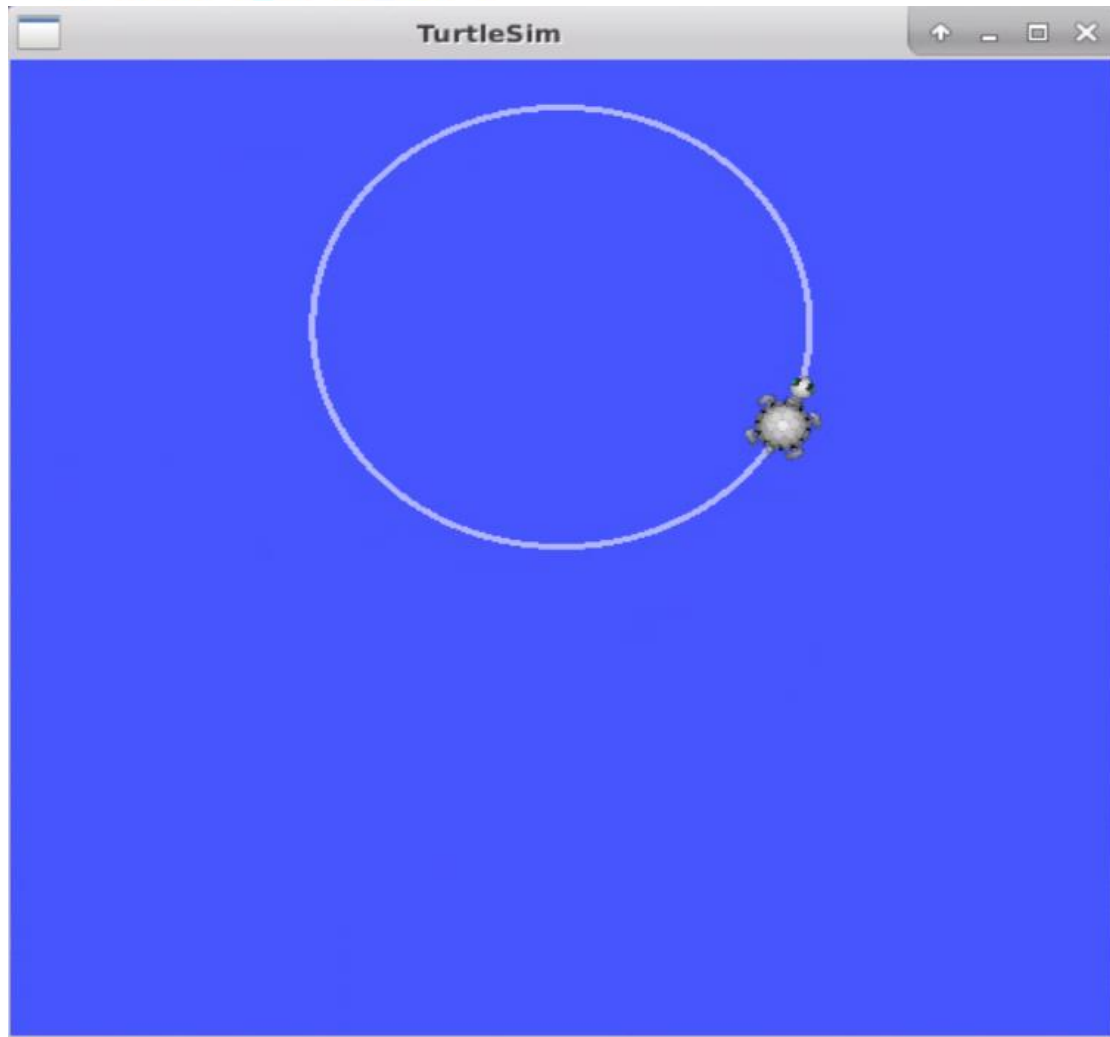
Input “roslaunch turtlesim turtlesim_node” command and then press “Enter” to start TurtleSim.

```
ubuntu@ubuntu:~/catkin_ws$ rosrn turtlesim turtlesim_node
libEGL warning: DRI2: failed to authenticate
[ INFO] [1644663888.439197118]: Starting turtlesim with node name /turtlesim
[ INFO] [1644663888.462207665]: Spawning turtle [turtle1] at x=[5.544445], y=[5.544445], theta=[0.000000]
```



Open a new terminal and enter “rosrn beginner_hiwonder velocity_publisher.py” command to run the publisher of velocity_publisher.py. Then press “Ctrl+C” to stop running the publisher node.

```
Terminal - ubuntu@ubuntu: ~
File Edit View Terminal Tabs Help
ubuntu@ubuntu:~$ rosrn beginner_hiwonder velocity_publisher.py
[INFO] [1644664960.154518]: Publshturtlevelocitycommand[0.50 m/s, 0.20 rad/s]
[INFO] [1644664960.255668]: Publshturtlevelocitycommand[0.50 m/s, 0.20 rad/s]
[INFO] [1644664960.355954]: Publshturtlevelocitycommand[0.50 m/s, 0.20 rad/s]
[INFO] [1644664960.460197]: Publshturtlevelocitycommand[0.50 m/s, 0.20 rad/s]
[INFO] [1644664960.556231]: Publshturtlevelocitycommand[0.50 m/s, 0.20 rad/s]
[INFO] [1644664960.656011]: Publshturtlevelocitycommand[0.50 m/s, 0.20 rad/s]
[INFO] [1644664960.757576]: Publshturtlevelocitycommand[0.50 m/s, 0.20 rad/s]
[INFO] [1644664960.863103]: Publshturtlevelocitycommand[0.50 m/s, 0.20 rad/s]
[INFO] [1644664960.959313]: Publshturtlevelocitycommand[0.50 m/s, 0.20 rad/s]
[INFO] [1644664961.055680]: Publshturtlevelocitycommand[0.50 m/s, 0.20 rad/s]
```



Open a new terminal and input “roslaunch beginner_hiwonder pose_subscriber.py” command to run the subscriber of pose_subscriber.py Then press “Ctrl+C” to stop running the subscribe node.

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- ① The publisher node needs to be started first, and then the subscriber node can subscribe message.
 - ② If need to receive the publisher messages completely, you can start the subscriber node first and then the publisher node.
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