Robotics Lab

LECTURE 6.0: PUBSUB

Pub/Sub Program

- Create a workspace (*pubsub_ws*).
- Add two scripts in the *pubsub_ws\src\pubsub_pkg\scripts* directory in the package *publisher.py , subscriber.py* and every created script you have to give permission to it.
- For the first time only Execute `chmod +x *.py` in the previous directory to add permissions for the .py nodes.
- For only one time and because build and compiling reasons, add `source ~/ros_ws/*/devel/setup.bash` to the end of *.bashrc* file, you can open it by `gedit ~/.bashrc`

Pub/Sub Program

- Publisher Node:

```python
#!/usr/bin/env python
import rospy
from std_msgs.msg import String

rospy.init_node('publisher_node')

pub = rospy.Publisher('my_topic', String, queue_size=10)
rate = rospy.Rate(1) #rate in Hz

my_msg = String()
my_msg.data = "Hello, ROS!!"
print('Start Publishing...')
while not rospy.is_shutdown():
    pub.publish(my_msg)
    rate.sleep()
```

Pub/Sub Program

- Subscriber Node:

```python
#!/usr/bin/env python
import rospy
from std_msgs.msg import String

def cb(msg):
    print(msg.data)

rospy.init_node('subscriber_node')

rospy.Subscriber('my_topic', String, callback = cb)

#rospy.spin()

while not rospy.is_shutdown():
    pass
```

Pub/Sub Program

- Run `roscore` command to start the master (it's run a program that allow the nodes to find each others).

- Now in a separate terminals run the nodes by:

```
rosrun PACKAGE_NAME NODE_FILE_NAME
rosrun pubsub_pkg publisher.py
rosrun pubsub_pkg subscriber.py
```

Pub/Sub Program

The result is:

```
seem@ubuntu:~/ros_ws/pubsub_ws$ rosrun pubsub_pkg publisher.py
Start Publishing...
```

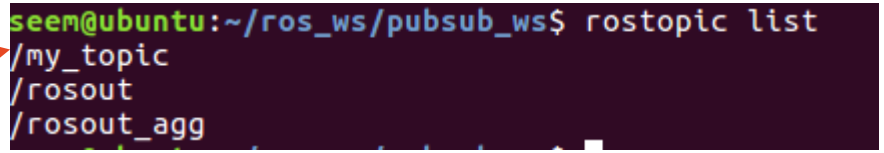
```
seem@ubuntu:~/ros_ws/pubsub_ws$ rosrun pubsub_pkg subscriber.py
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
Hello, ROS!!
```

Pub/Sub Program

You can check the active topics by:

```
rostopic list
```

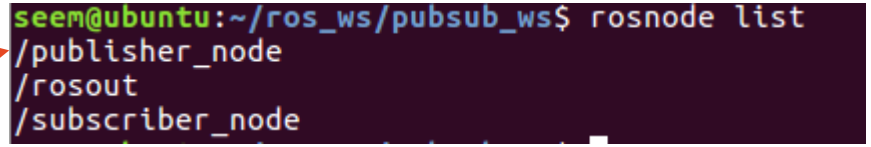
Our topic



You can check the active nodes by:

```
rosnode list
```

Our nodes



Pub/Sub Program

You can find the workspace here.

* Note you have to rebuild it on your machine.