

## **Simulation and Modelling**

**CSE3102**

### **Lab Submission – 2**

#### **Laboratory 2 - ROS Publisher Subscriber**

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#### **Instructions:**

Design a ROS code for the following Scenario: There are two publishers namely Pub1 and Pub2 and there are three subscribers Sub1, sub2 and Sub3.

Pub1 Publishes a topic called \CSE3102 and Sub1 subscribed to it.

Pub2 publishes a topic called \cse2034 and, sub2, sub3 are subscribed to it. Design a python script for ROS and submit the following details.

Screenshots, Source code and method of execution. Submit either a PDF or Doc or Docx format.

#### **PUB CODE – 1:**

```
#!/usr/bin/env python3
# license removed for brevity
import rospy
from std_msgs.msg import String

def talker():
    pub = rospy.Publisher('\CSE3102', String, queue_size=10)
    rospy.init_node('talker1', anonymous=True)
    rate = rospy.Rate(10) # 10hz
    while not rospy.is_shutdown():
        hello_str = "hello world %s" % rospy.get_time()
        rospy.loginfo(hello_str)
        pub.publish(hello_str)
        rate.sleep()

if __name__ == '__main__':
    try:
        talker()
    except rospy.ROSInterruptException:
```

pass

## **PUB CODE – 2:**

```
#!/usr/bin/env python3
# license removed for brevity
import rospy
from std_msgs.msg import String

def talker():
    pub = rospy.Publisher('/cse2034', String, queue_size=10)
    rospy.init_node('talker1', anonymous=True)
    rate = rospy.Rate(10) # 10hz
    while not rospy.is_shutdown():
        hello_str = "hello world %s" % rospy.get_time()
        rospy.loginfo(hello_str)
        pub.publish(hello_str)
        rate.sleep()

if __name__ == '__main__':
    try:
        talker()
    except rospy.ROSInterruptException:
        pass
```

## **SUB CODE – 1:**

```
#!/usr/bin/env python3
import rospy
from std_msgs.msg import String

def callback(data):
    rospy.loginfo(rospy.get_caller_id() + "I heard %s", data.data)
```

```

def listener():

    rospy.init_node('listener1', anonymous=True)

    rospy.Subscriber("/CSE3102", String, callback)

    # spin() simply keeps python from exiting until this node is stopped
    rospy.spin()

if __name__ == '__main__':
    listener()

```

## **SUB CODE – 2:**

```

#!/usr/bin/env python3

import rospy
from std_msgs.msg import String

def callback(data):
    rospy.loginfo(rospy.get_caller_id() + "I heard %s", data.data)

def listener():

    rospy.init_node('listener1', anonymous=True)
    rospy.Subscriber("/cse2034", String, callback)

    # spin() simply keeps python from exiting until this node is stopped
    rospy.spin()

if __name__ == '__main__':
    listener()

```

## SUBSCRIBER - 1

```
lab21@205A-scope--69: ~/Documents/meher_ws
lab21@205A-scope--69:~/Documents/meher_ws$ source ./devel/setup.bash
lab21@205A-scope--69:~/Documents/meher_ws$ rosrn ros_tutorial1 sub1.py
[INFO] [1676625831.519203]: /listener1_7461_1676625831348I heard hello world 167
6625831.5153806
[INFO] [1676625831.619470]: /listener1_7461_1676625831348I heard hello world 167
6625831.6154206
[INFO] [1676625831.719439]: /listener1_7461_1676625831348I heard hello world 167
6625831.7154381
[INFO] [1676625831.819460]: /listener1_7461_1676625831348I heard hello world 167
6625831.8154292
[INFO] [1676625831.919300]: /listener1_7461_1676625831348I heard hello world 167
6625831.9154294
[INFO] [1676625832.019328]: /listener1_7461_1676625831348I heard hello world 167
6625832.0154202
[INFO] [1676625832.119355]: /listener1_7461_1676625831348I heard hello world 167
6625832.1154213
[INFO] [1676625832.219403]: /listener1_7461_1676625831348I heard hello world 167
6625832.2154305
[INFO] [1676625832.319482]: /listener1_7461_1676625831348I heard hello world 167
6625832.3154244
[INFO] [1676625832.419514]: /listener1_7461_1676625831348I heard hello world 167
6625832.4154267
[INFO] [1676625832.519307]: /listener1_7461_1676625831348I heard hello world 167
6625832.5154178
```

## SUBSCRIBER - 2

```
lab21@205A-scope--69: ~/Documents/meher_ws
lab21@205A-scope--69:~/Documents/meher_ws$ source ./devel/setup.bash
lab21@205A-scope--69:~/Documents/meher_ws$ rosrn ros_tutorial1 sub2.py
[INFO] [1676625855.777296]: /listener2_7489_1676625844977I heard hello world 167
6625855.7733274
[INFO] [1676625855.877989]: /listener2_7489_1676625844977I heard hello world 167
6625855.8737304
[INFO] [1676625855.977661]: /listener2_7489_1676625844977I heard hello world 167
6625855.9735653
[INFO] [1676625856.077501]: /listener2_7489_1676625844977I heard hello world 167
6625856.0735154
[INFO] [1676625856.177547]: /listener2_7489_1676625844977I heard hello world 167
6625856.1736002
[INFO] [1676625856.277304]: /listener2_7489_1676625844977I heard hello world 167
6625856.2735972
[INFO] [1676625856.374929]: /listener2_7489_1676625844977I heard hello world 167
6625856.3735595
[INFO] [1676625856.477296]: /listener2_7489_1676625844977I heard hello world 167
6625856.4735386
[INFO] [1676625856.577356]: /listener2_7489_1676625844977I heard hello world 167
6625856.5735888
[INFO] [1676625856.677505]: /listener2_7489_1676625844977I heard hello world 167
6625856.673596
[INFO] [1676625856.777327]: /listener2_7489_1676625844977I heard hello world 167
6625856.7736042
```

### SUBSCRIBER - 3

```
lab21@205A-scope--69: ~/Documents/meher_ws
lab21@205A-scope--69:~/Documents/meher_ws$ source ./devel/setup.bash
lab21@205A-scope--69:~/Documents/meher_ws$ rosrn ros_tutorial1 sub3.py
[INFO] [1676625882.819826]: /listener3_7553_1676625882617I heard hello world 167
6625882.8153894
[INFO] [1676625882.919452]: /listener3_7553_1676625882617I heard hello world 167
6625882.9154327
[INFO] [1676625883.019347]: /listener3_7553_1676625882617I heard hello world 167
6625883.0154335
[INFO] [1676625883.119406]: /listener3_7553_1676625882617I heard hello world 167
6625883.1154232
[INFO] [1676625883.219743]: /listener3_7553_1676625882617I heard hello world 167
6625883.2154326
[INFO] [1676625883.319838]: /listener3_7553_1676625882617I heard hello world 167
6625883.3154485
[INFO] [1676625883.419310]: /listener3_7553_1676625882617I heard hello world 167
6625883.4154403
[INFO] [1676625883.519406]: /listener3_7553_1676625882617I heard hello world 167
6625883.51544
[INFO] [1676625883.619285]: /listener3_7553_1676625882617I heard hello world 167
6625883.6154208
[INFO] [1676625883.719405]: /listener3_7553_1676625882617I heard hello world 167
6625883.7154374
[INFO] [1676625883.819478]: /listener3_7553_1676625882617I heard hello world 167
6625883.8154283
```

### PUBLISHER - 1

```
lab21@205A-scope--69: ~/Documents/meher_ws
^C^C lab21@205A-scope--69:~/Documents/meher_ws$ rosrn ros_tutorial1 pub1.py
[INFO] [1676625752.115412]: hello world 1676625752.1151557
[INFO] [1676625752.215633]: hello world 1676625752.2154548
[INFO] [1676625752.315648]: hello world 1676625752.3153877
[INFO] [1676625752.415692]: hello world 1676625752.4154222
[INFO] [1676625752.515673]: hello world 1676625752.515417
[INFO] [1676625752.615679]: hello world 1676625752.6154191
[INFO] [1676625752.715609]: hello world 1676625752.7154076
[INFO] [1676625752.815675]: hello world 1676625752.8154168
[INFO] [1676625752.915724]: hello world 1676625752.9154418
[INFO] [1676625753.015696]: hello world 1676625753.0154235
[INFO] [1676625753.115724]: hello world 1676625753.1154416
[INFO] [1676625753.215718]: hello world 1676625753.2154388
[INFO] [1676625753.315707]: hello world 1676625753.3154333
[INFO] [1676625753.415718]: hello world 1676625753.415441
[INFO] [1676625753.515688]: hello world 1676625753.5154185
[INFO] [1676625753.615700]: hello world 1676625753.6154275
[INFO] [1676625753.715685]: hello world 1676625753.7153938
[INFO] [1676625753.815697]: hello world 1676625753.8154235
[INFO] [1676625753.915701]: hello world 1676625753.9154274
[INFO] [1676625754.015698]: hello world 1676625754.0154269
[INFO] [1676625754.115422]: hello world 1676625754.115328
[INFO] [1676625754.215450]: hello world 1676625754.215358
[INFO] [1676625754.315649]: hello world 1676625754.315375
```

## PUBLISHER - 2

```
lab21@205A-scope--69: ~/Documents/meher_ws
lab21@205A-scope--69:~/Documents/meher_ws$ source ./devel/setup.bash
lab21@205A-scope--69:~/Documents/meher_ws$ roslaunch ros_tutorial1 pub2.py
[INFO] [1676625855.773648]: hello world 1676625855.7733274
[INFO] [1676625855.874007]: hello world 1676625855.8737304
[INFO] [1676625855.973923]: hello world 1676625855.9735653
[INFO] [1676625856.073758]: hello world 1676625856.0735154
[INFO] [1676625856.173867]: hello world 1676625856.1736002
[INFO] [1676625856.273868]: hello world 1676625856.2735972
[INFO] [1676625856.373666]: hello world 1676625856.3735595
[INFO] [1676625856.473810]: hello world 1676625856.4735386
[INFO] [1676625856.573860]: hello world 1676625856.5735888
[INFO] [1676625856.673862]: hello world 1676625856.673596
[INFO] [1676625856.773875]: hello world 1676625856.7736042
[INFO] [1676625856.873865]: hello world 1676625856.8735957
[INFO] [1676625856.973869]: hello world 1676625856.9735978
[INFO] [1676625857.073869]: hello world 1676625857.073598
[INFO] [1676625857.173854]: hello world 1676625857.1735876
[INFO] [1676625857.273875]: hello world 1676625857.2736027
[INFO] [1676625857.373878]: hello world 1676625857.3736072
[INFO] [1676625857.473968]: hello world 1676625857.4736047
[INFO] [1676625857.573920]: hello world 1676625857.5735652
[INFO] [1676625857.673860]: hello world 1676625857.6735916
[INFO] [1676625857.773897]: hello world 1676625857.7736244
[INFO] [1676625857.874038]: hello world 1676625857.8737245
```