Lab submission – 1

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Subject: Simulation and modelling

Subject code: CSE3102

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Slot: L57+L58

1. **Create a subscriber and publisher node.**

Code for publisher node:

```
# /usr /bin/env python3
import rospy
from std msgs.msg import String
if __name__ == '__main__':
        rospy. init node('publisher.node')
        pub - rospy.Pubitsher (" /robot_publisher_node",String, queue _siza-10)
        rate = rospy. Rate(2)
        while not rospy.is_ shutdown():
                msg = String()
                msg. data = "Hi i an publtshing"
                pub.publish(msg)
                rate.sleep)
          rospy. loginfo("Publisher Node stopped")
```

Code for subscriber node:

```
#!/usr/bin/env python3
import rospy
from std_msgs.msg import String
def callback_receive_radio_data(msg):
        rospy.loginfo("Message received:")
        rospy.loginfo(msg)
if __name__ == '__main__':
        rospy.init_node('subscriber')
        sub = rospy.Subscriber("/robot_publisher_node", String,
callback_receive_radio_data)
        rospy.spin()
```

Output:

```
[INFO] [1675403842.920531]: data: "Hi i am publishing"
[INFO] [1675403843.417840]: Message received:
[INFO] [1675403843.422323]: data: "Hi i am publishing"
[INFO] [1675403843.918901]: Message received:
[INFO] [1675403843.923705]: data: "Hi i am publishing"
[INFO] [1675403844.418219]: Message received:
[INFO] [1675403844.421529]: data: "Hi i am publishing"
[INFO] [1675403844.917247]: Message received:
[INFO] [1675403844.919891]: data: "Hi i am publishing"
[INFO] [1675403845.419355]: Message received:
[INFO] [1675403845.421528]: data: "Hi i am publishing"
[INFO] [1675403845.917218]: Message received:
[INFO] [1675403845.918639]: data: "Hi i am publishing"
[INFO] [1675403846.418731]: Message received:
[INFO] [1675403846.422787]: data: "Hi i am publishing"
[INFO] [1675403846.917414]: Message received:
[INFO] [1675403846.920571]: data: "Hi i am publishing"
[INFO] [1675403847.418675]: Message received:
[INFO] [1675403847.423297]: data: "Hi i am publishing"
[INFO] [1675403847.918478]: Message received:
[INFO] [1675403847.923565]: data: "Hi i am publishing"
[INFO] [1675403848.418085]: Message received:
[INFO] [1675403848.419696]: data: "Hi i am publishing"
```

2. **Create one publisher and 2 subscriber nodes and display the graph corresponding to it.**

Code for publisher:

```
# /usr /bin/env python3
import rospy
from std msgs.msg import Int32
def publisher():
    pub = rospy.Publisher('/numbers',Int32,queue=size=10)
    rospy.init_node('publisher',anonymous=True)
    num = 0
    while not rospy.is_shutdown():
        num += 1
        pub.publisher(num)
        pub.publisher(1188)
        rate.sleep()

if __name__ == '__main__':
    try:
```

```
            publisher()
        except rospy.ROSInterruptException:
            pass
```

Code for subscriber 1:

```
#!/usr/bin/env python3
Import rospy

From std_msgs.msg import Int32

Def callback_sub1(data):
        rospy.loginfo("Subscriber 1 received: %d" % data.data )

def subscriber_1():
        rospy.init_node('subscriber_1',anonymous=True)
        rospy.Subscriber("/numbers",Int32,callback_sub1)
        rospy.spin()

if __name__ == '__main__':
        try:
            subscriber_1()
        except rospy.ROSInterruptException:
            pass
```

Code for subscriber 2:

```
#!/usr/bin/env python3
Import rospy

From std_msgs.msg import Int32

Def callback_sub1(data):
        rospy.loginfo("Subscriber 2 received: %d" % data.data )

def subscriber_1():
        rospy.init_node('subscriber_1',anonymous=True)
        rospy.Subscriber("/numbers",Int32,callback_sub1)
        rospy.spin()

if __name__ == '__main__':
```

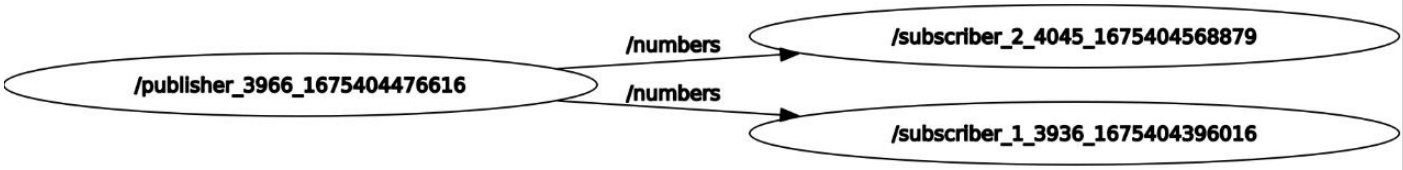
```
try:
    subscriber_1()
except rospy.ROSInterruptException:
    pass
```

Output:

```
[INFO] [1675404396.362285]: Subscriber 1 received: 16
[INFO] [1675404477.644165]: Subscriber 1 received: 2
[INFO] [1675404477.648024]: Subscriber 1 received: 1188
[INFO] [1675404478.644380]: Subscriber 1 received: 3
[INFO] [1675404478.648528]: Subscriber 1 received: 1188
[INFO] [1675404479.644369]: Subscriber 1 received: 4
[INFO] [1675404479.653665]: Subscriber 1 received: 1188
[INFO] [1675404480.644599]: Subscriber 1 received: 5
[INFO] [1675404480.647166]: Subscriber 1 received: 1188
[INFO] [1675404481.645091]: Subscriber 1 received: 6
[INFO] [1675404481.650038]: Subscriber 1 received: 1188
[INFO] [1675404482.644687]: Subscriber 1 received: 7
[INFO] [1675404482.649263]: Subscriber 1 received: 1188
[INFO] [1675404483.645620]: Subscriber 1 received: 8
[INFO] [1675404483.649568]: Subscriber 1 received: 1188
[INFO] [1675404484.644609]: Subscriber 1 received: 9
[INFO] [1675404484.648485]: Subscriber 1 received: 1188
[INFO] [1675404485.644941]: Subscriber 1 received: 10
[INFO] [1675404485.649983]: Subscriber 1 received: 1188
[INFO] [1675404486.645366]: Subscriber 1 received: 11
[INFO] [1675404486.651722]: Subscriber 1 received: 1188
[INFO] [1675404487.643104]: Subscriber 1 received: 12
[INFO] [1675404487.644407]: Subscriber 1 received: 1188
```

```
[INFO] [1675404569.647992]: Subscriber 2 received: 94
[INFO] [1675404569.652598]: Subscriber 2 received: 1188
[INFO] [1675404570.645531]: Subscriber 2 received: 95
[INFO] [1675404570.653671]: Subscriber 2 received: 1188
[INFO] [1675404571.646323]: Subscriber 2 received: 96
[INFO] [1675404571.652984]: Subscriber 2 received: 1188
[INFO] [1675404572.645282]: Subscriber 2 received: 97
[INFO] [1675404572.653054]: Subscriber 2 received: 1188
[INFO] [1675404573.645007]: Subscriber 2 received: 98
[INFO] [1675404573.652953]: Subscriber 2 received: 1188
[INFO] [1675404574.645801]: Subscriber 2 received: 99
[INFO] [1675404574.649906]: Subscriber 2 received: 1188
[INFO] [1675404575.643873]: Subscriber 2 received: 100
[INFO] [1675404575.648540]: Subscriber 2 received: 1188
[INFO] [1675404576.648460]: Subscriber 2 received: 101
[INFO] [1675404576.653484]: Subscriber 2 received: 1188
```

Graph:



3. **Create 2 subscriber nodes and 2 publisher nodes and display the graph corresponding to it.**

Code for publisher node 1:

```
# /usr /bin/env python3
import rospy
from std msgs.msg import Int32
def publisher():
        pub1 = rospy.Publisher('/publisher1',Int32,queue=size=10)
        rospy.init_node('publisher1',anonymous=True)
        num = 0
        while not rospy.is_shutdown():
                num += 1
                pub.publisher(1188)
                rate.sleep()

if __name__ == '__main__':
        try:
                publisher1()
        except rospy.ROSInterruptException:
                pass
```

Code for publisher 2:

```
# /usr /bin/env python3
import rospy
from std msgs.msg import Int32
def publisher():
        pub1 = rospy.Publisher('/publisher2',Int32,queue=size=10)
        rospy.init_node('publisher2',anonymous=True)
        num = 0
        while not rospy.is_shutdown():
                num += 1
                pub.publisher(1188)
                rate.sleep()

if __name__ == '__main__':
        try:
                publisher1()
        except rospy.ROSInterruptException:
                pass
```

Code for subscriber 1:

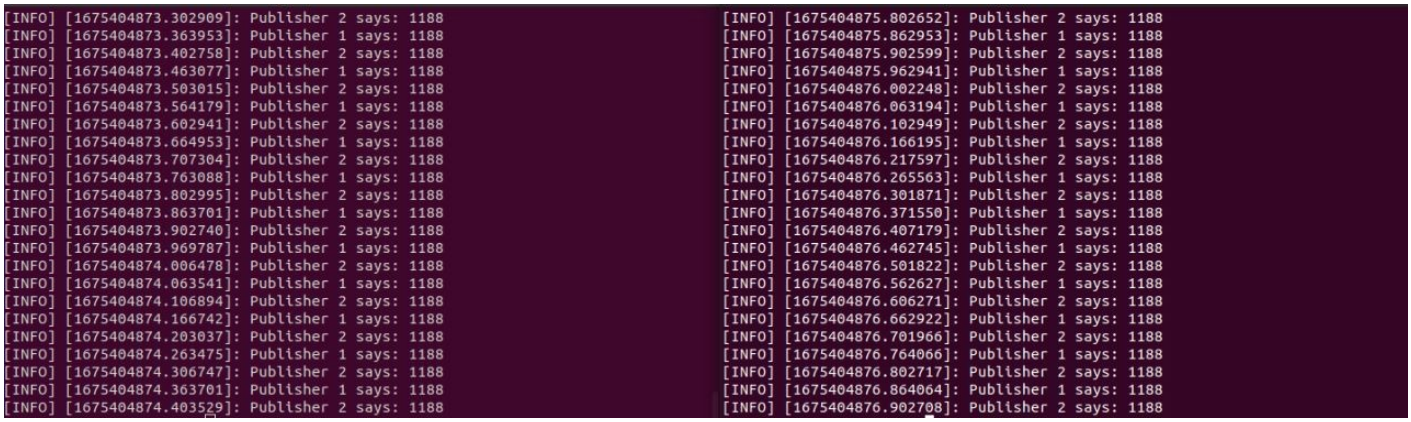
```
#!/usr/bin/env python3
Import rospy

From std_msgs.msg import Int32

Def callback_sub1(data):
        rospy.loginfo("Subscriber 1 says: %d" % data.data )

Def callback_sub1(data):
        rospy.loginfo("Subscriber 2 says %d" % data.data )

def subscriber_1():
        rospy.init_node('subscriber-1',anonymous=True)
        rospy.Subscriber("/publisher1",Int32,publisher1_callback)
        rospy.Subscriber("/publisher2",Int32,publisher1_callback)
        rospy.spin()

if __name__ == '__main__':
        try:
                subscriber_1()
```

```
    except rospy.ROSInterruptException:
        pass
```

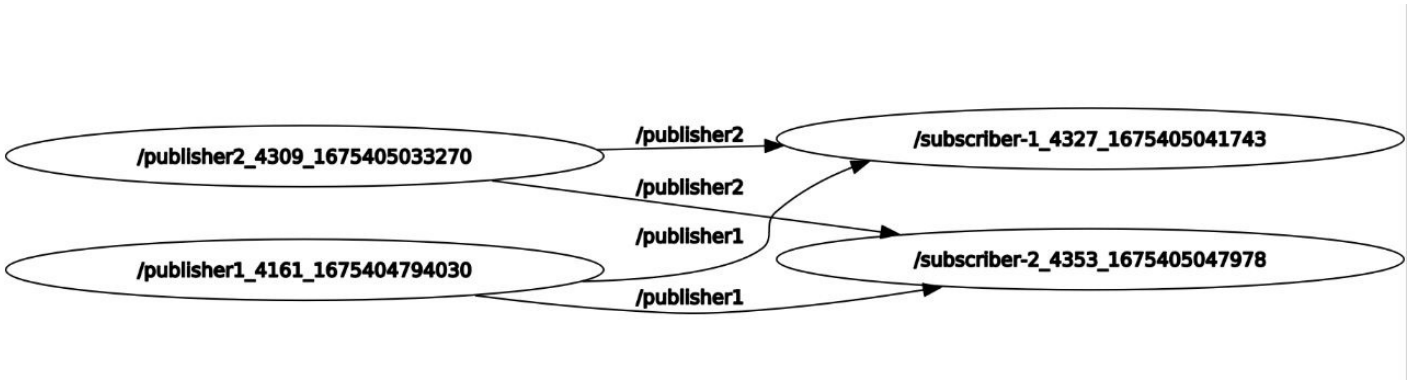
Code for subscriber 2:

```
#!/usr/bin/env python3
Import rospy

From std_msgs.msg import Int32

Def callback_sub1(data):
    rospy.loginfo("Subscriber 1 says: %d" % data.data )

Def callback_sub1(data):
    rospy.loginfo("Subscriber 2 says %d" % data.data )

def subscriber_1():
    rospy.init_node('subscriber-2',anonymous=True)
    rospy.Subscriber("/publisher1",Int32,publisher1_callback)
    rospy.Subscriber("/publisher2",Int32,publisher1_callback)
    rospy.spin()

if __name__ == '__main__':
    try:
        subscriber_2()
    except rospy.ROSInterruptException:
        pass
```

Output:



Graph:


/publisher2_4309_1675405033270
/publisher1_4161_1675404794030
/publisher2
/publisher2
/publisher1
/publisher1
/subscriber-1_4327_1675405041743
/subscriber-2_4353_1675405047978