

Robotics Lab-2 Exercise

Aim-

Write a publisher subscriber package to transfer the custom data containing status.msg (time), count.msg (integer), matrix.msg (matrix) to the subscriber node.

Program

Publisher

```
#!/usr/bin/env python3import
rospy
from pub_sub_lab.msg import status,count,matrixM =
[[1,2,3], [4,5,8], [7,8,9]]

def main():
    rospy.init_node('publisher')
    time_pub = rospy.Publisher('/status', status, queue_size=1) count_pub =
    rospy.Publisher('/counter', count, queue_size=1) matrix_pub =
    rospy.Publisher('/matrix', matrix, queue_size=1)

    time_msg = status() count_msg =
    count() count_msg.count = 0
    matrix_msg = matrix()
    matrix_msg.rows = len(M)
    matrix_msg.columns = len(M[0])

    for i in M:
        for j in i:
            matrix_msg.matrix.append(int(j))

    rospy.loginfo('sending messages')rate =
    rospy.Rate(10)
    while not rospy.is_shutdown(): time_msg.status =
        rospy.Time.now() time_pub.publish(time_msg)
        count_pub.publish(count_msg) count_msg.count
        += 1 matrix_pub.publish(matrix_msg) rate.sleep()

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

Subscriber

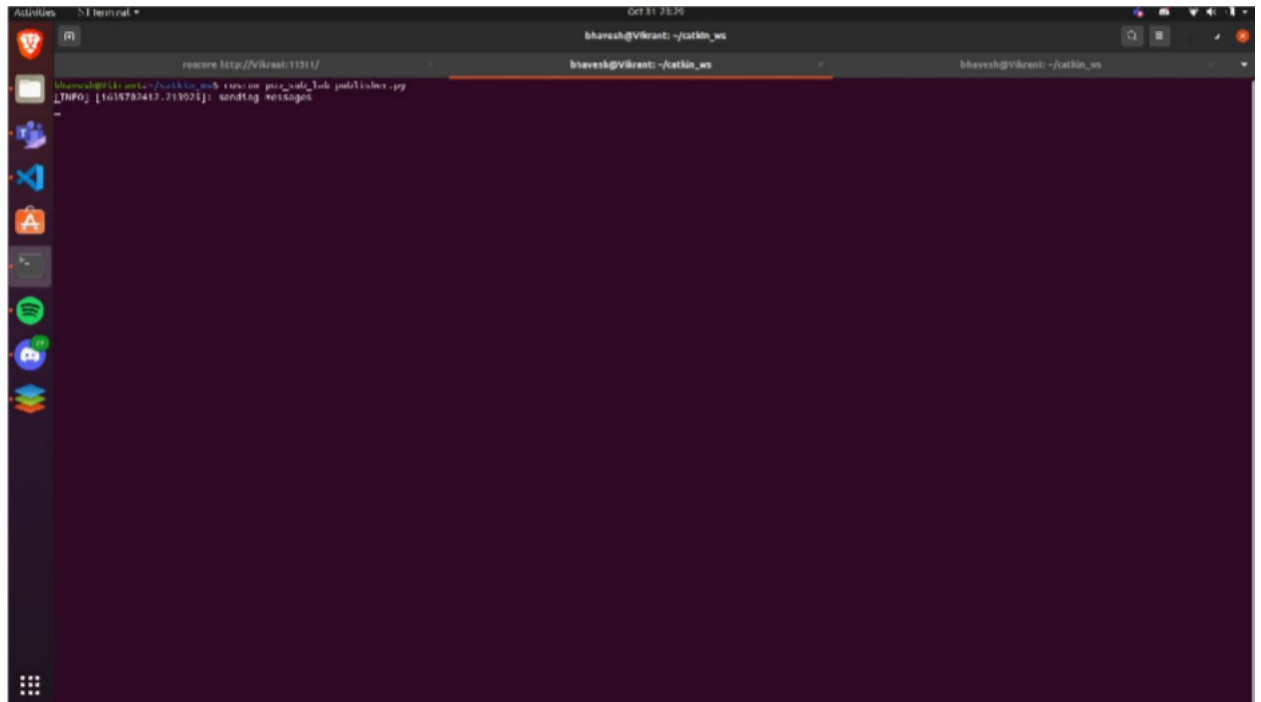
```
#!/usr/bin/env python3
from __future__ import print_function
import rospy
from pub_sub_lab.msg import status, count, matrix
def count_callback(msg):
    global ctr
    ctr = msg.count
def time_callback(msg):
    global tm
    tm = msg.status
def matrix_callback(msg):
    global M, r, c, M_st
    M = []
    M_st = ""
    temp = []
    r = msg.rows
    c = msg.columns
    = 0
    for i in msg.matrix:
        temp.append(i)
        M_st = M_st + str(i) + " "
        j += 1
        if j == c:
            M.append(temp)
            M_st += "\n"
            j = 0
            temp = []
def main():
    rospy.init_node('subscriber')
    rospy.Subscriber('/status', status, time_callback)
    rospy.Subscriber('/counter', count, count_callback)
    rospy.Subscriber('/matrix', matrix, matrix_callback)
    while not 'M' in globals() or not 'ctr' in globals() or not 'tm' in globals():
        rospy.loginfo('waiting for publisher')

    while True:
        message = "\n---messages recieved---\n"
        time = str(tm) + "\n"
        counter = str(ctr) + "\n"
        matrix = "\n" + M_st + "\n"
        rospy.loginfo(message)

if __name__ == '__main__':
    try:
        main()
    except rospy.ROSInterruptException:
        sys.exit(1)
```

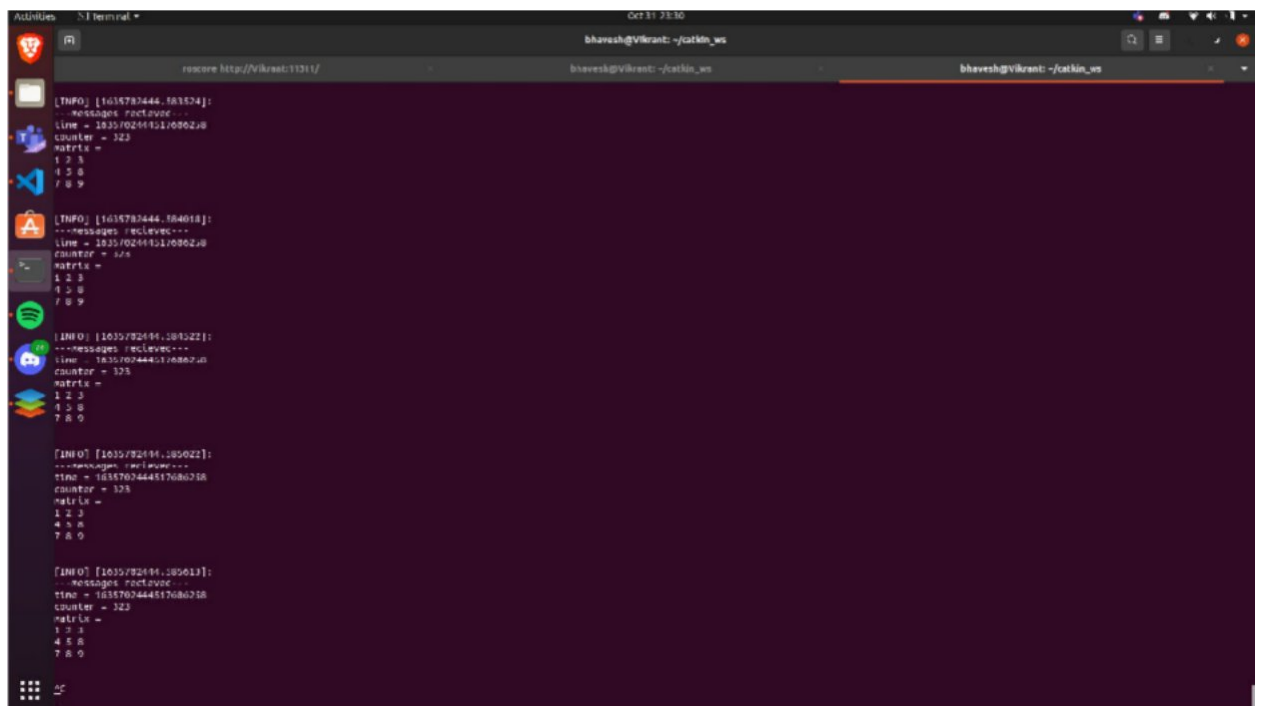
Outcome

Publisher Terminal



```
Activities 5 Terminal * Oct 31 23:29
bharsh@vikrant: ~/catkin_ws
roscore http://vikrant:1311/
bharsh@vikrant: ~/catkin_ws
bharsh@vikrant:~/catkin_ws$ rosrun pub_sub_1 pub1.py
[INFO] [1635783415.219021]: sending messages
=
```

Subscriber Terminal



```
Activities 5 Terminal * Oct 31 23:30
bharsh@vikrant: ~/catkin_ws
roscore http://vikrant:1311/
bharsh@vikrant: ~/catkin_ws
bharsh@vikrant:~/catkin_ws$ rosrun pub_sub_1 sub1.py
[INFO] [1635783444.183524]:
--messages received--
line = 103570251151709020
counter = 323
matrix =
1 2 3
4 5 6
7 8 9

[INFO] [1635783444.184018]:
--messages received--
line = 103570251151709020
counter = 324
matrix =
1 2 3
4 5 6
7 8 9

[INFO] [1635783444.185022]:
--messages received--
line = 103570251151709020
counter = 325
matrix =
1 2 3
4 5 6
7 8 9

[INFO] [1635783444.186022]:
--messages received--
line = 103570251151709020
counter = 326
matrix =
1 2 3
4 5 6
7 8 9

[INFO] [1635783444.187022]:
--messages received--
line = 103570251151709020
counter = 327
matrix =
1 2 3
4 5 6
7 8 9
```