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

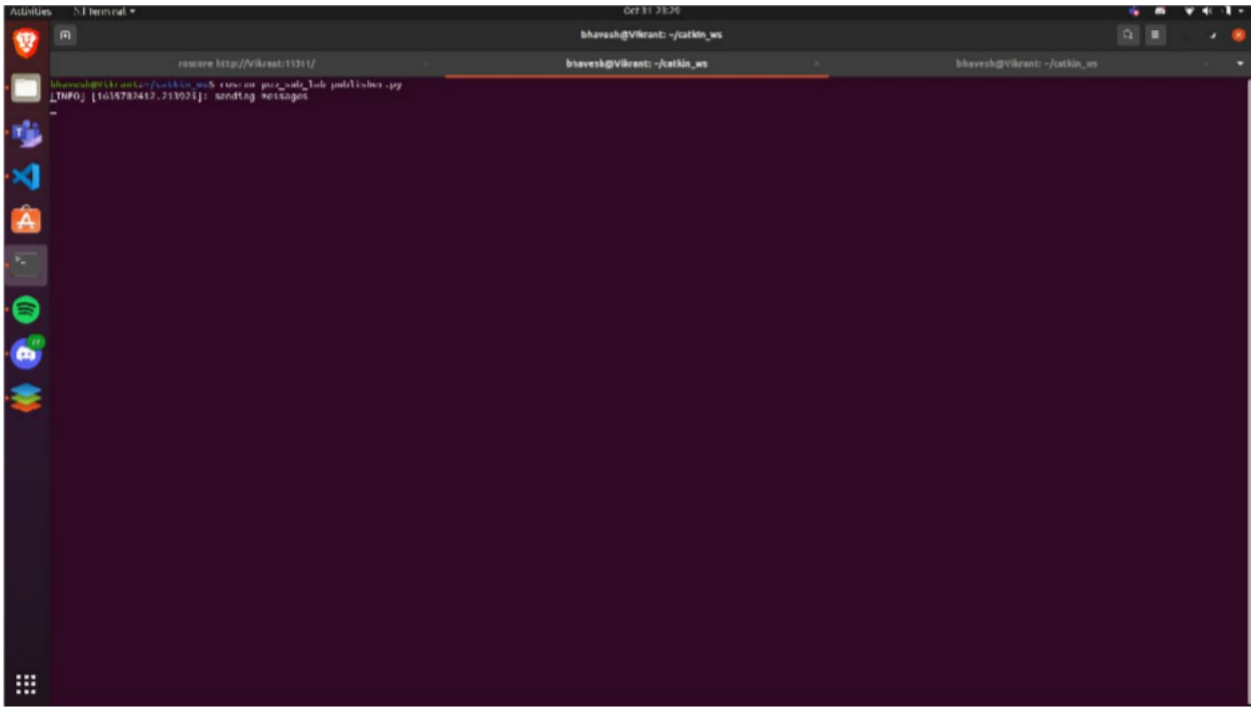
```
#!/usr/bin/env python3
from __future_____import print_function
import  rospy
from pub_sub_lab.msg import status,count,matrixdef
count_callback(msg):
        global ctr
        ctr  =  msg.count
def  time_callback(msg):global
        tm
        tm  =  msg.status
def matrix_callback(msg):
        global  M,r,c,  M_st
        M  =  []
        M_st  =  ''
        temp  =
        []
        r = msg.rows
        c = msg.columnsj
        =  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'  inglobals():
                rospy.loginfo('waiting for publisher')

        while True:
                message  =  "\n---messages  recieved---\ntime  =  "+str(tm)+"\ncounter
= "+str(ctr)+"\nmatrix = \n"+M_st+"\n"
                rospy.loginfo(message)

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

Outcome

Publisher Terminal



Subscriber Terminal