AA 274A: Principles of Robot Autonomy I
Section 1

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Problem 1

Determine the following things about the server.

a **How many GPU's are there?**
There are 6 GPU's.

b **How much RAM is available on the machine?**
There are 252 GB of RAM.

c **How many CPU cores are there?**
There are 64 cores.

d **What version of Python is available on the machine?**
Python version 3.8.10 is available as alias python3.

Problem 2

Create your own message file consisting of multiple standard data types.

```
# Message used to pass information about a specific latitude, longitude.
string  landType
float64 latitude
float64 longitude
float64 altitude
```

Problem 3

Create a publisher and subscriber that publish and subscribe to your custom message type, respectively.

publisher.py

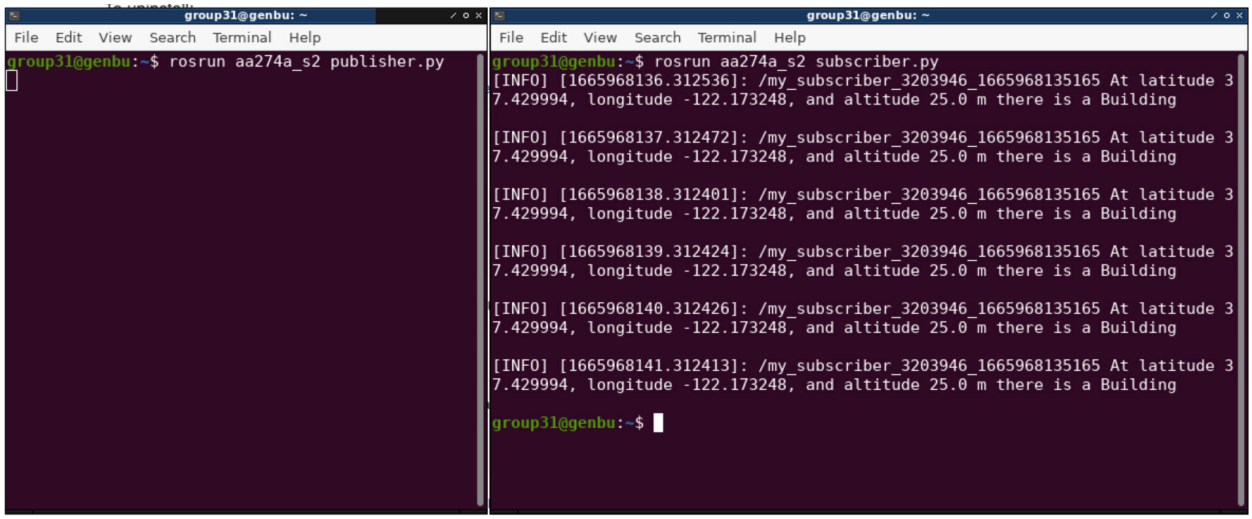
```
import rospy
from aa274a_s2.msg import MyMessage

def publisher():
    pub = rospy.Publisher('my_topic', MyMessage, queue_size=10)
    rospy.init_node('my_node', anonymous=True)
    rate = rospy.Rate(1)
    msg = MyMessage()
    while not rospy.is_shutdown():
        msg.landType = "Building"
        msg.latitude = 37.429994
        msg.longitude = -122.173248
        msg.altitude = 25
        pub.publish(msg)
        rate.sleep()

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

subscriber.py

```
import rospy
from aa274a_s2.msg import MyMessage

def callback(data):
    msg = " At latitude " + str(data.latitude)
    msg = msg + ", longitude " + str(data.longitude)
    msg = msg + ", and altitude " + str(data.altitude)
    msg = msg + " m there is a " + str(data.landType)
    rospy.loginfo(rospy.get_caller_id() + msg + "\n")

def subscriber():
    rospy.init_node('my_subscriber', anonymous=True)
    rospy.Subscriber("my_topic", MyMessage, callback)
    rospy.spin()

if __name__ == '__main__':
    subscriber()
```

Problem 4

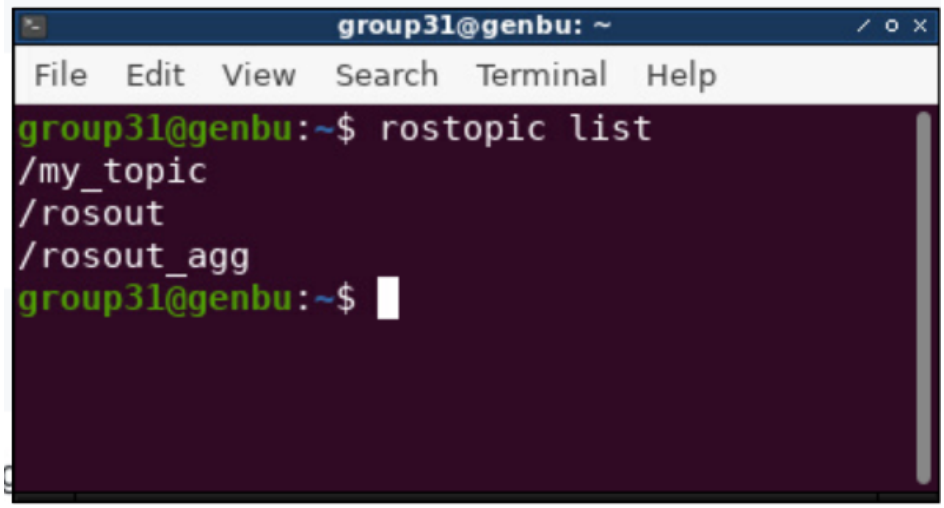
Include screenshots or terminal output text that shows your publisher and subscriber are working.



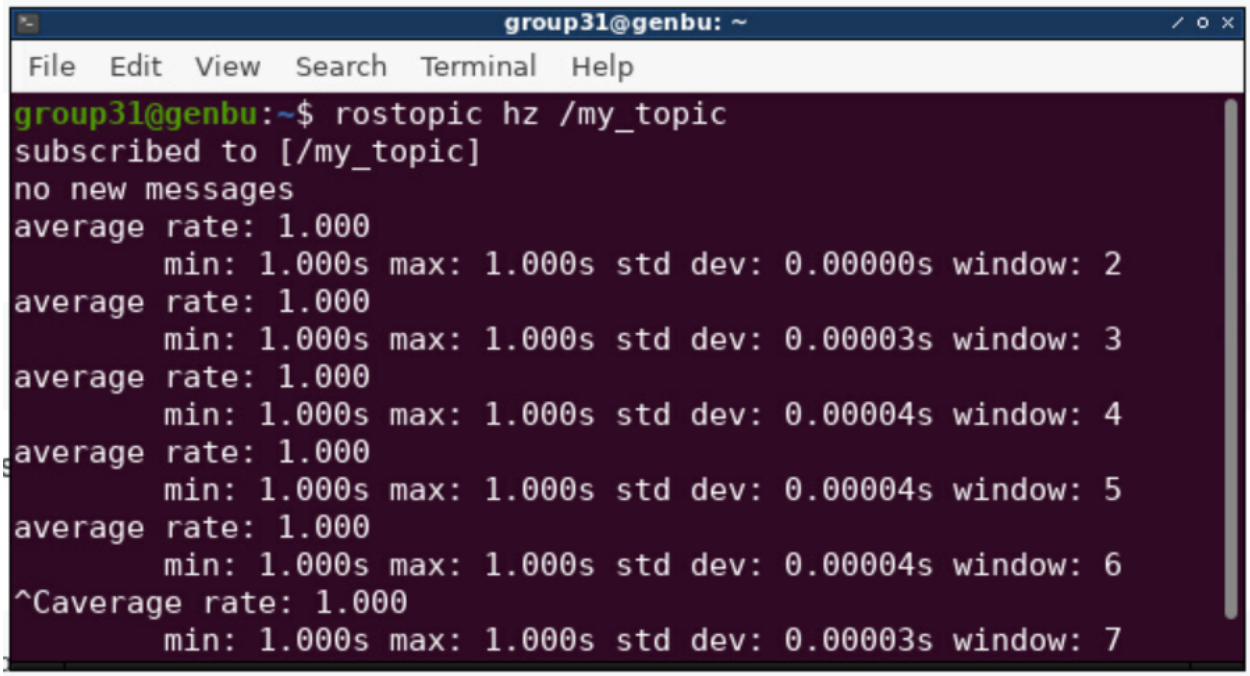
Problem 5

Run the first three of these commands to:

a **See that your topic is registered and visible.**



b **Show what your publisher is publishing.**



c **Determine the frequency with which your publisher is publishing messages.**