Section 3 Write-Up: Group 17

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Problem 1:

```
group17@genbu:~$ rostopic list
/camera/depth/camera_info
/camera/depth/image_raw
/camera/depth/points
/camera/parameter_descriptions
/camera/parameter_updates
/camera/rgb/camera_info
/camera/rgb/image_raw
 /camera/rgb/image_raw/compressed
/camera/rgb/lmage_raw/compressed
/camera/rgb/lmage_raw/compressed/parameter_descriptions
/camera/rgb/lmage_raw/compressed/parameter_updates
/camera/rgb/lmage_raw/compressedDepth
/camera/rgb/lmage_raw/compressedDepth/parameter_descriptions
/camera/rgb/lmage_raw/compressedDepth/parameter_updates
/camera/rgb/lmage_raw/theora
/camera/rgb/lmage_raw/theora/parameter_descriptions
/camera/rgb/lmage_raw/theora/parameter_updates
/clock
 /clock
 /cmd_vel
/gazebo/link_states
/gazebo/model_states
  /gazebo/parameter_descriptions
/gazebo/parameter_updates
/gazebo/parameter_updates
/gazebo/set_link_state
/gazebo/set_model_state
/gazebo_gui/parameter_descriptions
/gazebo_gui/parameter_updates
/joint_states
/odom
  rosout
  rosout_agg
/scan
/tf
```

Problem 2:

Message type is nav_msgs/Odometry. The information contained is *pose* (including position, orientation, and covariance) and *twist* (including linear, angular, and covariance)

Problem 3:

```
vel_publisher.py
import rospy
from geometry_msgs.msg import Twist

def publisher():
    pub = rospy.Publisher('cmd_vel', Twist, queue_size=10)
    rospy.init_node('vel_node', anonymous=True)
    rate = rospy.Rate(1)
    while not rospy.is_shutdown():
        twist = Twist()
```

```
twist.linear.x = 0; twist.linear.y = 0; twist.linear.z = 0
    twist.angular.x = 0; twist.angular.y = 0; twist.angular.z = 0
    pub.publish(twist)
    rate.sleep()

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

Output (via rostopic echo /cmd_vel):

```
group17@genbu: ~
File Edit View Search Terminal Help
angular:
 x: 0.0
 y: 0.0
 z: 0.0
linear:
 y: 0.0
z: 0.0
angular:
 x: 0.0
  y: 0.0
  z: 0.0
linear
  x: 0.0
angular:
 x: 0.0
 y: 0.0
  z: 0.0
```

Output (from python vel_publisher.py window):

```
group17@genbu: ~/catkin_ws/src/aa274_s3/src/scripts
 File Edit View Search Terminal Help
orConfig.h
    4%] Built target trajectory_msgs_generate_messages_py
  4%] Built target trajectory_msgs_generate_messages_py
9%] Built target turtlebot3_msgs_generate_messages_py
13%] Built target turtlebot3_msgs_generate_messages_cpp
17%] Built target asl_turtlebot_generate_messages_eus
22%] Built target asl_turtlebot_generate_messages_py
24%] Built target asl_turtlebot_generate_messages_cpp
26%] Built target asl_turtlebot_generate_messages_nodejs
32%] Built target turtlebot3_msgs_generate_messages_eus
   34%] Built target asl_turtlebot_generate_messages_lisp
   38%] Built target turtlebot3_msgs_generate_messages_lisp
   49%] Built target turtlebot3_example_generate_messages_py
   53%] Built target turtlebot3 msgs generate messages nodejs
   62%] Built target turtlebot3 example generate messages lisp
   72%] Built target turtlebot3_example_generate_messages_nodejs
  81%| Built target turtlebot3 example generate messages cpp
  81%] Built target asl_turtlebot gencfq
   92%] Built target turtlebot3_example_generate_messages_eus
   94%] Built target turtlebot3_drive
   94%] Built target asl_turtlebot_generate_messages
  94%] Built target turtlebot3_msgs_generate_messages
94%] Built target turtlebot3_example_generate_messages
[ 97%] Built target turtlebot3_diagnostics
[100%] Built target turtlebot3_fake_node
group17@genbu:~/catkin_ws$ source devel/setup.bash
group17@genbu:~/catkin_ws$ cd src/aa274_s3/src/scripts/
group17@genbu:~/catkin_ws/src/aa274_s3/src/scripts$ python vel publisher.py
```

Problem 4:

```
Odometry_subscriber.py
import rospy
from nav_msgs.msg import Odometry

def callback(data):
    rospy.loginfo(data.pose)
    rospy.loginfo(data.twist)

def subscriber():
    rospy.init_node('odom_subscriber', anonymous=True)
    rospy.Subscriber("/odom", Odometry, callback)
    rospy.spin()

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

Output:

```
File Edit View Search Terminal Help
position:
  x: -0.144139267082
  y: 0.163588859665
  z: -0.00100766690611
 orientation:
  x: -0.00057344269331
  v: -0.00148317756357
  z: 0.360760014275
  w: -0.932657323698
covariance: [1e-05, 0.0, 0.0, 0.0, 0.0, 0.0, 1e-05, 0.0, 0.0, 0.0, 0.0, 0.0
[INFO] [1602095413.414133, 2798.211000]: twist:
 linear
  x: -8.04176464139e-06
  y: -3.11502743014e-07
  z: 0.0
 angular
  x: 0.0
  y: 0.0
  z: 6.11559537492e-05
0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0]
```