Robotics Lab - 221 LIA 001

Assignment 1

Due:October 26, 2022, 2.00 pm IST

Submission via Github classroom

- All final code files to be pushed to your assignment repo
- The questions below are to be answered serial order and them pushed to your assignment repo as a **single pdf file**

1. **ROS nodes**: Launch ROS core and carry out the following tasks
   (a) List the currently running nodes
   (b) What is the purpose of node */rosout*
   (c) List the currently running topics
   (d) What topics are subscribed by the node */rosout*
   (e) What topics are published by the node */rosout*
   (f) What are the services provided by the node */rosout*
   (g) Kill the node */rosout* and again list the running nodes. What is your observation.
   (h) What are the functions of commands `cleanup`, `info`, `kill`, `list`, `machine` & `ping` of the *rosnode* command-line tool
   (i) Run the command `rosnode info /rosout` and paste the screenshot here.
   (j) Run the rqt_graph tool (Uncheck the debug option in the RosGraphwindow if the rqt_raph is empty) and paste the node graph here.

2. **ROS publisher node** : Create a ROS publisher node with the following features.
   Node name : '<your first name_pubnode'
   Topic published : 'Greetings'
   Message : 'Hello, I am <your first name>'
   Message type : std_msgs_String
   Rate of publishing message : 10 Hz
   Use rospy.loginfo to echo the message published on to the terminal
   (a) Run the publisher node and paste the terminal screenshot here.
   (b) Launch rqt_graph and paste its screenshot here. Comment on your observations from rqt_graph.
   (c) List the running nodes in the terminal. Paste the terminal screenshot here
   (d) Modify the publisher code to run concurrently three publisher nodes with the name '<your first name_node1'. Run rqt_graph and paste the screenshot here. Comment on your observations from rqt_graph.

3. **ROS subscriber node** : Create a ROS subscriber with the name 'RAA23_subnode' that subscribes to the topic 'Greetings'
   (a) Run the publisher (from question 2) and the subscriber and paste the terminal screenshots
   (b) Run rqt_graph and paste the screenshot here. Comment on your observations from rqt_graph.