SC 627

Instructions on how to connect turtlebot to roscore

Reference:

1. https://emanual.robotis.com/docs/en/platform/turtlebot3/quick-start/#pc-setup
2. https://emanual.robotis.com/docs/en/platform/turtlebot3/bringup/#bringup

Steps to follow:

1. Connect to wifi in the lab, SSID: *ARMS301*, password: *armslab301*

2. Go to 1st link in the reference, and add these commands in the .bashrc file of your system;
   >>*export ROS_MASTER_URI=http://IP OF YOUR SYSTEM:11311*
   >>*export ROS_HOSTNAME=IP OF YOUR SYSTEM*

   [you can find the .bashrc file in home directory, by typing Ctrl+h (or) type >>*gedit .bashrc* in the new terminal.]

3. After you have added above lines and saved, enter the following command in the current terminal:
   >> *source .bashrc*
   and close all terminals.

4. Steps [1-3] has to be done only once.

5. Switch on the turtlebot3, use the black switch on the controller to switch it on.

6. Run the roscore in 1st terminal, and you will see rosmaster IP as your system's IP.

7. When switched on, you will see the bot's lidar on the top spinning. To connect to the bot wait for 10 secs and then type in the 2nd terminal
   >> *ssh ubuntu@IP_of_the_bot_written_on_it*
   then, enter the password of the bot: *turtlebot*

8. Now, your 2nd terminal will look like "ubuntu@ubnuntu". Enter the following command on bot's terminal(2nd terminal):
   >>*nano .bashrc*

9. This will give to access to the .bashrc of the bot, scroll down and enter your system's IP address in this line "export ROS_MASTER_URI=http://IP OF YOUR SYSTEM:11311". And that's it!!!

10. Then in the bot's terminal enter the following command:
    >>*source .bashrc*
    >> *roslaunch turtlebot3_bringup turtlebot3_robot.launch*
    (you can find this command in 2nd link)

11. Hurray!!! You are finally connected to the bot.

12. Now in the new terminal(3rd one), to check if you are able to access all the topics of the bot enter the following command:
    >>*rostopic list*

13. To move the bot publish a command velocity in x-direction by entering the following command:
    >> *rostopic pub –r 10 /tb3_?/cmd_vel*

14. When done with the bot, do not switch off the bot directly, instead write the following command in the bot's terminal:
    >>*sudo shutdown now*
    after the lidar has stopped then only switch off the bot.

NOTE:

1. Topics of the bots are similar to the one in simulations, but appended by the bot's name.
2. Bot's IP address and its name has been written on the top of the bot.
3. Always use the bot by keeping it on the ground, not elsewhere and do not fiddle with lidar while its running.
4. Please work in groups, one bot will be assigned to one group.
5. Always return the bot to us and please keep the stool at proper place before leaving.
6. Working on hardware is tricky, so please try to modify and run the code one by one and discuss among yourselves what needs to be changed in the code.
7. Make sure each one of you is equipped with the code that will work on hardware as well, feel free to work collaboratively.