Setup ROS connection between Raspberry Pi and Linux PC:

In this tutorial, you will learn how to setup a ROS connection between Raspberry Pi and PC. There will be only one ROS master for both Raspberry Pi and PC. We have to change the "bashrc" file in such a way that these both machines connect to only single master. Follow the procedure given below to do same.

NOTE: In the following procedure **PC will be ROS master** (roscore will be running in PC terminal)

1. Setup SSH connection between Raspberry Pi and PC. Refer WIFI Network connection and SSH.pdf document to setup connection.
2. Open ".bashrc" file of **Raspberry Pi**:

     sudo gedit ~/.bashrc

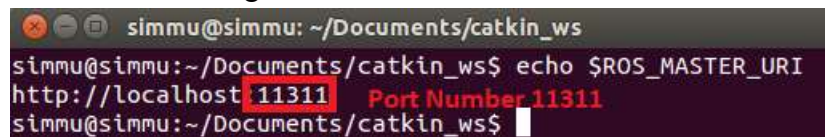3. Add the following lines at the end of .bashrc file

     export ROS_IP =<IP_Address_RPI>

     export ROS_MASTER_URI=http://<IP_Address_PC>:<Port_Number>

   You can find the **IP address of R-PI** using **"ifconfig"** command in R-PI terminal. Similarly, you can find the PC IP address by running the same command in PC terminal. Type the following command in PC terminal to find port number

     echo $ROS_MASTER_URI

   Output of above is shown in Figure 1.1
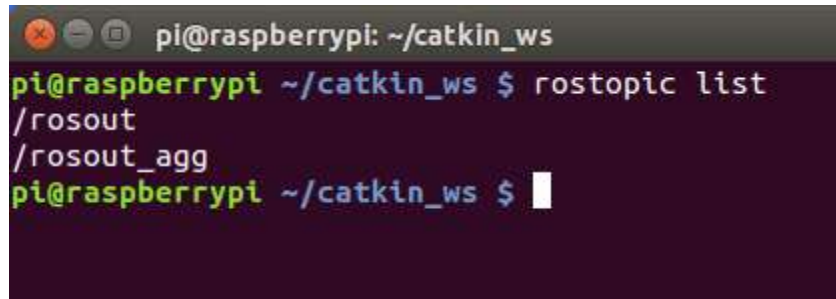

Figure 1.1: port number

4. Save the file and source .bashrc using command **" source ~/.bashrc"**
5. Now open .bashrc file of PC and add the following line to it

     export ROS_IP=<IP_Address_PC>

6. Save .bashrc file and source it
7. Now run the **"roscore"** command in PC terminal. If you had done everything ok, this command will run without any error.
8. To check both R-PI and PC connected. Type following command in R-PI terminal

rostopic list

This command will return output as shown in Figure 1.2

Figure 1.2: output of **rostopic list** command

This command output ensures that your R-PI and PC are connected to one master which is running on PC. Similarly, you can also make R-PI as master instead of PC.