

Lab assignment: week 1

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January 18, 2021

1 General Information

- Language used:
 1. C++
- Launch file:
 1. `week1.launch` - *runs all the three nodes*
- Libraries used:
 1. `roscpp`
 2. `catkin`
 3. `std_msgs`

2 Nodes information

2.1 Publishers

Sr. No.	Node name	Message type	Topic name	Frequency (Hz)
1	<code>name_talker</code>	<code>std_msgs::String</code>	<code>/names</code>	10
2	<code>roll_talker</code>	<code>std_msgs::String</code>	<code>/roll_nos</code>	10

Table 1: Publishers

2.2 Subscribers

Both publishers [table:1] use `std_msgs::String` as ROS message type instead of `string` of C++ for seamless communication between publisher and subscriber. 10 hz seems to be enough frequency for publishing, which can be changed as wished.

Sr. No.	Node name	Subscription topics
1	<code>listener</code>	<code>/names, /roll_nos</code>

Table 2: Subscribers

Subscriber [table:2] takes both `std_msgs::String` ROS messages with different callback function for each topic. An extra function is used for printing the required output. Two bool variables, (*has_name* & *has_roll*) are used for synchronizing both the callbacks with global variables for transfer of information between callback functions and print function. Alternatively, a class could've used for better structured code.

3 RosGraph

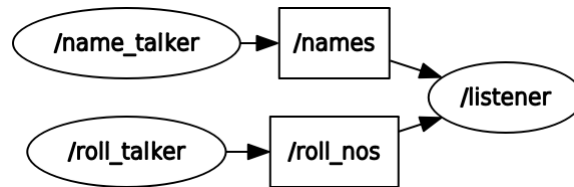


Figure 1: Rosgraph

4 Demo

```

pranav@pranav:~$ cd /sc635_ws
pranav@pranav:~/sc635_ws$ roslaunch week1_170040012_190100057 week1.launch
... logging to /home/pranav/.ros/log/be2a7f0c-599a-11eb-ba9d-88b1114b194b/roslaunch-pro-9676.log
Checking log directory for disk usage. This may take awhile.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://pro:33845/

SUMMARY
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PARAMETERS
* /rostdistro: kinetic
* /rosversion: 1.12.17

NODES
/
  listener (week1_170040012_190100057/listener)
  name_talker (week1_170040012_190100057/name_talker)
  roll_talker (week1_170040012_190100057/roll_talker)

auto-starting new master
process[master]: started with pid [9687]
ROS_MASTER_URI=http://localhost:11311

setting /run_id to be2a7f0c-599a-11eb-ba9d-88b1114b194b
process[rosout-1]: started with pid [9700]
started core service [/rosout]
process[roll_talker-2]: started with pid [9706]
process[name_talker-3]: started with pid [9718]
process[listener-4]: started with pid [9726]
Student Pranav has roll : 170040012
Student Pranav has roll : 190100057
Student Pranav has roll : 170040012
Student Hitwarth has roll : 190100057
Student Pranav has roll : 170040012
Student Hitwarth has roll : 190100057
Student Pranav has roll : 170040012
Student Hitwarth has roll : 190100057
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Student Hitwarth has roll : 190100057
Student Pranav has roll : 170040012
Student Hitwarth has roll : 190100057
^C[listener-4] killing on exit
[name_talker-3] killing on exit
[roll_talker-2] killing on exit

```

Figure 2: Demo