Note: This tutorial assumes that you have completed the previous tutorials: Understanding ROS services and parameters (/ROS/Tutorials/UnderstandingServicesParams).

Please ask about problems and questions regarding this tutorial on answers.ros.org (http://answers.ros.org). Don't forget to include in your question the link to this page, the versions of your OS & ROS, and also add appropriate tags.

Using rqt_console and roslaunch

Description: This tutorial introduces ROS using rqt_console (/rqt_console) and rqt_logger_level (/rqt_logger_level) for debugging and roslaunch (/roslaunch) for starting many nodes at once. If you use `ROS fuerte` or ealier distros where rqt (/rqt) isn't fully available, please see this page with this page (/ROS/Tutorials/UsingRxconsoleRoslaunch) that uses old `rx` based tools.

Tutorial Level: BEGINNER

Next Tutorial: Using rosed (/ROS/Tutorials/UsingRosEd)

Contents

1. Prerequisites rqt and turtlesim package

The tutorial uses both the `rqt` and `turtlesim` packages. To do this tutorial, please install both packages, if you have not yet done so.

```
$ sudo apt-get install ros-<distro>-rqt ros-<distro>-rqt-common-plugins ros-<distro>-turtlesim
```

Replace <distro> with the name of your ROS distribution (/Distributions) (e.g. indigo, jade, kinetic, lunar...).

NOTE: you may have already built rqt and turtlesim for one of the previous tutorials. If you are not sure, installing them again will not hurt anything.

2. Using rqt_console and rqt_logger_level

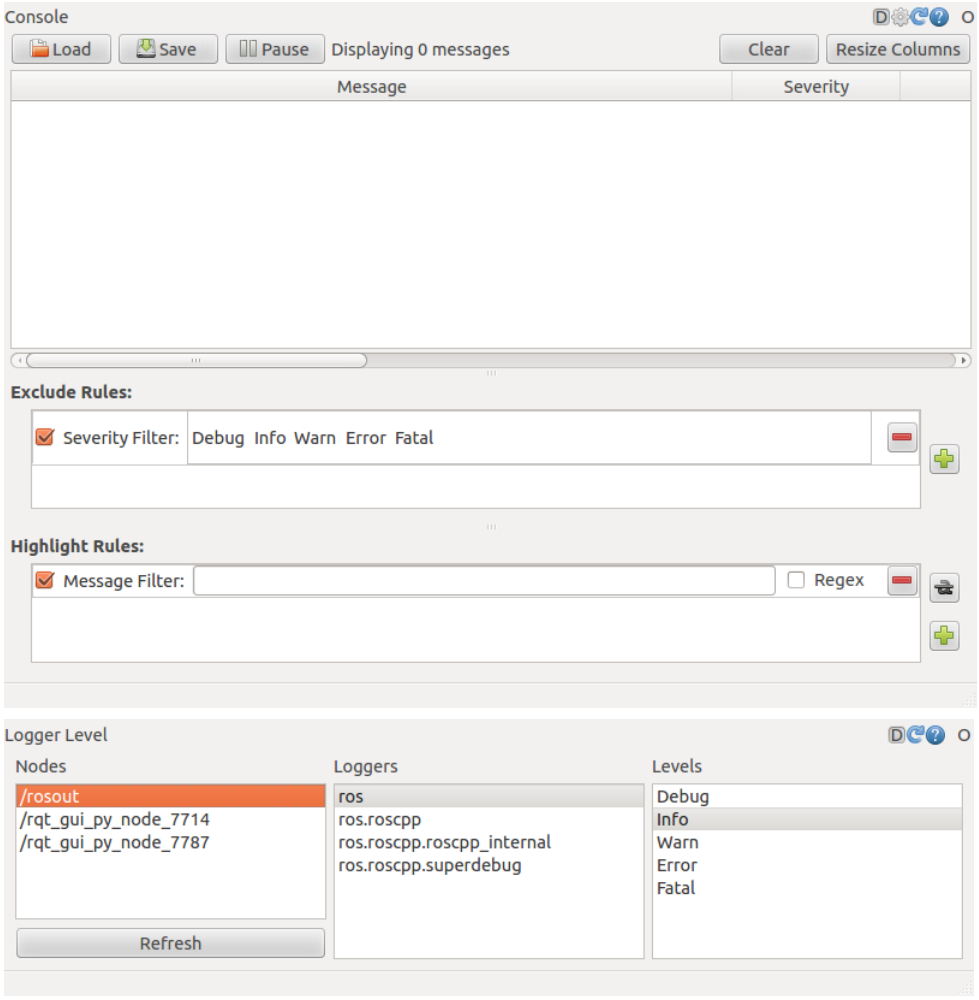
`rqt_console` attaches to ROS's logging framework to display output from nodes. `rqt_logger_level` allows us to change the verbosity level (DEBUG, WARN, INFO, and ERROR) of nodes as they run.

Now let's look at the turtlesim output in `rqt_console` and switch logger levels in `rqt_logger_level` as we use turtlesim. Before we start the turtlesim, **in two new terminals** start `rqt_console` and `rqt_logger_level`:

```
$ rosrun rqt_console rqt_console
```

```
$ rosrun rqt_logger_level rqt_logger_level
```

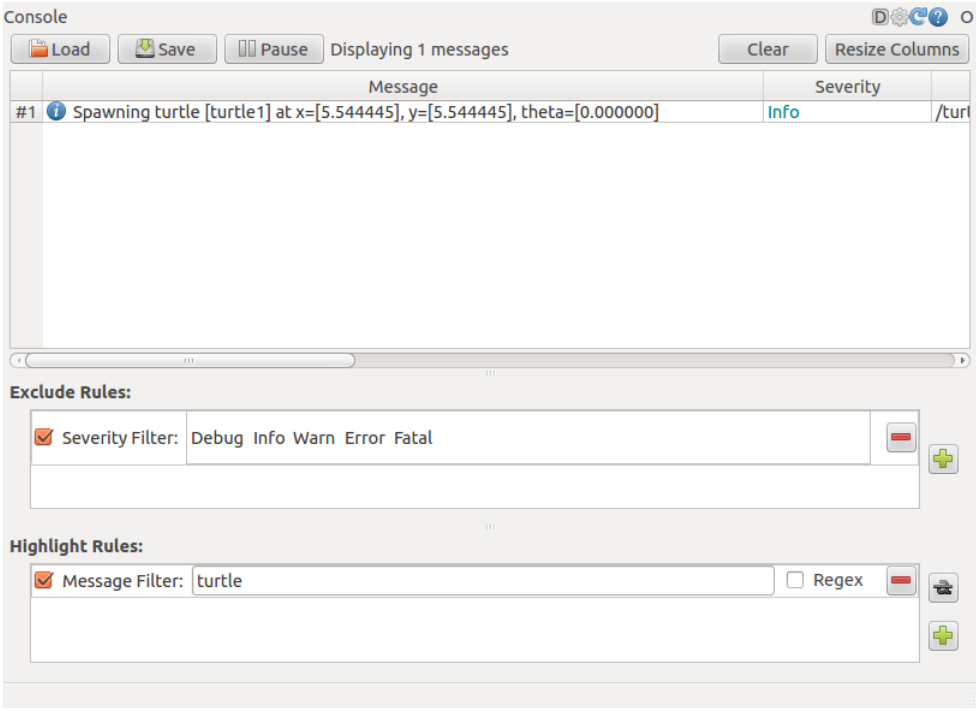
You will see two windows popup:



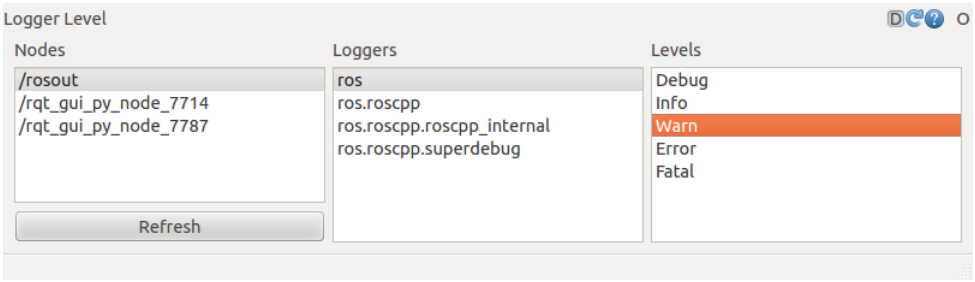
Now let's start turtlesim in a **new terminal**:

```
$ rosrun turtlesim turtlesim_node
```

Since the default logger level is INFO you will see any info that the turtlesim publishes when it starts up, which should look like:



Now let's change the logger level to Warn by refreshing the nodes in the rqt_logger_level window and selecting Warn as shown below:



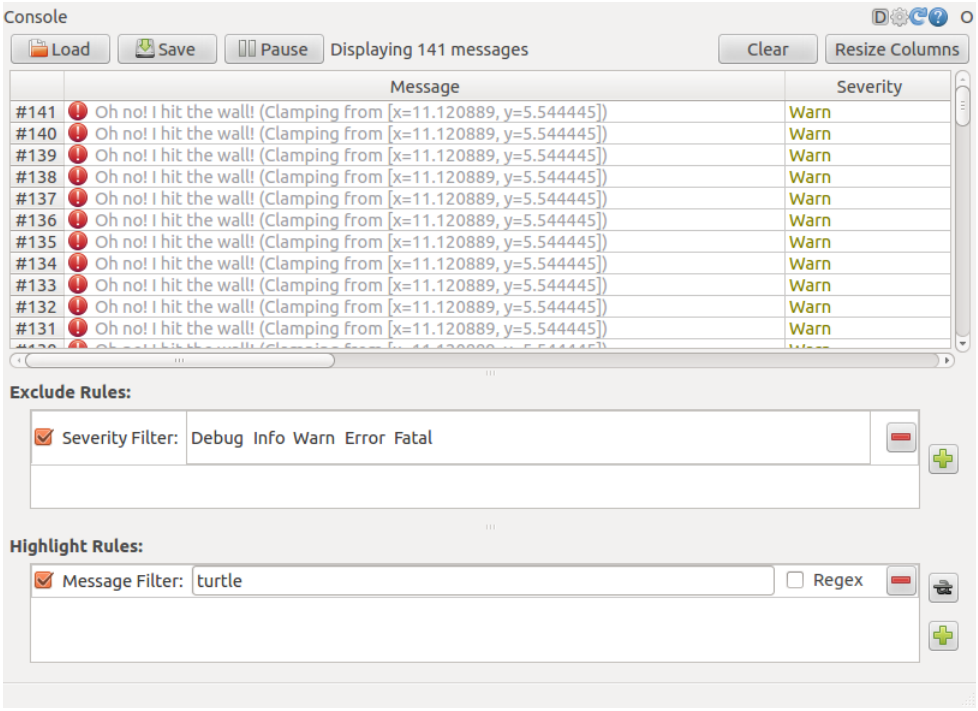
Now let's run our turtle into the wall and see what is displayed in our rqt_console:

For ROS Hydro and later,

```
rostopic pub /turtle1/cmd_vel geometry_msgs/Twist -r 1 -- '{linear: {x: 2.0, y: 0.0, z: 0.0}, angular: {x: 0.0,y: 0.0,z: 0.0}}'
```

For ROS Groovy and earlier,

```
rostopic pub /turtle1/command_velocity turtlesim/Velocity -r 1 -- 2.0  0.0
```



2.1 Quick Note about logger levels

Logging levels are prioritized in the following order:

```
Fatal
Error
Warn
Info
Debug
```

`Fatal` has the highest priority and `Debug` has the lowest. By setting the logger level, you will get all messages of that priority level or higher. For example, by setting the level to `Warn`, you will get all `Warn`, `Error`, and `Fatal` logging messages.

Let's `Ctrl-C` our turtlesim and let's use `roslaunch` to bring up multiple turtlesim nodes and a mimicking node to cause one turtlesim to mimic another:

2.2 Using roslaunch

`roslaunch` starts nodes as defined in a launch file.

Usage:

```
$ roslaunch [package] [filename.launch]
```

First go to the `beginner_tutorials` package we created (/ROS/Tutorials/CreatingPackage) and built (/ROS/Tutorials/BuildingPackages) earlier:

```
$ roscd beginner_tutorials
```

If `roscd` says something similar to *roscd: No such package/stack 'beginner_tutorials'* , you will need to `source` the environment setup file like you did at the end of the create_a_workspace (/catkin/Tutorials/create_a_workspace) tutorial:

```
$ cd ~/catkin_ws
$ source devel/setup.bash
$ roscd beginner_tutorials
```

Then let's make a launch directory:

```
$ mkdir launch
$ cd launch
```

> NOTE: The directory to store launch files doesn't necessarily have to be named `launch`. In fact you don't even need to store them in a directory. `roslaunch` command automatically looks into the passed package and detects available launch files. However, this is considered good practice.

2.3 The Launch File

Now let's create a launch file called turtlemimic.launch and paste the following:

Toggle line numbers

```
 1 <launch>
 2
 3   <group ns="turtlesim1">
 4     <node pkg="turtlesim" name="sim" type="turtlesim_node"/>
 5   </group>
 6
 7   <group ns="turtlesim2">
 8     <node pkg="turtlesim" name="sim" type="turtlesim_node"/>
 9   </group>
10
11   <node pkg="turtlesim" name="mimic" type="mimic">
12     <remap from="input" to="turtlesim1/turtle1"/>
13     <remap from="output" to="turtlesim2/turtle1"/>
14   </node>
15
16 </launch>
```

2.4 The Launch File Explained

Now, let's break the launch xml down.

Toggle line numbers

```
 1 <launch>
```

Here we start the launch file with the launch tag, so that the file is identified as a launch file.

Toggle line numbers

```
 3   <group ns="turtlesim1">
 4     <node pkg="turtlesim" name="sim" type="turtlesim_node"/>
 5   </group>
 6
 7   <group ns="turtlesim2">
 8     <node pkg="turtlesim" name="sim" type="turtlesim_node"/>
 9   </group>
```

Here we start two groups with a namespace tag of turtlesim1 and turtlesim2 with a turtlesim node with a name of sim. This allows us to start two simulators without having name conflicts.

Toggle line numbers

```
11   <node pkg="turtlesim" name="mimic" type="mimic">
12     <remap from="input" to="turtlesim1/turtle1"/>
13     <remap from="output" to="turtlesim2/turtle1"/>
14   </node>
```

Here we start the mimic node with the topics input and output renamed to turtlesim1 and turtlesim2. This renaming will cause turtlesim2 to mimic turtlesim1.

Toggle line numbers

```
16 </launch>
```

This closes the xml tag for the launch file.

2.5 roslaunching

Now let's `roslaunch` the launch file:

```
$ roslaunch beginner_tutorials turtlemimic.launch
```

Two turtlesims will start and in a **new terminal** send the `rostopic` command:

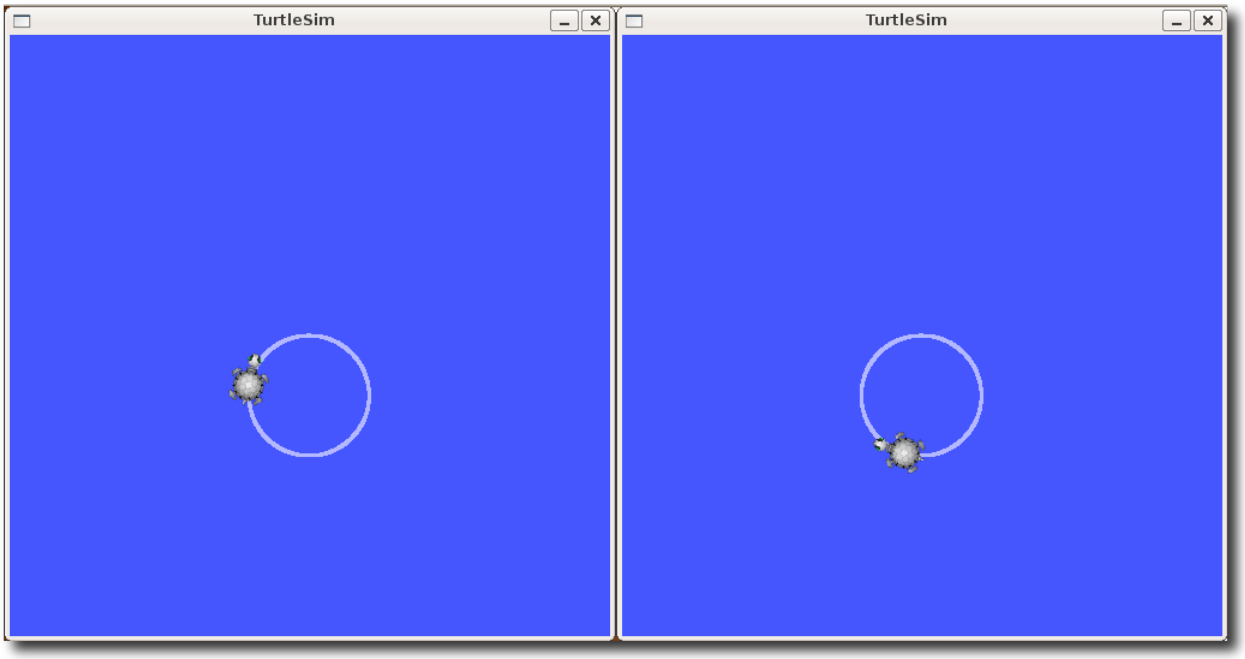
For ROS Hydro and later,

```
$ rostopic pub /turtlesim1/turtle1/cmd_vel geometry_msgs/Twist -r 1 -- '[2.0, 0.0, 0.0]' '[0.0, 0.0, -1.8]'
```

For ROS Groovy and earlier,

```
$ rostopic pub /turtlesim1/turtle1/command_velocity turtlesim/Velocity -r 1 -- 2.0  -1.8
```

You will see the two turtlesims start moving even though the publish command is only being sent to turtlesim1.

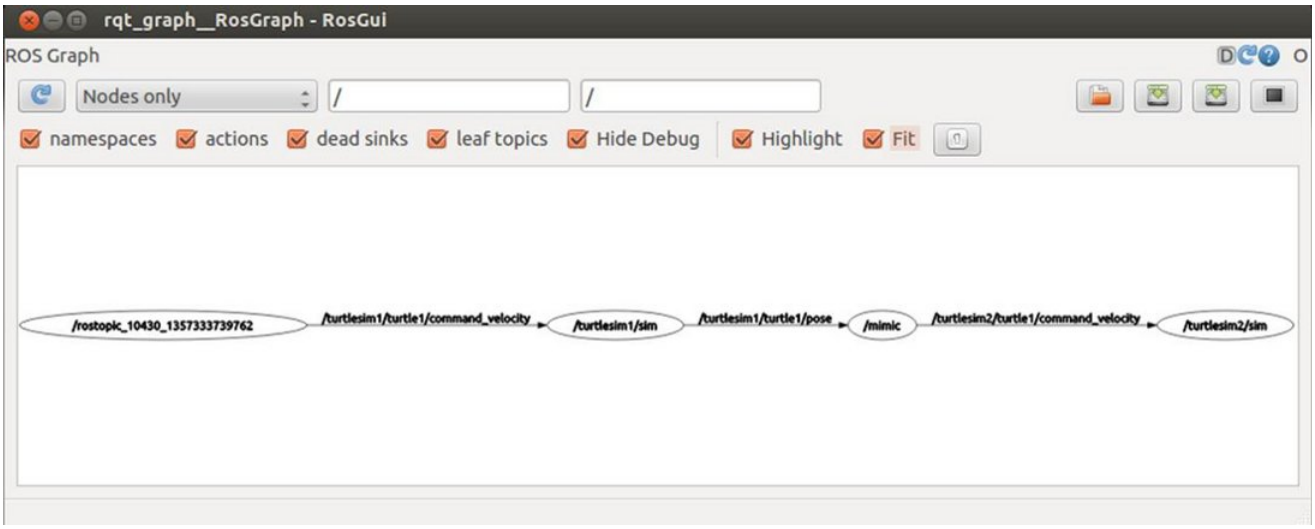


We can also use rqt_graph (/rqt_graph) to better understand what our launch file did. Run rqt (/rqt)'s main window and select *Plugins* > *Introspection* > *Node Graph*:

```
$ rqt
```

Or simply:

```
$ rqt_graph
```



Now that you have successfully used rqt_console and roslaunch, let's learn about editor options for ROS (/ROS/Tutorials/UsingRosEd). You can `Ctrl-C` all your turtlesims, as you will not need them for the next tutorials.

Wiki: ROS/Tutorials/UsingRqtconsoleRoslaunch (last edited 2018-01-06 15:45:32 by ErikNewton (/ErikNewton))