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Getting started with roswtf

Description: Basic introduction to the roswtf (/roswtf) tool.

Keywords: roswtf

Tutorial Level: BEGINNER

Next Tutorial: Navigating the wiki (/ROS/Tutorials/NavigatingTheWiki)

Before you start this tutorial, please make sure your `roscore` is NOT running.

On Linux, you can check if `roscore` is still running or not by something like this (if you see a line like this that includes `rosmaster`, which starts as part of `roscore`, roscore is running):

```
$ ps -ef | grep -i rosmaster
00:00:00 /usr/bin/python /opt/ros/kinetic/bin/rosmaster
```

1. Checking your installation

roswtf (/roswtf) examines your system to try and find problems. Let's try it out:

```
$ roscd rosmaster
$ roswtf
```

You should see (detail of the output varies):

```
Package: rosmaster
==========================================================================
==
Static checks summary:

No errors or warnings
==========================================================================
==


ROS Master does not appear to be running.
Online graph checks will not be run.
ROS_MASTER_URI is [http://localhost:11311]
```

If your installation ran correctly, you should see an output similar to the above. The output is telling you:

- `Package: rosmaster`: roswtf (/roswtf) uses whatever your current directory is to determine what checks it does. This output is telling us that you started `roswtf` in the `rosmaster` package directory.
- `Static checks summary`: this is a report on any filesystem or any non-runtime (i.e. no `roscore` required to run) issues. It's telling us that there were no errors.
- `ROS Master does not appear to be running.`: the `roscore` isn't running. `roswtf` didn't do any online checks.

2. Trying it online

For this next step, we want a Master (/Master) to be up, so go ahead and start a `roscore` in another terminal.

Now, try running the same sequence again:

```
$ roscd
$ roswtf
```

You should see:

```
No package or stack in context
=======================================================
Static checks summary:

No errors or warnings
=======================================================
Beginning tests of your ROS graph. These may take awhile...
analyzing graph...
... done analyzing graph
running graph rules...
... done running graph rules


Online checks summary:

Found 1 warning(s).
Warnings are things that may be just fine, but are sometimes at fault

WARNING The following node subscriptions are unconnected:
 * /rosout:
   * /rosout
```

`roswtf` did some online examination of your graph now that your `roscore` is running. Depending on how many ROS nodes you have running, this can take a long time to complete. As you can see, this time it produced a warning:

```
WARNING The following node subscriptions are unconnected:
 * /rosout:
   * /rosout
```

This time, `roscd` ran without argument, which likely takes you to a directory there's no ROS package, so we see a message `No package or stack in context`.

`roswtf` is warning you that the rosout (/rosout) node is subscribed to a topic that no one is publishing to. In this case, this is expected because nothing else is running, so we can ignore it.

3. Errors

`roswtf` will warn you about things that look suspicious but may be normal in your system. It can also report errors for problems that it knows are wrong.

For this part, we are going to set your ROS_PACKAGE_PATH to a *bad* value. We're also going to stop our `roscore` to simplify the output that you see.

```
$ roscd
$ ROS_PACKAGE_PATH=bad:$ROS_PACKAGE_PATH roswtf
```

This time we see:

```
Stack: ros
======================================================
Static checks summary:

Found 1 error(s).

ERROR Not all paths in ROS_PACKAGE_PATH [bad] point to an existing directory:
 * bad


======================================================

Cannot communicate with master, ignoring graph checks
```

As you can see, `roswtf` now gives us an error about the `ROS_PACKAGE_PATH` setting.

There are many other types of problems that `roswtf` can find. If you find yourself stumped by a build or communication issue, try running it and seeing if it can point you in the right direction.

Now that you know how to use roswtf, take sometime to learn more about how ros.org is structured and navigating the wiki (/ROS/Tutorials/NavigatingTheWiki).

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