A Quick Checklist for New ROS Projects

1. ROS projects live in their own directory. A typical choice is *~/catkin\_ws/src*.

If this is your first time to use ROS, you’ll need to create this directory, and then to initialize the ROS workspace.

 To initialize the workspace, simply use the command *catkin\_init\_workspace* from this directory.

1. To create a new project, while in the directory *~/catkin\_ws/src* use the command

*catkin\_create\_pkg <package\_name> <package\_dependencies>*

Here*, package\_name* is, of course, the name that you assign to the package that is being created, and *package\_dependencies* lists those packages that are needed by your new project.

1. Source code for your new project will live in the directory

*~/catkin\_ws/src*/*<package name>/src*

Create the file *program\_name.cpp* in this directory. This is the file that will contain the source code for your project. Be sure to include in this file the necessary header files, such as

*#include <ros/ros.h>.*

1. You must update the package file to include relevant information about your new source code and its dependencies. In particular, you should edit the file

*~/catkin\_ws/src*/*<package name>/package.xml*

*So that it includes at least the following:*

*<?xml version="1.0"?>*

*<package>*

*<name> package\_name </name>*

*<version>0.0.0</version>*

*<description>the package\_name package</description>*

*<maintainer email="youremail@address">John Doe</maintainer>*

*<license>TODO</license>*

*<buildtool\_depend>catkin</buildtool\_depend>*

*<build\_depend>PACKAGE\_1</build\_depend>*

*<build\_depend>PACKAGE\_2</build\_depend>*

*<run\_depend>PACKAGE\_1</run\_depend>*

*<run\_depend>PACKAGE\_2</run\_depend>*

*</package>*

NOTE: The terms PACKAGE\_1 and PACKAGE\_2 refer to the packages that you listed in the package\_dependencies entry when creating the package with the *catkin\_create\_pkg* command*.*

1. In ROS, source code is compiled using the CMake utility. This requires that you update the file CMakeLists.txt, which lives in the *~/catkin\_ws/src*/*<package name>/* directory. This file should already exist (it was created when you created the project), but you’ll need to modify it so that the following lines are included (and not commented out).

*cmake\_minimum\_required(VERSION 2.8.3)*

*project(package\_name)*

*find\_package(catkin REQUIRED COMPONENTS*

*PACKAGE\_1*

*PACKAGE\_2*

*)*

*catkin\_package()*

*include\_directories(${catkin\_INCLUDE\_DIRS})*

*add\_executable(program\_file src/program\_name.cpp)*

*target\_link\_libraries(program\_name ${catkin\_LIBRARIES})*

1. To compile your program, simply use the command *catkin\_make* from the directory *~/catkin\_ws.*
2. Executing catkin\_make has a few side effects, and these must be registered with your user shell. To do this, execute the command source *devel/setup.bash* from the directory *~/catkin\_ws.*
3. Now it’s time to fire up ROS. To do this, open a new terminal window, and execute the command *roscore*.
4. And now, we can execute the program. In the original terminal window, invoke your program using the command *rosrun package\_name program\_name.*