

Lab Submission - 5

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Subject: Simulation and modelling

Subject code: CSE3102

Professor: Dr. Christy Jackson J

Slot: L57+L58

Create a subscriber and publisher architecture with your own message type.

```
kailash@Kailash-Linux: ~/catkin_ws/src/sim/src/scripts
Command 'Source' not found, did you mean:
  command 'gource' from deb gource (0.51-1build1)
Try: sudo apt install <deb name>

kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs$ nano CMakeLists.txt
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs$ nano CMakeLists.txt
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs$ mkdir msg
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs$ cd msg
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs/msg$ touch HardwareStatus.ms
g
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs/msg$ touch HardwareStatus.ms
g
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs/msg$ nano CMakeLists.txt
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs/msg$ cd ..
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs$ nano CMakeLists.txt
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs$ cd
kailash@Kailash-Linux:~$ cd catkin_ws
kailash@Kailash-Linux:~/catkin_ws$ catkin_make
Base path: /home/kailash/catkin_ws
Source space: /home/kailash/catkin_ws/src
Build space: /home/kailash/catkin_ws/build
```

```
kailash@Kailash-Linux:~/catkin_ws$ ls
build  devel  src
kailash@Kailash-Linux:~/catkin_ws$ cd src
kailash@Kailash-Linux:~/catkin_ws/src$ cd my_robot_msgs
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs$ nano package.xml
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs$ nano package.xml
kailash@Kailash-Linux:~/catkin_ws/src/my_robot_msgs$ cd ..
kailash@Kailash-Linux:~/catkin_ws/src$ cd sim
kailash@Kailash-Linux:~/catkin_ws/src/sim$ nano package.xml
kailash@Kailash-Linux:~/catkin_ws/src/sim$ nano CMakeLists.txt
kailash@Kailash-Linux:~/catkin_ws/src/sim$ cd scripts
bash: cd: scripts: No such file or directory
kailash@Kailash-Linux:~/catkin_ws/src/sim$ cd src
kailash@Kailash-Linux:~/catkin_ws/src/sim/src$ cd scripts
kailash@Kailash-Linux:~/catkin_ws/src/sim/src/scripts$ touch hw_status_publisher.py
kailash@Kailash-Linux:~/catkin_ws/src/sim/src/scripts$ chmod +x hw_status_publisher.py
kailash@Kailash-Linux:~/catkin_ws/src/sim/src/scripts$ nano hw_status_publisher.py
kailash@Kailash-Linux:~/catkin_ws/src/sim/src/scripts$ python3 hw_status_publisher.py
```

```
home > kailash > catkin_ws > src > my_robot_msgs > CMakeLists.txt
96 ######
97 ## catkin specific configuration ##
98 #####
99 ## The catkin_package macro generates cmake config files for your package
100 ## Declare things to be passed to dependent projects
101 ## INCLUDE_DIRS: uncomment this if your package contains header files
102 ## LIBRARIES: libraries you create in this project that dependent project
103 ## CATKIN_DEPENDS: catkin_packages dependent projects also need
104 ## DEPENDS: system dependencies of this project that dependent projects a
105 catkin_package()
106 # INCLUDE_DIRS include
107 # LIBRARIES my_robot_msgs
108 # CATKIN_DEPENDS roscpp rospy std_msgs message_runtime
109 # DEPENDS system_lib
110 []
111 #####
112 ## Build ##
113 #####
114 #####
115
116 ## Specify additional locations of header files
117 ## Your package locations should be listed before other locations
118 include_directories(
```

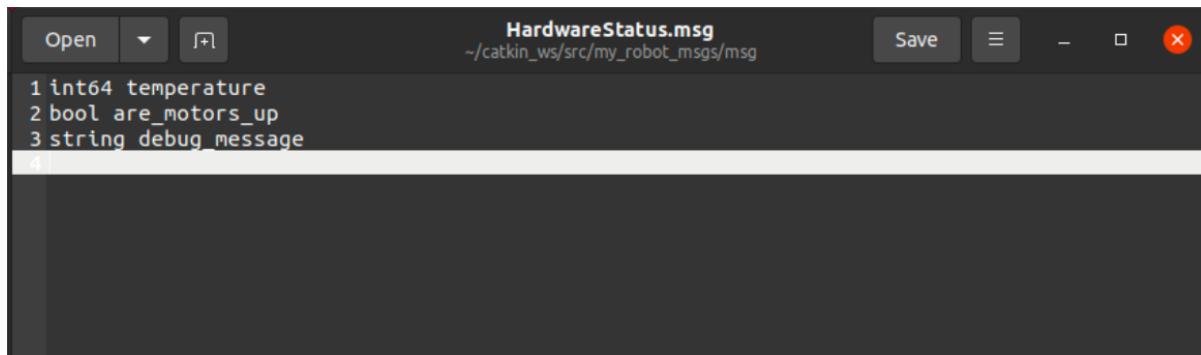
Open ▾ + package.xml ~/catkin_ws/src/my_robot_msgs Save ⌂ ⌂ ⌂

```
<!-- use build_export_depend for packages you need in order to build against this
package: -->
42 <!-- <build_export_depend>message_generation</build_export_depend> -->
43 <!-- Use buildtool_depend for build tool packages: -->
44 <!-- <buildtool_depend>catkin</buildtool_depend> -->
45 <!-- Use exec_depend for packages you need at runtime: -->
46 <!-- <exec_depend>message_runtime</exec_depend> -->
47 <!-- Use test_depend for packages you need only for testing: -->
48 <!-- <test_depend>gtest</test_depend> -->
49 <!-- Use doc_depend for packages you need only for building documentation: -->
50 <!-- <doc_depend>doxygen</doc_depend> -->
51 <buildtool_depend>catkin</buildtool_depend>
52 <build_depend>roscpp</build_depend>
53 <build_depend>rospy</build_depend>
54 <build_depend>std_msgs</build_depend>
55 <build_depend>message_generation</build_depend>
56 <build_export_depend>roscpp</build_export_depend>
57 <build_export_depend>rospy</build_export_depend>
58 <build_export_depend>std_msgs</build_export_depend>
59 <exec_depend>roscpp</exec_depend>
60 <exec_depend>rospy</exec_depend>
61 <exec_depend>std_msgs</exec_depend>
62 <exec_depend>message_runtime</exec_depend>
63
```

```

1 cmake_minimum_required(VERSION 3.0.2)
2 project(my_robot_msgs)
3
4 ## Compile as C++11, supported in ROS Kinetic and newer
5 # add_compile_options(-std=c++11)
6
7 ## Find catkin macros and libraries
8 ## if COMPONENTS list like find_package(catkin REQUIRED COMPONENTS xyz)
9 ## is used, also find other catkin packages
10 find_package(catkin REQUIRED COMPONENTS
11   roscpp
12   rospy
13   std_msgs
14   message_generation
15 )
16
17 ## System dependencies are found with CMake's conventions
18 # find_package(Boost REQUIRED COMPONENTS system)
19
20
21 ## Uncomment this if the package has a setup.py. This macro ensures
22 ## modules and global scripts declared therein get installed
23 ## See http://ros.org/doc/api/catkin/html/user\_guide/setup\_dot\_py.html
24 #catkin_package()

```



```

1 #!/usr/bin/env python3
2 import rospy
3 from my_robot_msgs.msg import HardwareStatus
4 if __name__ == '__main__':
5     rospy.init_node("hardware_status_publisher")
6     pub = rospy.Publisher("/my_robot/hardware_status", HardwareStatus)
7     rate = rospy.Rate(5)
8     while not rospy.is_shutdown():
9         msg = HardwareStatus()
10        msg.temperature = 45
11        msg.are_motors_up = True
12        msg.debug_message = "Hello World,Im Kailash"
13        pub.publish(msg)
14        rate.sleep()
15

```

```
-- Using Python nosetests: /usr/bin/nosetests3
-- catkin 0.8.10
-- BUILD_SHARED_LIBS is on
-- BUILD_SHARED_LIBS is on
-- ~~~ traversing 2 packages in topological order:
--   - my_robot_msgs
--   - sim
-- ~~~
-- +++ processing catkin package: 'my_robot_msgs'
-- ==> add_subdirectory(my_robot_msgs)
-- Using these message generators: gencpp;geneus;genlisp;gennodejs;genpy
-- my_robot_msgs: 1 messages, 0 services
-- +++ processing catkin package: 'sim'
-- ==> add_subdirectory(sim)
-- Configuring done
-- Generating done
-- Build files have been written to: /home/kailash/catkin_ws/build
#####
##### Running command: "make -j2 -l2" in "/home/kailash/catkin_ws/build"
#####
[ 0%] Built target std_msgs_generate_messages_lisp
[ 0%] Built target std_msgs_generate_messages_nodejs
[ 0%] Built target _my_robot_msgs_generate_messages_check_deps_HardwareStatus
[ 0%] Built target std_msgs_generate_messages_py
[ 0%] Built target std_msgs_generate_messages_cpp
[ 0%] Built target std_msgs_generate_messages_eus
[ 14%] Generating Lisp code from my_robot_msgs/HardwareStatus.msg
[ 28%] Generating Javascript code from my_robot_msgs/HardwareStatus.msg
[ 28%] Built target my_robot_msgs_generate_messages_lisp
[ 28%] Built target my_robot_msgs_generate_messages_nodejs
[ 42%] Generating Python from MSG my_robot_msgs/HardwareStatus
[ 57%] Generating C++ code from my_robot_msgs/HardwareStatus.msg
[ 57%] Built target my_robot_msgs_generate_messages_cpp
[ 71%] Generating EusLisp code from my_robot_msgs/HardwareStatus.msg
[ 85%] Generating Python msg __init__.py for my_robot_msgs
[100%] Built target my_robot_msgs_generate_messages_eus
[100%] Built target my_robot_msgs_generate_messages_py
[100%] Built target my_robot_msgs_generate_messages
kailash@Kailash-Linux:~/catkin_ws$ source devel/setup.bash
kailash@Kailash-Linux:~/catkin_ws$ rosrun my_robot_tutorials hw_status_publisher.py
[rospack] Error: package 'my_robot_tutorials' not found
kailash@Kailash-Linux:~/catkin_ws$ rosrun sim hw_status_publisher.py
```

Output: