To create a Catkin workspace:

1. create a directory mkdir -p ~/catkin_ws/src
2. cd ~/catkin_ws/
3. inside src, type in terminal : **catkin_init_workspace # not necessary**
4. type: **catkin_make** in root

Automatically it will create a catkin workspace with CmakeLists.txt in src

5. source devel/setup.bash

6. Check if your folder shows up : **echo $ROS_PACKAGE_PATH**

To create a Package:

1. Go to src of root **cd src**
2. Type **catkin_create_pkg packageName dependancy1 dependancy2 dependancy3**..
eg : **catkin_create_pkg object_recog std_msgs roscpp rospy**
3. Edit the CmakeLists.txt inside the package that you had created in previous step. Hint: It's not the Root CmakeLists.txt!
4. Create C++ files (and) header files.
5. Add the node as **add_executable(nodeName src/name.cpp)..**
eg: add_executable(test src/test1.cpp)
6. To add the header files (.h), add it to **add_executable(nodeName src/name.cpp, src/header.h)**
7.For compilation, add c++ 2011 using set. **SET(CMAKE_CXX_FLAGS "-std=c++11 -O3")** # added the compiler and library support for c++ 2011
8. Finally, compile the files using **catkin_make**
9. Start **roscore.** To run a node, type **rosrun packageName nodeName**

Note:

1) **Common compilation errors:**
   If you use **ClassName Obj= new ClassName ()** for creating instances of your class, **use ->** for referencing the member variables and methods. *.[dot] operator will result in **error.***

   Conversely, if you use **ClassName Obj;** for creating object instances of your class, always **use .[dot]** for referencing the member variables and functions. **->** will result in **error.**