

ROS入门
21讲

9.创建工作空间与功能包

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工作空间 (workspace) 是一个存放工程开发相关文件的文件夹。

- **src**: 代码空间 (Source Space)
- **build**: 编译空间 (Build Space)
- **devel**: 开发空间 (Development Space)
- **install**: 安装空间 (Install Space)

```
workspace_folder/      -- WORKSPACE
src/                   -- SOURCE SPACE
  CMakeLists.txt       -- The 'toplevel' CMake file
  package_1/
    CMakeLists.txt
    package.xml
    ...
  package_n/
    CMakeLists.txt
    package.xml
    ...
build/                 -- BUILD SPACE
  CATKIN_IGNORE        -- Keeps catkin from walking this directory
devel/                 -- DEVELOPMENT SPACE (set by CATKIN_DEVEL_PREFIX)
  bin/
  etc/
  include/
  lib/
  share/
  .catkin
  env.bash
  setup.bash
  setup.sh
  ...
install/               -- INSTALL SPACE (set by CMAKE_INSTALL_PREFIX)
  bin/
  etc/
  include/
  lib/
  share/
  .catkin
  env.bash
  setup.bash
  setup.sh
  ...
```

catkin编译系统下的工作空间结构

创建工作空间

```
$ mkdir -p ~/catkin_ws/src  
$ cd ~/catkin_ws/src  
$ catkin_init_workspace
```

编译工作空间

```
$ cd ~/catkin_ws/  
$ catkin_make
```

设置环境变量

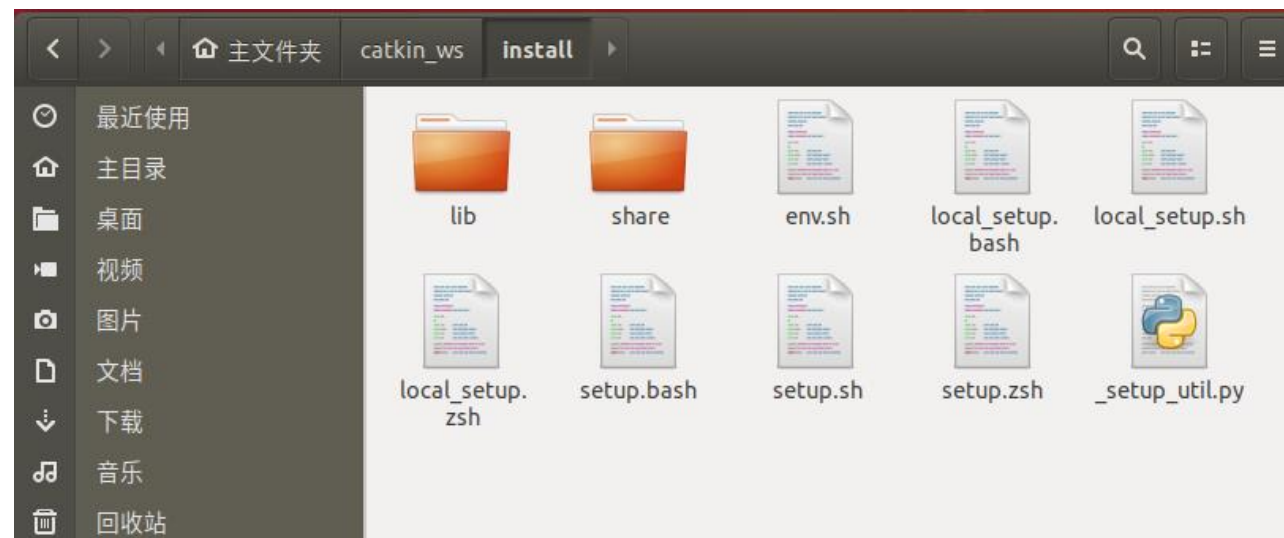
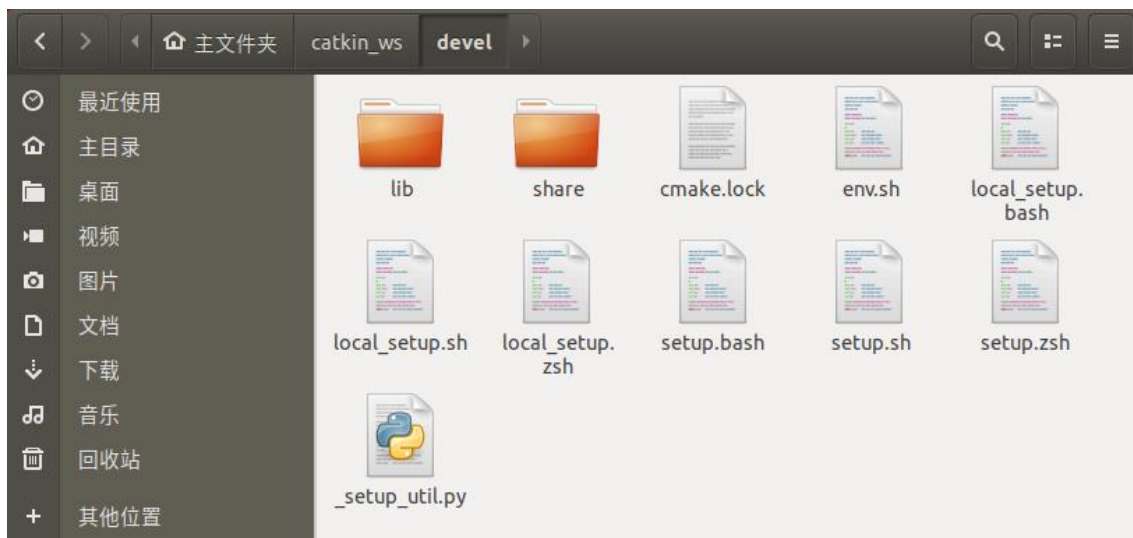
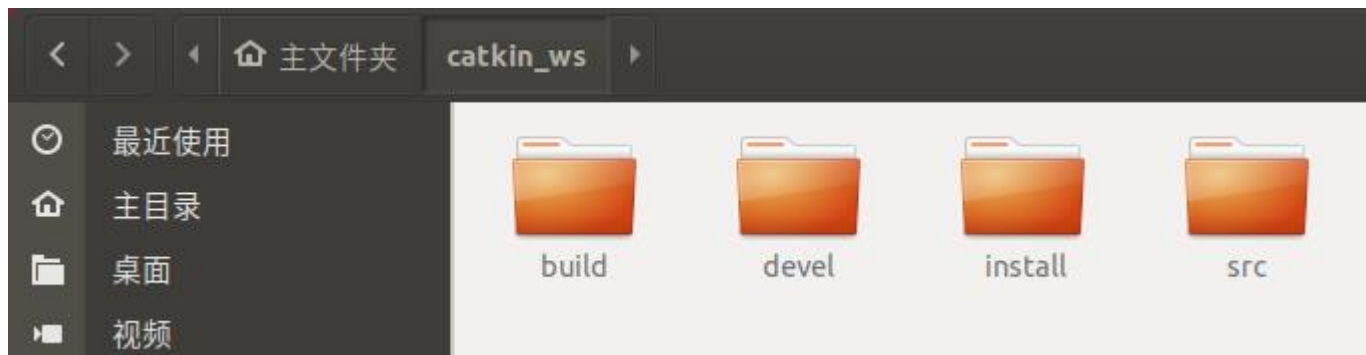
```
$ source devel/setup.bash
```

检查环境变量

```
$ echo $ROS_PACKAGE_PATH
```

```
→ ~ echo $ROS_PACKAGE_PATH  
/home/hcx/catkin_ws/src:/opt/ros/indigo/share:/opt/ros/indigo/stacks
```

• 创建功能包



```
$ catkin_create_pkg <package_name> [depend1] [depend2] [depend3]
```

创建功能包

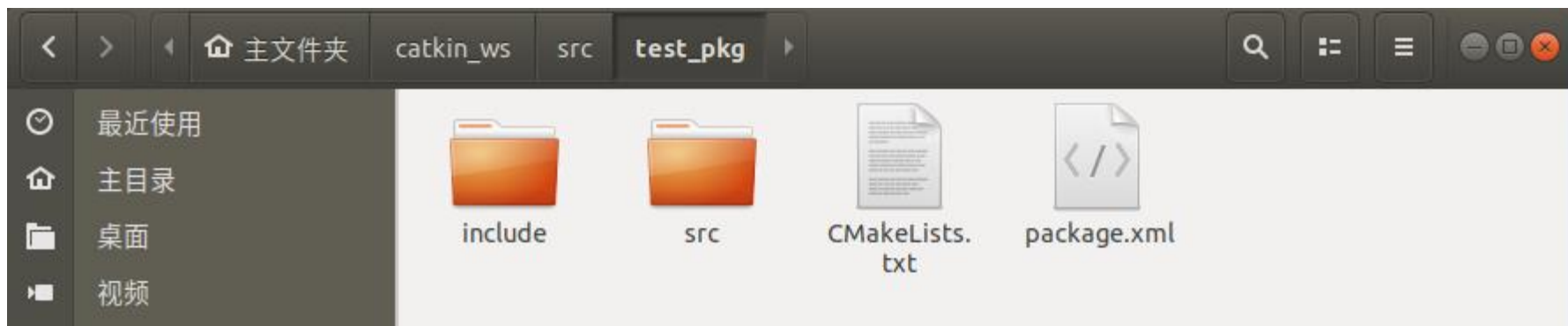
```
$ cd ~/catkin_ws/src  
$ catkin_create_pkg test_pkg std_msgs rospy roscpp
```

编译功能包

```
$ cd ~/catkin_ws  
$ catkin_make  
$ source ~/catkin_ws/devel/setup.bash
```

同一个工作空间下，不允许存在同名功能包
不同工作空间下，允许存在同名功能包

• 创建功能包



```
打开(O)  CMakeLists.txt  ~/catkin_ws/src/test_pkg  保存(S)  三  窗口  关闭(X)

cmake_minimum_required(VERSION 2.8.3)
project(test_pkg)

## Compile as C++11, supported in ROS Kinetic and newer
# add_compile_options(-std=c++11)

## Find catkin macros and libraries
## if COMPONENTS list like find_package(catkin REQUIRED COMPONENTS xyz)
## is used, also find other catkin packages
find_package(catkin REQUIRED COMPONENTS
  roscpp
  rospy
  std_msgs
)

## System dependencies are found with CMake's conventions
# find_package(Boost REQUIRED COMPONENTS system)

## Uncomment this if the package has a setup.py. This macro ensures
## modules and global scripts declared therein get installed
## See http://ros.org/doc/api/catkin/html/user\_guide/setup\_dot\_py.html
# catkin_python_setup()

#####
## Declare ROS messages, services and actions ##
#####
```

```
打开(O)  package.xml  ~/catkin_ws/src/test_pkg  保存(S)  三  窗口  关闭(X)

<?xml version="1.0"?>
<package format="2">
  <name>test_pkg</name>
  <version>0.0.0</version>
  <description>The test_pkg package</description>

  <!-- One maintainer tag required, multiple allowed, one person per tag -->
  <!-- Example: -->
  <!-- <maintainer email="jane.doe@example.com">Jane Doe</maintainer> -->
  <maintainer email="hcx@todo.todo">hcx</maintainer>

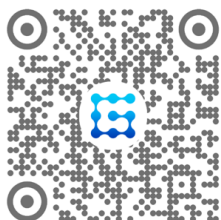
  <!-- One license tag required, multiple allowed, one license per tag -->
  <!-- Commonly used license strings: -->
  <!--   BSD, MIT, Boost Software License, GPLv2, GPLv3, LGPLv2.1, LGPLv3 -->
  <license>TODO</license>

  <!-- Url tags are optional, but multiple are allowed, one per tag -->
  <!-- Optional attribute type can be: website, bugtracker, or repository -->
  <!-- Example: -->
  <!-- <url type="website">http://wiki.ros.org/test\_pkg</url> -->
```

感谢观看

怕什么真理无穷，进一寸有一寸的欢喜

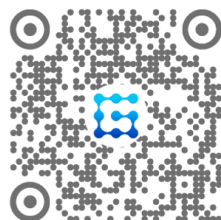
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