ros_install

～～～～～创建deb包～～～～～

1、安装依赖工具

```
sudo apt-get install python-bloom fakeroot
```

2、修改CMakeLists.txt文件，在后面添加install相关内容

举例如下，根据需要打包的具体文件修改添加

python项目：

```
## Install scripts
install(PROGRAMS scripts/talker.py scripts/listener.py
  DESTINATION ${CATKIN_PACKAGE_BIN_DESTINATION}
)
 install(FILES
  # myfile1
  # myfile2
   DESTINATION ${CATKIN_PACKAGE_SHARE_DESTINATION}
 )
```

c++项目：

```
## Install exec
install(TARGETS cloudplatform_control_node cloudplatform_sdk_control_node visible_cloudplat_node
infrared_cloudplat_node hostpc_cloudplat_node camera_status_node tianboir_sdk_control_node
  RUNTIME DESTINATION ${CATKIN_PACKAGE_BIN_DESTINATION}
)
## Mark other files for installation (e.g. launch and bag files, etc.)
 install(FILES
   launch/cloudplatform_correlation.launch
   launch/robot_camera.urdf
  # myfile1
  # myfile2
   DESTINATION ${CATKIN_PACKAGE_SHARE_DESTINATION}
 )
```

3、修改package.xml文件

只需要修改该文件中的version字段，例如下面version为2021.2.2

版本号中不要以0开头（除非就是0），不要写成如2021.02.02，否则打包时会报如下警告“WARNING: Package "imu_383_driver" does not follow the version conventions. It should not contain leading zeros (unless the number is 0).”：

```
<?xml version="1.0"?>
<package format="2">
  <name>imu_383_driver</name>
  <version>2021.2.2</version>
  <description>The imu_383_driver package</description>
</package>
```

4、执行打包命令(注意16.04和18.04中的ros版本差别)

a、bloom-generate rosdebian --os-name ubuntu --ros-distro melodic

```
chenwei@chenwei-N85-87HP6:~/catkin_dandt_ws/src/imu_383_driver$ bloom-generate rosdebian --os-name ubuntu --ros-distro melodic
==> Generating debs for ubuntu:bionic for package(s) ['imu_383_driver']
No homepage set, defaulting to ''
No historical releaser history, using current maintainer name and email for each versioned changelog entry.
No CHANGELOG.rst found for package 'imu_383_driver'
Package 'imu-383-driver' has dependencies:
Run Dependencies:
  rosdep key           => bionic key
  roscpp               => ['ros-melodic-roscpp']
  rospy                => ['ros-melodic-rospy']
  std_msgs             => ['ros-melodic-std-msgs']
Build and Build Tool Dependencies:
  rosdep key           => bionic key
  roscpp               => ['ros-melodic-roscpp']
  rospy                => ['ros-melodic-rospy']
  std_msgs             => ['ros-melodic-std-msgs']
  catkin               => ['ros-melodic-catkin']
==> Placing templates files in the 'debian' folder.
==> In place processing templates in 'debian' folder.
Expanding 'debian/compat.em' -> 'debian/compat'
Expanding 'debian/changelog.em' -> 'debian/changelog'
Expanding 'debian/rules.em' -> 'debian/rules'
Expanding 'debian/copyright.em' -> 'debian/copyright'
Expanding 'debian/source/format.em' -> 'debian/source/format'
Expanding 'debian/source/options.em' -> 'debian/source/options'
Expanding 'debian/control.em' -> 'debian/control'
chenwei@chenwei-N85-87HP6:~/catkin_dandt_ws/src/imu_383_driver$
```

b、fakeroot debian/rules binary

该指令执行完成后可在package同级目录下看到生成的deb包

```
chenwei@chenwei-N85-87HP6:~/catkin_dandt_ws/src$ ls *.deb *.ddeb
ros-melodic-imu-383-driver_0.0.0-0bionic_amd64.deb      ros-melodic-imu-383-driver-dbgsym_0.0.0-0bionic_amd64.ddeb
ros-melodic-imu-383-driver_2021.2.2-0bionic_amd64.deb   ros-melodic-imu-383-driver-dbgsym_2021.2.2-0bionic_amd64.ddeb
chenwei@chenwei-N85-87HP6:~/catkin_dandt_ws/src$
```

5、更新版本重新打包

a、如果代码有修改，修改代码完成后，修改package.xml中的版本号

b、然后执行catkin_make --pkg ***，编译修改的package

c、删除package的src同级目录下的obj-x86_64-linux-gnu和debian文件夹

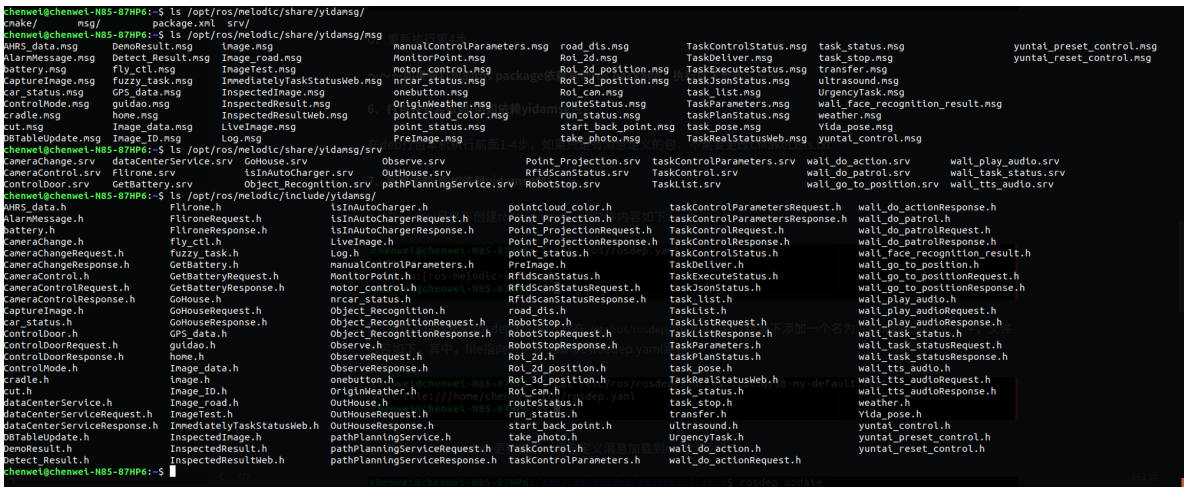
```
chenwei@chenwei-N85-87HP6:~/catkin_dandt_ws/src/imu_383_driver$ ls
CMakeLists.txt  debian  include  launch  obj-x86_64-linux-gnu  package.xml  src
chenwei@chenwei-N85-87HP6:~/catkin_dandt_ws/src/imu_383_driver$ rm debian/ -rf
chenwei@chenwei-N85-87HP6:~/catkin_dandt_ws/src/imu_383_driver$ rm obj-x86_64-linux-gnu/ -rf
chenwei@chenwei-N85-87HP6:~/catkin_dandt_ws/src/imu_383_driver$
```

d、重新执行第4步

～～～如果要打包的ros package依赖其他ros package，执行以下步骤～～～

6、打包并安装依赖(例如依赖yidamsg包)

在deb打包本机执行前面1-4步，如果只是有消息定义的包，不需要更改CMakeLists.txt，安装完成后可以在/opt/ros相关目录看到安装文件，如下图：

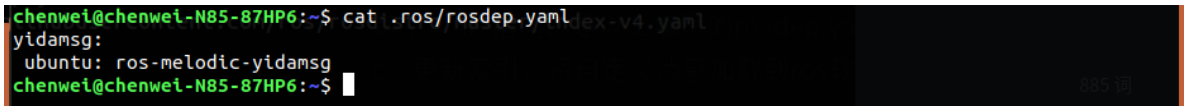


7、配置依赖(例如依赖yidamsg包)

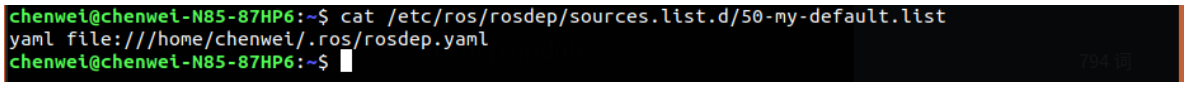
a、在~/.ros/目录下创建rosdep.yaml，该文件内容如下：

格式如下（operating_system:前后各有一个空格）：

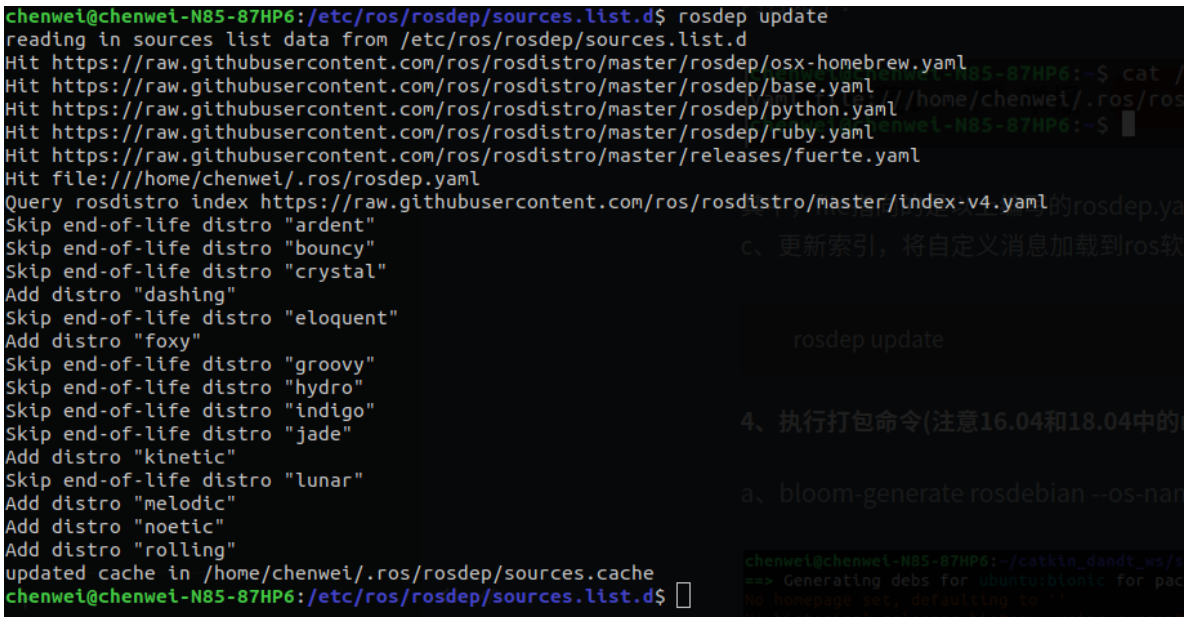
```
rosdep_name:
 operating_system: package1 package2
```



b、将该文件连接到rosdep索引中，即在 `/etc/ros/rosdep/sources.list.d/` 目录下添加一个名为 `50-my-default.list` 文件，文件内容如下，其中，file指向的是以上编写的rosdep.yaml路径：



c、执行rosdep update更新索引，将自定义消息加载到ros软件列表：

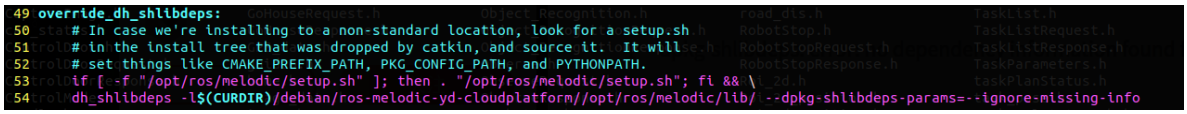


8、使用第三方库文件

要打的包中有使用第三方动态库文件的，可能会提示无版本信息，因为其不是使用dpkg安装，所以需要修改rules文件。

到需要打包的目录中，找到debian/rules，打开之后找到override_dh_shlibdeps，在最后加上如下选项：

--dpkg-shlibdeps-params=--ignore-missing-info



～～～～～制作安装第三方动态库及配置环境变量的可执行程序～～～～～

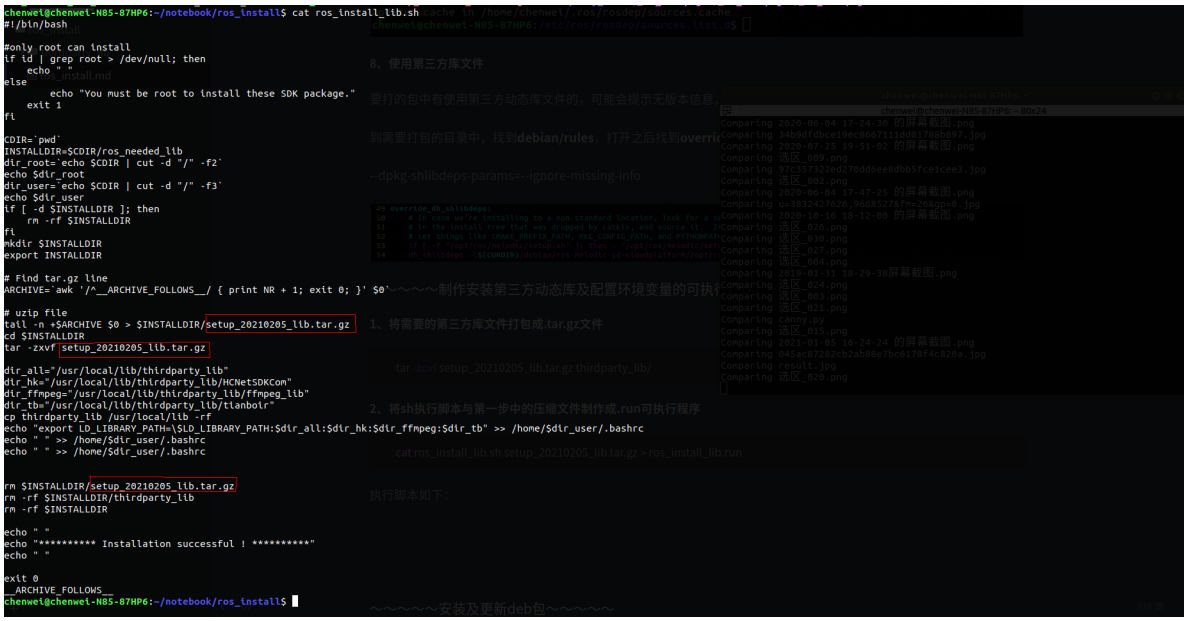
1、将需要的第三方库文件打包成.tar.gz文件

```
tar -zcvf setup_20210205_lib.tar.gz thirdparty_lib/
```

2、将sh执行脚本与第一步中的压缩文件制作成.run可执行程序

```
cat ros_install_lib.sh setup_20210205_lib.tar.gz > ros_install_lib_20210205.run
```

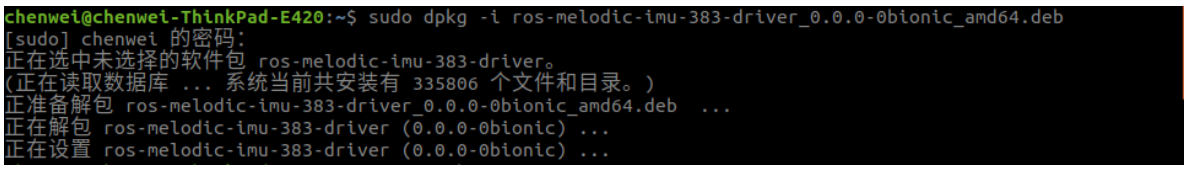
执行脚本如下，红框中为压缩文件名称：



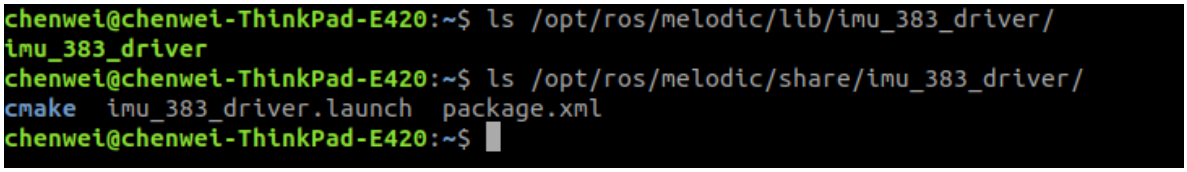
～～～～～安装及更新deb包～～～～～～

1、在新系统安装deb

```
sudo dpkg -i ***.deb
```



可以在opt/ros相关目录下看到安装文件



2、卸载旧版本，安装新版本

```
sudo dpkg --purge ***-dbgsym
sudo dpkg --purge ***
sudo dpkg -i ***.deb(新版本deb文件)
```

```
chenwei@chenwei-ThinkPad-E420:~$ sudo dpkg --purge ros-melodic-imu-383-driver-dbgsym
(正在读取数据库 ... 系统当前共安装有 338406 个文件和目录。)
正在卸载 ros-melodic-imu-383-driver-dbgsym (0.0.0-0bionic) ...
chenwei@chenwei-ThinkPad-E420:~$ sudo dpkg --purge ros-melodic-imu-383-driver
(正在读取数据库 ... 系统当前共安装有 338403 个文件和目录。)
正在卸载 ros-melodic-imu-383-driver (0.0.0-0bionic) ...
chenwei@chenwei-ThinkPad-E420:~$ ls /opt/ros/melodic/lib/imu_383_driver/
ls: 无法访问'/opt/ros/melodic/lib/imu_383_driver/': 没有那个文件或目录
chenwei@chenwei-ThinkPad-E420:~$ ls /opt/ros/melodic/share/imu_383_driver/
ls: 无法访问'/opt/ros/melodic/share/imu_383_driver/': 没有那个文件或目录
chenwei@chenwei-ThinkPad-E420:~$ sudo dpkg -i ros-melodic-imu-383-driver_2021.2.2-0bionic_amd64.deb
正在选中未选择的软件包 ros-melodic-imu-383-driver。
(正在读取数据库 ... 系统当前共安装有 338393 个文件和目录。)
正准备解包 ros-melodic-imu-383-driver_2021.2.2-0bionic_amd64.deb  ...
正在解包 ros-melodic-imu-383-driver (2021.2.2-0bionic) ...
正在设置 ros-melodic-imu-383-driver (2021.2.2-0bionic) ...
chenwei@chenwei-ThinkPad-E420:~$ ls /opt/ros/melodic/lib/imu_383_driver/
imu_383_driver
chenwei@chenwei-ThinkPad-E420:~$ ls /opt/ros/melodic/share/imu_383_driver/
cmake  imu_383_driver.launch  package.xml
chenwei@chenwei-ThinkPad-E420:~$
```

～～～～～安装第三方动态库～～～～～

1、将.run文件拷贝到 /home/用户名 目录下，给.run文件赋予可执行权限

```
sudo chmod 777 ros_install_lib_20210205.run
```

2、使用root用户，执行.run可执行程序，安装成功后退出root权限

```
sudo su
./ros_install_lib_20210205.run
#看到********** Installation successful ! **********说明安装完成
exit
```

```
thirdparty_lib/libcrypto.so
thirdparty_lib/HCNetSDK_Log_Switch.xml
thirdparty_lib/ffmpeg_lib/
thirdparty_lib/ffmpeg_lib/libavfilter.so.7
thirdparty_lib/ffmpeg_lib/libavutil.so.56
thirdparty_lib/ffmpeg_lib/libswresample.so.3
thirdparty_lib/ffmpeg_lib/libavcodec.so.58
thirdparty_lib/ffmpeg_lib/libavformat.so.58
thirdparty_lib/ffmpeg_lib/libswscale.so.5
thirdparty_lib/ffmpeg_lib/libavdevice.so.58
thirdparty_lib/ffmpeg_lib/libx264.so.157
thirdparty_lib/libSuperRender.so

********** Installation successful ! **********

root@chenwei-N85-87HP6:/home/chenwei/notebook/ros_install#
```