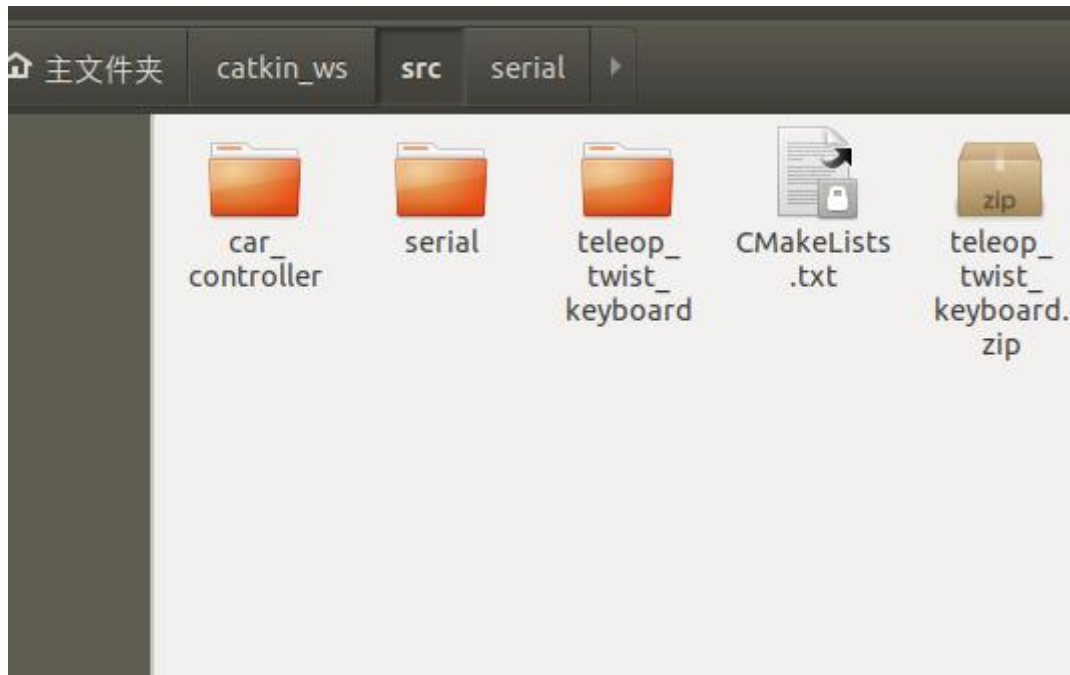


把键盘包 `teleop_twist_keyboard.zip` 解压成文件夹

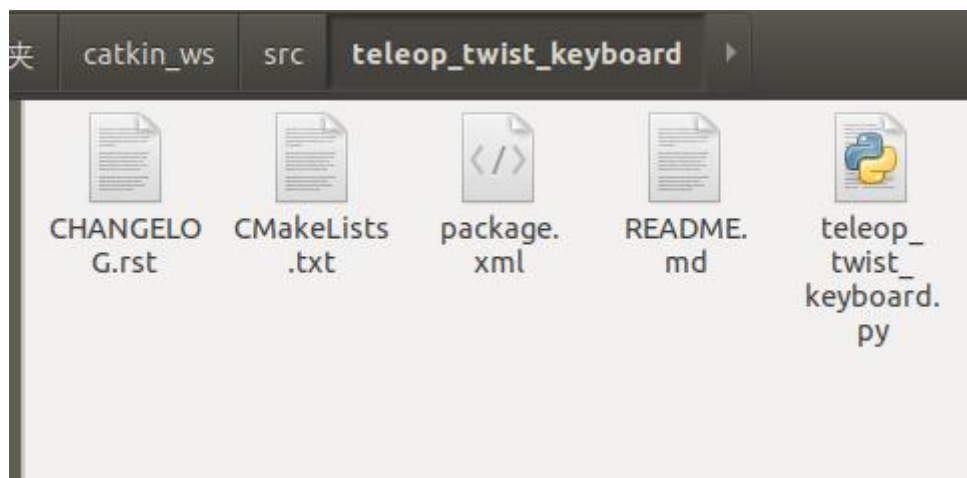
复制文件夹 `car_controller` 和 `teleop_twist_keyboard` 到工作空间,即 `catkin_ws/src` 文件夹里



进入键盘包文件夹里右键 `teleop_twist_keyboard.py` 文件

打开属性>权限

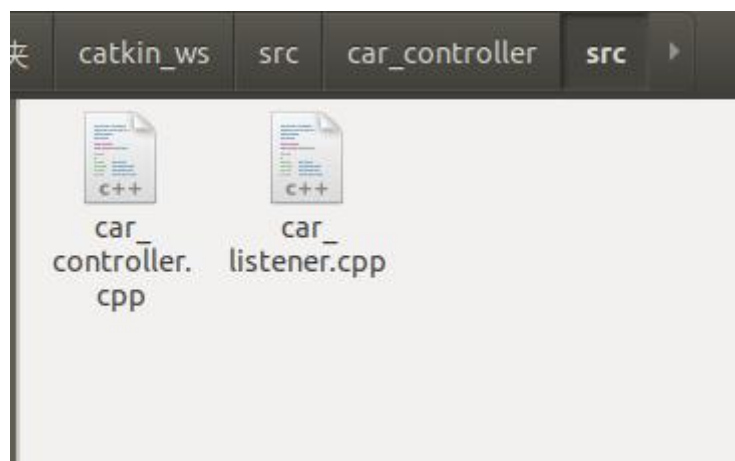
将允许作为程序执行文件前面的 ☒ 给打上





同理，进入 `catkin_ws/src/car_controller/src`

把那两个文件也设置为可执行文件



如果没有安装串口功能包 serial

安装串口功能包

- 1、先在终端输入 `roscore`
- 2、打开新终端，再输入，`roscparam list`
- 3、再输入 `roscparam get /roscdistro` 就能得到版本
- 4、安装串口依赖包 `sudo apt-get install ros-melodic-serial`
- 5、查看是否安装成功 `roscd serial`
- 6、若成功会显示 `opt/ros/melodic/share/serial$`

查看本机串口信息 `ls -l /dev/ttyUSB0`

查看串口设备 `dmesg | grep ttyUSB0`

权限问题

运行 `roscore`，运行节点看是否能打开串口。如果提示 `Unable to open port`，是由于权限不够引起的，进行如下操作

创建文件:（若使用的是 `ttyACM` 将 `ttyusb` 替换即可）

`sudo gedit /etc/udev/rules.d/70-ttyusb.rules`

在打开的文件中添加

`KERNEL=="ttyUSB[0-9]", MODE="0666"`

或者

`KERNEL=="ttyUSB*", OWNER="root", GROUP="root", MODE="0666"`

若不行则 `sudo chmod 666 /dev/ttyUSB0`

串口权限

## 运行指令

### 打开新终端

`cd ~/catkin_ws` //进入工作空间

`catkin_make` //编译（每次修改都需要编译）

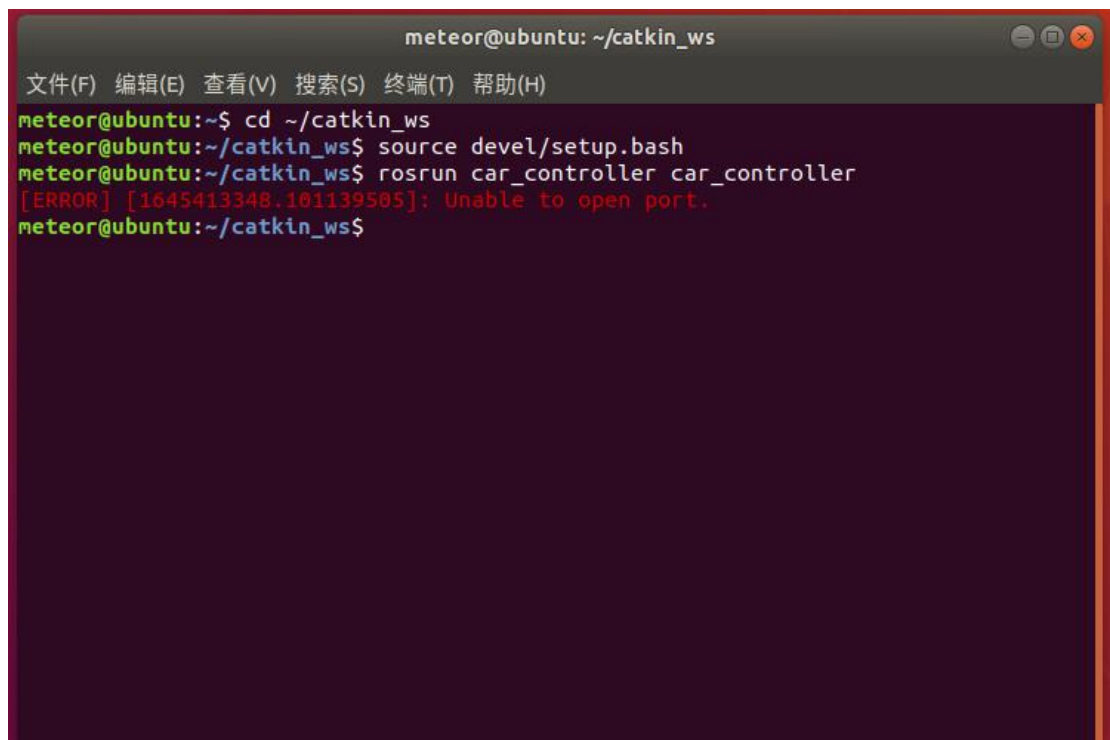
### 设置环境变量

`source devel/setup.bash`

### 运行小车控制程序

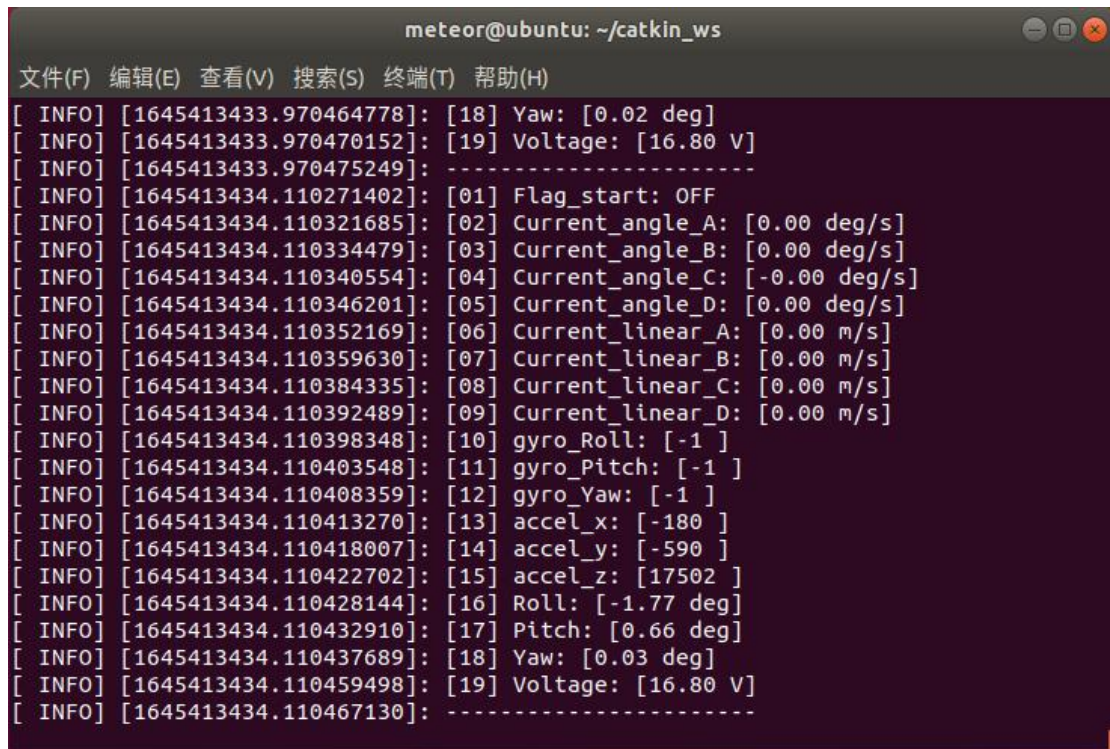
`roslaunch car_controller car_controller`

若没有连接到串口会有提示

A terminal window titled 'meteor@ubuntu: ~/catkin\_ws' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows the following commands and output:

```
meteor@ubuntu:~$ cd ~/catkin_ws
meteor@ubuntu:~/catkin_ws$ source devel/setup.bash
meteor@ubuntu:~/catkin_ws$ roslaunch car_controller car_controller
[ERROR] [1645413348.101139505]: Unable to open port.
meteor@ubuntu:~/catkin_ws$
```

若正常连接会有数据显示，有时候串口堵塞，需要重新运行启动指令



```
meteor@ubuntu: ~/catkin_ws
文件(F) 编辑(E) 查看(V) 搜索(S) 终端(T) 帮助(H)
[ INFO] [1645413433.970464778]: [18] Yaw: [0.02 deg]
[ INFO] [1645413433.970470152]: [19] Voltage: [16.80 V]
[ INFO] [1645413433.970475249]: -----
[ INFO] [1645413434.110271402]: [01] Flag_start: OFF
[ INFO] [1645413434.110321685]: [02] Current_angle_A: [0.00 deg/s]
[ INFO] [1645413434.110334479]: [03] Current_angle_B: [0.00 deg/s]
[ INFO] [1645413434.110340554]: [04] Current_angle_C: [-0.00 deg/s]
[ INFO] [1645413434.110346201]: [05] Current_angle_D: [0.00 deg/s]
[ INFO] [1645413434.110352169]: [06] Current_linear_A: [0.00 m/s]
[ INFO] [1645413434.110359630]: [07] Current_linear_B: [0.00 m/s]
[ INFO] [1645413434.110384335]: [08] Current_linear_C: [0.00 m/s]
[ INFO] [1645413434.110392489]: [09] Current_linear_D: [0.00 m/s]
[ INFO] [1645413434.110398348]: [10] gyro_Roll: [-1 ]
[ INFO] [1645413434.110403548]: [11] gyro_Pitch: [-1 ]
[ INFO] [1645413434.110408359]: [12] gyro_Yaw: [-1 ]
[ INFO] [1645413434.110413270]: [13] accel_x: [-180 ]
[ INFO] [1645413434.110418007]: [14] accel_y: [-590 ]
[ INFO] [1645413434.110422702]: [15] accel_z: [17502 ]
[ INFO] [1645413434.110428144]: [16] Roll: [-1.77 deg]
[ INFO] [1645413434.110432910]: [17] Pitch: [0.66 deg]
[ INFO] [1645413434.110437689]: [18] Yaw: [0.03 deg]
[ INFO] [1645413434.110459498]: [19] Voltage: [16.80 V]
[ INFO] [1645413434.110467130]: -----
```

## 打开新终端

`cd ~/catkin_ws //进入工作空间`

## 设置环境变量

`source devel/setup.bash`

`Rosrun teleop_twist_keyboard teleop_twist_keyboard.py` 运行键盘包

```
meteor@ubuntu: ~/catkin_ws
文件(F) 编辑(E) 查看(V) 搜索(S) 终端(T) 帮助(H)
Moving around:
  u    i    o
  j    k    l
  m    ,    .

For Holonomic mode (strafing), hold down the shift key:
-----
  U    I    O
  J    K    L
  M    <    >

t : up (+z)
b : down (-z)

anything else : stop

q/z : increase/decrease max speeds by 10%
w/x : increase/decrease only linear speed by 10%
e/c : increase/decrease only angular speed by 10%

CTRL-C to quit

currently:      speed 0.5      turn 1.0
```

## 打开新终端

`cd ~/catkin_ws` //进入工作空间

## 设置环境变量

`source devel/setup.bash`

运行小车控制程序中的订阅话题

`roslaunch car_controller car_listener`

```
meteor@ubuntu: ~/catkin_ws
文件(F) 编辑(E) 查看(V) 搜索(S) 终端(T) 帮助(H)
meteor@ubuntu:~$ cd ~/catkin_ws
meteor@ubuntu:~/catkin_ws$ source devel/setup.bash
meteor@ubuntu:~/catkin_ws$ roslaunch car_controller car_listener
```

```
meteor@ubuntu: ~/catkin_ws
文件(F) 编辑(E) 查看(V) 搜索(S) 终端(T) 帮助(H)
[ INFO] [1645413675.449159323]: position.z: [-0.1280 rad]
[ INFO] [1645413675.449167618]: -----
[ INFO] [1645413675.449188263]: X_linear_speed: [-0.0000 m/s]
[ INFO] [1645413675.449196138]: Y_linear_speed: [0.0000 m/s]
[ INFO] [1645413675.449201406]: Z_angular_speed: [-0.0011 rad/s]
[ INFO] [1645413675.449206831]: position.x: [0.0000 m]
[ INFO] [1645413675.449224089]: position.y: [0.0000 m]
[ INFO] [1645413675.449231421]: position.z: [-0.1280 rad]
[ INFO] [1645413675.449236337]: -----
[ INFO] [1645413675.449244907]: X_linear_speed: [-0.0000 m/s]
[ INFO] [1645413675.449262737]: Y_linear_speed: [0.0000 m/s]
[ INFO] [1645413675.449270002]: Z_angular_speed: [-0.0011 rad/s]
[ INFO] [1645413675.449275498]: position.x: [0.0000 m]
[ INFO] [1645413675.449280238]: position.y: [0.0000 m]
[ INFO] [1645413675.449285215]: position.z: [-0.1280 rad]
[ INFO] [1645413675.449301828]: -----
[ INFO] [1645413675.449313242]: X_linear_speed: [-0.0000 m/s]
[ INFO] [1645413675.449319286]: Y_linear_speed: [0.0000 m/s]
[ INFO] [1645413675.449324632]: Z_angular_speed: [-0.0011 rad/s]
[ INFO] [1645413675.449342274]: position.x: [0.0000 m]
[ INFO] [1645413675.449349326]: position.y: [0.0000 m]
[ INFO] [1645413675.449354523]: position.z: [-0.1280 rad]
[ INFO] [1645413675.449359149]: -----
```