Node创建

1. python环境配置

为clion添加python2的支持，具体可以参考前面的讲解

在新建的 `py` 文件开头添加环境说明:

```
1  #!/usr/bin/env python
2  #coding:utf-8
```

修改新建 `py` 文件的权限，添加可执行权限

```
1  chmod +x turtle_control.py
```

2. node源码编写

```
1  import rospy
2
3  if __name__ == '__main__':
4      nodeName = "qt_turle_ctrl";
5      # 创建ros node
6      rospy.init_node(nodeName, anonymous=True)
```

Qt UI的创建

1. 窗体继承

```
1  class MainWindow1(QWidget):
2      def __init__(self):
3          super(MainWindow1, self).__init__()
```

2. 编写UI

```
1   # 设置title
2   self.setWindowTitle("小乌龟控制")
3   self.resize(400, 120)
4   # 设置布局
5   layout = QFormLayout()
6   self.setLayout(layout)
7   # 添加控件
8   self.editLinear = QLineEdit("0")
9   layout.addRow("线速度", self.editLinear)
10  self.editAngular = QLineEdit("0")
11  layout.addRow("角速度", self.editAngular)
12
13  self.btnSend = QPushButton("发送")
14  layout.addRow(self.btnSend)
```

3. 事件添加

```python
# 添加事件
self.btnSend.clicked.connect(self.clickSend)

def clickSend(self):
    pass
```

4. Publisher整合

```python
# 创建publisher
topicName = "/turtle1/cmd_vel"
self.publisher = rospy.Publisher(topicName, Twist, queue_size=1000)
```

5. 发送消息

```python
# 创建消息
twist = Twist()
# 填充数据
twist.linear.x = linearX
twist.angular.z = angluarZ * math.pi / 180
# 发送消息
publisher.publish(twist)
```

完整示例代码

Window窗体

```python
#!/usr/bin/env python
# coding: utf-8

from PyQt5.QtWidgets import *
from PyQt5.QtCore import *
from PyQt5.QtGui import *
import rospy
from geometry_msgs.msg import Twist
from math import radians


class MainWindow(QWidget):
    def __init__(self):
        super(MainWindow, self).__init__()

        # 设置title
        self.setWindowTitle("小乌龟控制")
        self.resize(400, 120)

        # 设置布局
        layout = QFormLayout()
        self.setLayout(layout)

        # 添加控件
        self.editLinear = QLineEdit("0")
        layout.addRow("线速度", self.editLinear)
```

```python
27
28          self.editAngular = QLineEdit("0")
29          layout.addRow("角速度", self.editAngular)
30
31          self.btnSend = QPushButton("发送")
32          layout.addRow(self.btnSend)
33
34          # 添加事件
35          self.btnSend.clicked.connect(self.clickSend)
36
37          # 创建publisher
38          topicName = "/turtle1/cmd_vel"
39          self.publisher = rospy.Publisher(topicName, Twist, queue_size=1000)
40
41      def clickSend(self):
42          linearX = float(self.editLinear.text())
43          angularZ = radians(float(self.editAngular.text()))
44
45          # 构建消息
46          twist = Twist()
47          twist.linear.x = linearX
48          twist.angular.z = angularZ
49          # 发布
50          self.publisher.publish(twist)
```

```python
1   #!/usr/bin/env python
2   # coding:utf-8
3
4   import sys
5   import rospy
6   from window import MainWindow
7   from PyQt5.QtWidgets import *
8
9   if __name__ == '__main__':
10      nodeName = "turtle_ctrl1"
11      rospy.init_node(nodeName)
12
13      app = QApplication(sys.argv)
14      window = MainWindow()
15      window.show()
16
17      sys.exit(app.exec_())
```