ROS2 Topic Parameter Programming (sohi edit 2023.08.)

 https://github.com/sohicode/ros2_basics/

SOHI CODE

rpm_pub.py

토픽을 발행함 - rpm
$my_ws/src/rpm_topic_pkg/rpm_topic_pkg/rpm_pub.py

```
import rclpy
from rclpy.node import Node
from std_msgs.msg import Float32

RPM = 10

class  RpmPublisher(Node):

    def __init__(self):
        super().__init__('rpm_pub_node')
        self.pub = self.create_publisher(Float32, 'rpm_topic', 10)
        self.timer = self.create_timer(2, self.rpm_pub_cb)
        self.get_logger().info('RPM Publisher Node Running...')

    def rpm_pub_cb(self):
        msg = Float32()
        msg.data = float(RPM)
        self.pub.publish(msg)
        self.get_logger().info('Published message: ' + str(msg.data))


def main(args=None):
    rclpy.init(args=args)
    node = RpmPublisher()

    try:
        rclpy.spin(node)
    except KeyboardInterrupt:
        node.get_logger().info('Keyboard Interrupt')
    finally:
        node.destroy_node()
        rclpy.shutdown()

if __name__ == '__main__':
    main()
```

speed_calc.py

토픽을 수신함 - rpm
토픽을 발행함 - rpm으로 계산한 speed
$my_ws/src/rpm_topic_pkg/rpm_topic_pkg/speed_calc.py

```
import rclpy
from rclpy.node import Node
from std_msgs.msg import Float32

WHEEL_RADIUS_DEFAULT = 12.5 / 100 # centimeters to meters
class SpeedCalculator(Node):

    def __init__(self):
        super().__init__('speed_calc_node')
        self.declare_parameter('wheel_radius_param', WHEEL_RADIUS_DEFAULT)
        self.sub = self.create_subscription(Float32, 'rpm_topic',
                                            self.speed_calc_cb, 10)
        self.pub = self.create_publisher(Float32, 'speed_topic', 10)
        self.get_logger().info('Speed Calculator Node Started...')

    def speed_calc_cb(self, rpm_msg):
        self.get_logger().info('Received rpm message: ' + str(rpm_msg.data))
        wheel_radius = self.get_parameter('wheel_radius_param').get_parameter_value().double_value
        speed = rpm_msg.data * wheel_radius * 2 * 3.14159 / 60  # speed in m/s
        speed_msg = Float32()
        speed_msg.data = float(speed)
        self.pub.publish(speed_msg)
        self.get_logger().info('Published speed message: ' + str(speed_msg.data))

def main(args=None):
    rclpy.init(args=args)
    node = SpeedCalculator()

    try:
        rclpy.spin(node)
    except KeyboardInterrupt:
        node.get_logger().info('Keyboard Interrupt')
    finally:
        node.destroy_node()
        rclpy.shutdown()

if __name__ == '__main__':
    main()
```

setup.py

파이썬 패키지 설정 파일
$my_ws/src/rpm_topic_pkg

```
'console_scripts': [
  'rpm_pub_script = rpm_topic_pkg.rpm_pub:main',
  'speed_calc_script = rpm_topic_pkg.speed_calc:main'
],
```

build & run

빌드

```
$ cd ~/Workspaces/ros2_ws
$ colcon build
$ source ./install/setup.bash
```

노드 실행

```
$ ros2 pkg executables rpm_topic_pkg
$ ros2 run rpm_topic_pkg speed_calc_script
$ ros2 run rpm_topic_pkg rpm_pub_script
```

두 개의 창에 각각 실행함

CLI

파라미터값 확인

```
$ ros2 param get /speed_calc_node wheel_radius_param
$ ros2 topic echo /speed
```

파라미터값 설정

```
$ ros2 param set /speed_calc_node wheel_radius_param 0.5
$ ros2 topic echo /speed
```