실습3 – ROS 처리 지연 문제

문제점 : 도착하는 데이터를 미처 처리하지 못하면 어떻게 되는가?

준비

1) 파이썬 파일 2개 런치파일 1개

sender_overflow.py
```
#!/usr/bin/env python

import rospy
from std_msgs.msg import Int32
rospy.init_node('sender_overflow')
pub = rospy.Publisher('my_topic', Int32,queue_size=1)

rate = rospy.Rate(1000)
i=0
while not rospy.is_shutdown():

    pub.publish(i)
    i+=1
    rate.sleep()
```

receiver_overflow.py
```
#!/usr/bin/env python
import rospy
from std_msgs.msg import Int32

def callback(data):
    rospy.sleep(5)
    rospy.loginfo("callback is being processed")
    print(data.data)

rospy.init_node('receiver_overflow')
sub = rospy.Subscriber('my_topic', Int32,callback, queue_size=1)
rospy.spin()
```

2) 1초에 1000번씩 숫자를 1씩 증가해서 토픽 발행

3) 구독자 callback함수에 시간 걸리는 코드를 작성하여 토픽처리 시간 지연시키기

- Subscriber queue size =1, sleep(1)일 때

```
[INFO] [1609050217.494025]: callback is being processed
17
[INFO] [1609050218.497516]: callback is being processed
996
[INFO] [1609050219.500902]: callback is being processed
1981
[INFO] [1609050220.503844]: callback is being processed
2982
[INFO] [1609050221.507028]: callback is being processed
3984
[INFO] [1609050222.509513]: callback is being processed
4983
[INFO] [1609050223.511605]: callback is being processed
5987
```

- Subscriber queue size =1, sleep(5)일 때

```
[INFO] [1609050271.264530]: callback is being processed
38
[INFO] [1609050276.268833]: callback is being processed
5025
[INFO] [1609050281.276899]: callback is being processed
10010
[INFO] [1609050286.281681]: callback is being processed
15003
[INFO] [1609050291.287074]: callback is being processed
20009
[INFO] [1609050296.291731]: callback is being processed
25009
[INFO] [1609050301.296920]: callback is being processed
30008
```

- 구독자의 큐 사이즈를 늘렸을 때 순서대로 출력

rospy.Subscriber(sub_topic, Int32, callback, queue_size=10000)

버퍼링 때문에 토픽 잃어버림 막을 수 있음