Test case

Group 6.
Members: Li,Lun Zhou,Yating Ban,Guangwei Zhang,Xuliang

1.Topic_Create:

```
Please choose the function that you want to use[Exit/1-10] ? 1
Please type in topic name: Leung

Topic Received=> Leung

Leung Topic is added......

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Welcome to IPC Test Programm 1
Author: Yating Zhou, Lun Li, GuangWei Ban, Xuliang Zhang
-------------------------------------------
Debug: debug mode turn on.
[  1 ] TopicCreate
[  2 ] TopicLookup
[  3 ] TopicPublisher : Declare as a Publisher
[  4 ] TopicSubscriber: Declare as a Subscriber
[  5 ] Publish
[  6 ] Retrieve
[  7 ] Available Publisher(s)
[  8 ] Available Subscriber(s)
[  9 ] Flush Message Region
[ 10 ] Exit

Please choose the function that you want to use[Exit/1-10] ?
```

```
# cc syscl_test.c -o syscltest
# ./syscltest
Please type in number of different interesting topics: 7

      Group Topic Info
-----------------------------
  Topic            GroupID
-----------------------------
   0                109
   1                110
   2                111
   3                112
   4                113
   5                114
   6                115
-----------------------------
Select Topic you want: 5
Interest Topic 5 with GroupID 114 has been selected.
Please enter integer message:
```

2.Topic_lookup

```
---- Topics Available ------------------
0.      Leung
1.      Yating
---------- End -------------------------


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[ 10 ] Exit

Please choose the function that you want to use[Exit/1-10] ?
```

3.Topic_Publisher and
4.Topic_Subscriber

```
# cc syscl_test.c -o syscltest
# ./syscltest
Please type in number of different interesting topics: 7

       Group Topic Info
------------------------------
  Topic            GroupID
------------------------------
   0                116
   1                117
   2                118
   3                119
   4                120
   5                121
   6                122
------------------------------
Select Topic you want: 5
Interest Topic 5 with GroupID 121 has been selected.
Please enter integer message: 99
Type in number of process you want to create: 5
Register pid = 670 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 0
Register pid = 671 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Register pid = 672 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Register pid = 673 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Register pid = 674 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
```

0 = Publisher
1 = Subscriber
2 = None

5.Publish Message and
6.Retrieve message
(1) Single publisher to multiple subscribers

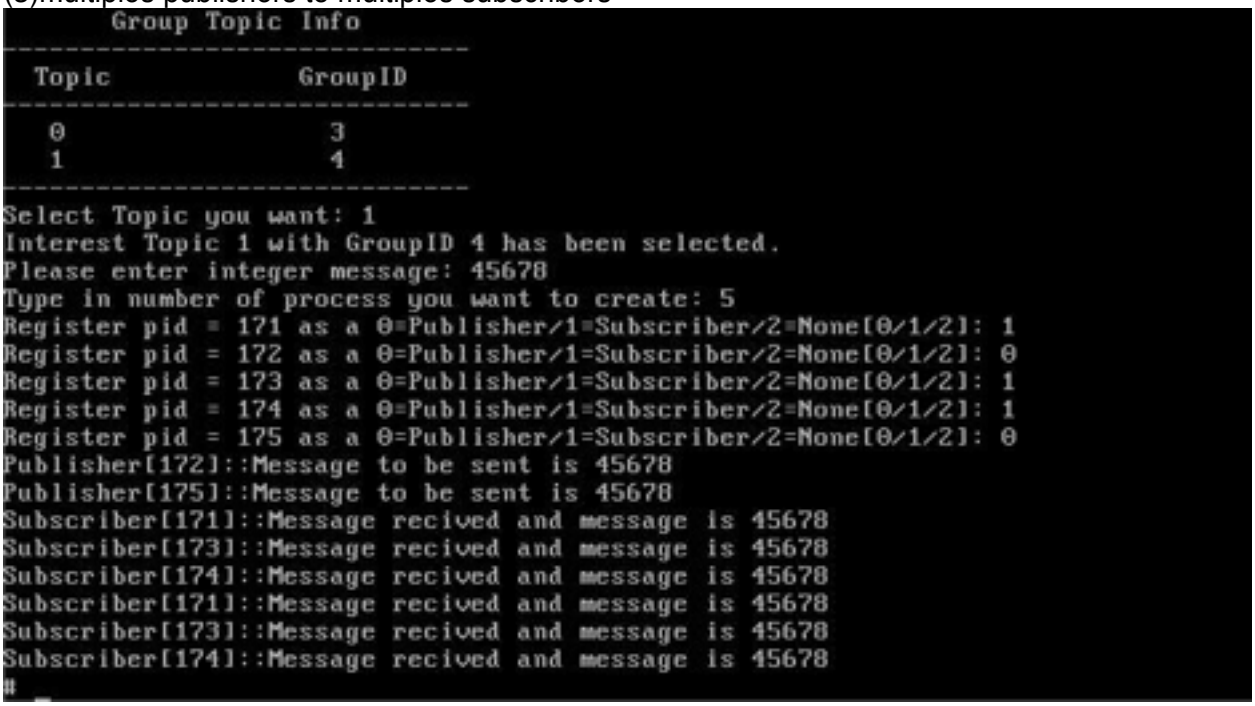
```
  Topic            GroupID
-----------------------------
   0                116
   1                117
   2                118
   3                119
   4                120
   5                121
   6                122
-----------------------------
Select Topic you want: 5
Interest Topic 5 with GroupID 121 has been selected.
Please enter integer message: 99
Type in number of process you want to create: 5
Register pid = 670 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 0
Register pid = 671 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Register pid = 672 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Register pid = 673 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Register pid = 674 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Publisher[670]::Message to be sent is 99
Subscriber[671]::Message recived and message is 99
Subscriber[672]::Message recived and message is 99
Subscriber[673]::Message recived and message is 99
Subscriber[674]::Message recived and message is 99
#
```

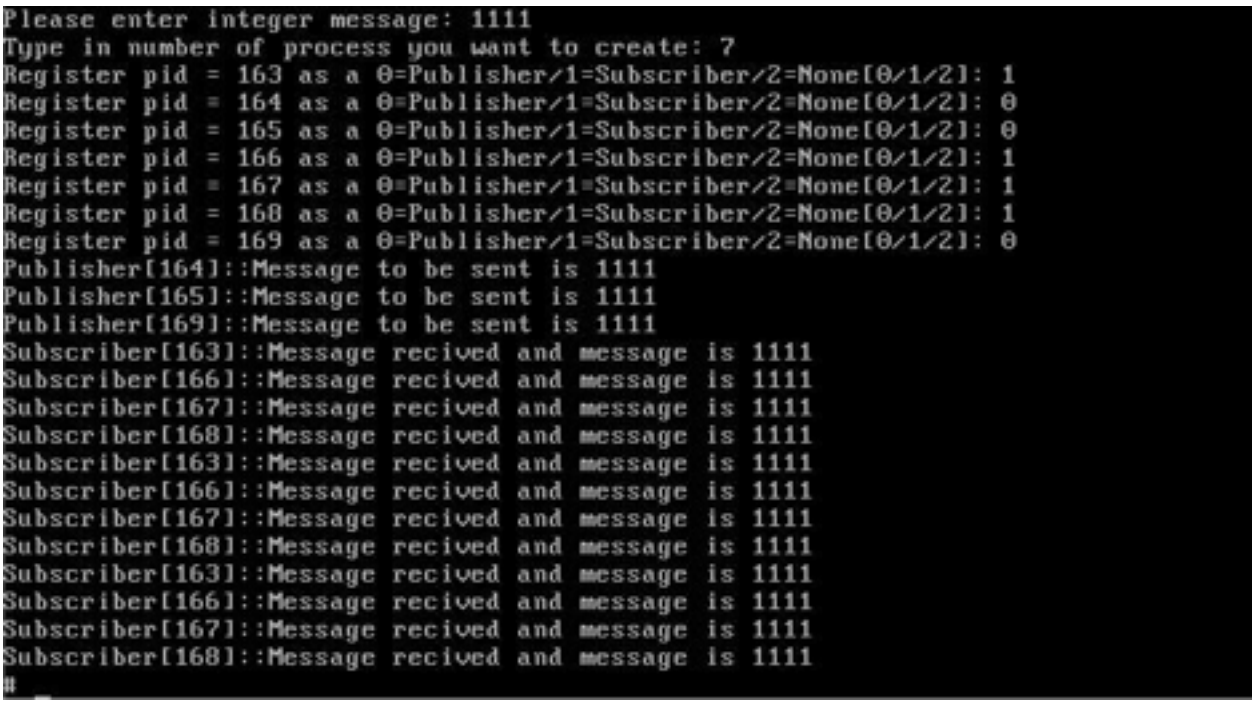
(2)multiple publishers to single subscriber

```
Subscriber[674]::Message recived and message is 99
# ./syscltest
Please type in number of different interesting topics: 1

       Group Topic Info
-----------------------------
  Topic            GroupID
-----------------------------
   0                123
-----------------------------
Select Topic you want: 0
Interest Topic 0 with GroupID 123 has been selected.
Please enter integer message: 555
Type in number of process you want to create: 5
Register pid = 676 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Register pid = 677 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Register pid = 678 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Register pid = 679 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 1
Register pid = 680 as a 0=Publisher/1=Subscriber/2=None[0/1/2]: 0
Publisher[680]::Message to be sent is 555
Subscriber[676]::Message recived and message is 555
Subscriber[677]::Message recived and message is 555
Subscriber[678]::Message recived and message is 555
Subscriber[679]::Message recived and message is 555
#
```

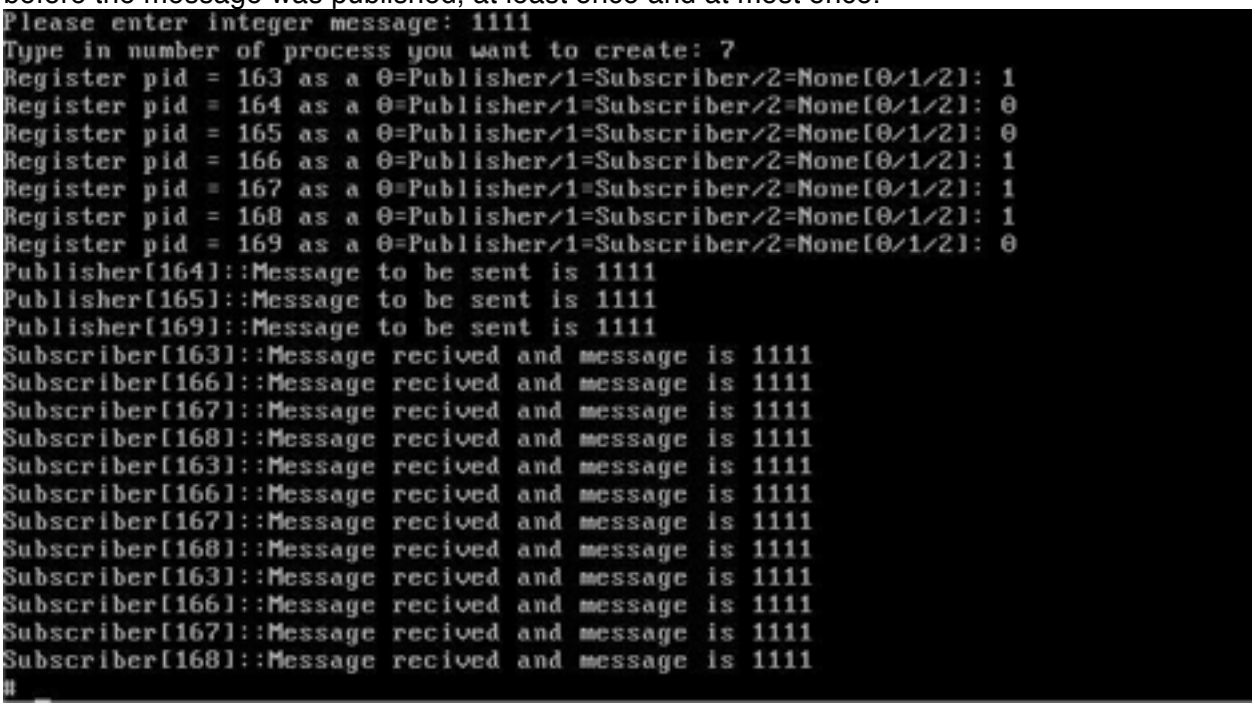
(3)multiples publishers to multiples subscribers





6.You will maintain a buffer that can contain 5 messages for each topic. No publisher can send to the topic when the buffer is full. On the other hand, Rretrieve is nonblocking. A message is removed from the buffer after it has been retrived by all the subscribers.

7.A message is published once and retrieved by all subscribers who had subscribed to the topic before the message was published, at least once and at most once.



8.We ask you to specifically address these questions: Can deadlock occur with your IPCs? If not, why? If yes, do you detect deadlock and how? If so, how you can recover from it?. If you do not detect deadlock, you should also say why. If deadlock can occur, can you advise the programmer to avoid it?

```
# gcc testdeadlock_1.c -o td1
# ./td1
You may need CTRL+C to exit block
Deadlock occur: 183001(endpoint)->183002(endpoint)
TEST_EQUAL [parent receive success(blocked), and child deadlock] OK.
_
```

```
# gcc testdeadlock_2.c -o td2
# ./td2
You may need CTRL+C to exit block
child id 1080
child id 1081
child id 1082
child id 1083
Deadlock occur: 183012(endpoint)->183009(endpoint)
TEST_EQUAL [deadlock occur and only occur once.] OK.
deadlock from 1083 to 1080
# _
```