Big Data Architecture Lab 1 Report

1. Set up information

   I choose to use python to code. First, we use **pip install redis** to install Redis packages. Then I open a terminal, enter the folder of Redis, input **./src/redis-server** and in another terminal input **./src/redis-client** to build the connection between server and client.

   Then I wrote two python files named **sub.py** and **pub.py**. Open another two terminals, run the two files above.

2. Supported scenarios

   - Publish a book

     After running **pub.py** there will appear **publish:**

     Here we need to write down the information of the book.

     For example, I can input: **1; Good Day; Thomas; 2; English; 1996**

     In the database, it will be store as:

     ('1', {'ISBN':1, 'Title':'Good Day', 'Author':'Thomas', 'NofCopies':2,

     'Language':'English', 'PubYear':1996, 'Available':0,

     'StartTime':time.perf_counter()}

     The newly published book is available by default.

   - Subscribe a channel

     After running **sub.py** there will appear **Channel:**

     Here we need to input the channel which we want to subscribe.

     For example, I can input: **Good** before the third publish.

     After that, every time when there is a newly published book whose name includes Good, the subscriber will detect that.

     After the subscriber side detect a message from the publisher side, it will display all the information of the new book.

```
[(base) cherilyndeMacBook-Pro:Study cherilyn$ ./pub.py
publish:1; Good Day; Thomas; 2; English; 1996
publish:2; Good Night; Robin; 3; French; 1997
publish:3; Good Morning; Alice; 4; Chinese; 1998
publish:
```

```
Study — sub.py — 80×24
Last login: Sun Oct  6 18:53:40 on ttys002
[(base) cherilyndeMacBook-Pro:~ cherilyn$ cd /Users/cherilyn/Study
[(base) cherilyndeMacBook-Pro:Study cherilyn$ ./sub.py
Channel:Good
{b'ISBN': b'3', b'Title': b' Good Morning', b'Author': b' Alice', b'NofCopies':
b' 4', b'Language': b' Chinese', b'PubYear': b' 1998', b'Available': b'0', b'Sta
rtTime': b'979.543850994'}
```

- How to borrow/return books

After showing the information of the new book, it will ask you to give a book id, then you can see the information of the book you have chosen and borrow or return this book.

I use an input to express "borrow" and "return". 1 stands for borrow and 2 stands for return. If the book is available, you can borrow successfully.

In this example, I chose to borrow a book whose id is 2. The first time I borrowed with success, the second time when I chose to borrow, it showed "Sorry, the book has been borrowed!"

```
[(base) cherilyndeMacBook-Pro:Study cherilyn$ ./pub.py
publish:1; Good Day; Thomas; 2; English; 1996
publish:2; Good Night; Robin; 3; French; 1997
publish:3; Good Morning; Alice; 4; Chinese; 1998
publish:4; Good Afternoon; Jean; 5; Korean; 1999
publish:
```

```
Study — sub.py — 80×24
[(base) cherilyndeMacBook-Pro:Study cherilyn$ ./sub.py
Channel:Good
{b'ISBN': b'3', b'Title': b' Good Morning', b'Author': b' Alice', b'NofCopies':
b' 4', b'Language': b' Chinese', b'PubYear': b' 1998', b'Available': b'0', b'Sta
rtTime': b'77.917987007'}
Input a book id:2
{b'ISBN': b'2', b'Title': b' Good Night', b'Author': b' Robin', b'NofCopies': b'
 3', b'Language': b' French', b'PubYear': b' 1997', b'Available': b'0', b'StartT
ime': b'25.099459148'}
You want to borrow or return? 1.borrow; 2.return
1
Successfully borrowed!
{b'ISBN': b'4', b'Title': b' Good Afternoon', b'Author': b' Jean', b'NofCopies':
 b' 5', b'Language': b' Korean', b'PubYear': b' 1999', b'Available': b'0', b'Sta
rtTime': b'96.369636964'}
Input a book id:2
{b'ISBN': b'2', b'Title': b' Good Night', b'Author': b' Robin', b'NofCopies': b'
 3', b'Language': b' French', b'PubYear': b' 1997', b'Available': b'1', b'StartT
ime': b'84.396423681'}
You want to borrow or return? 1.borrow; 2.return
1
Sorry, the book has been borrowed!
```

Then I tried to return the book with id 2.

```
Input a book id:2
{b'ISBN': b'2', b'Title': b' Good Night', b'Author': b' Robin', b'NofCopies': b'
 3', b'Language': b' French', b'PubYear': b' 1997', b'Available': b'1', b'StartT
ime': b'84.396423681'}
You want to borrow or return? 1.borrow; 2.return
1
Sorry, the book has been borrowed!
{b'ISBN': b'4', b'Title': b' Good Afternoon', b'Author': b' Jean', b'NofCopies':
 b' 5', b'Language': b' Korean', b'PubYear': b' 1999', b'Available': b'0', b'Sta
rtTime': b'141.264558681'}
Input a book id:2
{b'ISBN': b'2', b'Title': b' Good Night', b'Author': b' Robin', b'NofCopies': b'
 3', b'Language': b' French', b'PubYear': b' 1997', b'Available': b'1', b'StartT
ime': b'84.396423681'}
You want to borrow or return? 1.borrow; 2.return
2
Successfully returned!
```

- How to detect an expired book

I set the expiry time as 180 seconds. So, 180 seconds after the last time the book was returned or the time it was published (in case of never borrowed), if I want to borrow the book whose id is 3, it will show "Sorry, the book was expired!"

```
Input a book id:3
{b'ISBN': b'3', b'Title': b' Good Morning', b'Author': b' Alice', b'NofCopies':
b' 4', b'Language': b' Chinese', b'PubYear': b' 1998', b'Available': b'0', b'Sta
rtTime': b'77.917987007'}
You want to borrow or return? 1.borrow; 2.return
1
Sorry, the book was expired!
```