

Assignment 1

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- Environment

Python version : 3.6.9

Operating system : Ubuntu 18.04.4 LTS

- How to design assignment code

I divide three section; copy function, thread class, main function.

In copy function, it covers logging in the log.txt and transmission(copy) process. Just open two file,(source file, destination file) read from source file every 10KB($=10 \times 1000 = 10000$) and write to new file. After copy finish, log which show completion is written.

In thread class whose name is machine,

it controls thread with queue library which hold resources. What is resource in this code, each resource means the ticket to run thread. If it uses them all, no more thread cannot run. It allocates 11 resources just in case. Anytime main function run one of threads, queue which call q in my code will get one of resources. After finishing copy, it returns again.

In main function,

It makes clear log file which call log.txt, then allocate resources in queue(=q). After that, get input text then decide which action to do. If user wants to exit, check whether there is any thread running by thread list which store thread resources. After join function call for every thread, the program terminates.

Otherwise, by os library, it checks whether input file exists. If it doesn't exist, print wrong filename, then get input file name again. If input file exists, get target file name, and run thread. Add this to thread list for join function call.

- How to test code

```
while i < fsize:
    data = f.read(10000)
    new_f.write(data)
    i += 10000
    if i%1000000 == 0:
        t.sleep(1)
```

To test code, I need enough time to check it. So I add some code in copy operation to hold some time for it.

```
hyun@HYUNPC-asus-linux: ~/Desktop/3-2/network/assignment1
파일(F) 편집(E) 보기(V) 검색(S) 터미널(T) 탭(B) 도움말(H)
hyun@HYUNPC-asus-linux: ~/Desktop/3-2... x hyun@HYUNPC-asus-linux: ~/Desktop/3-2... x
Input the new name: 3
Input the file name: a
Input the new name: 4
Input the file name: a
Input the new name: 5
Input the file name: a
Input the new name: 6
Input the file name: a
Input the new name: 7
Input the file name: a
Input the new name: 8
Input the file name: a
Input the new name: 9
Input the file name: a
Input the new name: 10
Input the file name: 
```

```
3 | /usr/lib/gnome-terminal/gnome-terminal-server
4 | bash
7 | htop
3 | bash
1 | python3 test.py
2 | python3 test.py
2 | python3 test.py
3 | python3 test.py
3 | python3 test.py
4 | python3 test.py
5 | python3 test.py
5 | python3 test.py
4 | python3 test.py
4 | python3 test.py
7 | python3 test.py
0 | /usr/lib/gnome-terminal/gnome-terminal-server
```

I check it by htop. Then Check whether all threads run well.

```

) 편집(E) 보기(V) 검색(S) 터미널(T) 탭(B) 도움말(H)
HYUNPC-asus-linux: ~/Desktop/3-2... × hyun@HYUNPC-asus-li
-r-xr-x 2 hyun hyun      4096 10월  4 00:29 ./
-r-xr-x 3 hyun hyun      4096  9월 22 22:56 ../
-r--r-- 1 hyun hyun      1824  9월 23 14:07 0928copy_
-r--r-- 1 hyun hyun 13000000 10월  4 00:29 1
-r--r-- 1 hyun hyun  4000000 10월  4 00:29 10
-r--r-- 1 hyun hyun 12000000 10월  4 00:29 2
-r--r-- 1 hyun hyun 12000000 10월  4 00:29 3
-r--r-- 1 hyun hyun 11000000 10월  4 00:29 4
-r--r-- 1 hyun hyun 10000000 10월  4 00:29 5
-r--r-- 1 hyun hyun  8000000 10월  4 00:29 6
-r--r-- 1 hyun hyun  7000000 10월  4 00:29 7
-r--r-- 1 hyun hyun  7000000 10월  4 00:29 8
-r--r-- 1 hyun hyun  5000000 10월  4 00:29 9
-r--r-- 1 hyun hyun  678334  9월 15 11:02 Assignment
-r--r-- 1 hyun hyun 30136996 10월 11 2016 a
-r--r-- 1 hyun hyun 735248227 11월 24 2015 b
-r--r-- 1 hyun hyun      80 10월  4 00:05 env.txt
-r--r-- 1 hyun hyun     301 10월  4 00:29 log.txt
-r--r-- 1 hyun hyun    1652 10월  4 00:07 main.py
-r--r-- 1 hyun hyun    1678 10월  4 00:28 test.py
-r--r-- 1 hyun hyun     450  9월 22 21:56 test_thre
-r--r-- 1 hyun hyun     919  9월 23 11:17 test_thre
-r--r-- 1 hyun hyun 259502930 2월  5 2016 v
HYUNPC-asus-linux:~/Desktop/3-2/network/assignment1

```

In the terminal, I check the transmission works well by ll (ls -al) command continuously. Whenever I type ll command, the ongoing transmission can be seen by increasing file size.

```

log.txt x 1.01 Start copying a to 1
1.78 Start copying a to 2
2.49 Start copying a to 3
3.37 Start copying a to 4
4.03 Start copying a to 5
5.65 Start copying a to 6
6.64 Start copying a to 7
7.33 Start copying a to 8
9.06 Start copying a to 9
10.05 Start copying a to 10
31.27 1 is copied completely
31.92 2 is copied completely
32.65 3 is copied completely
32.79 Start copying a to 11
33.62 4 is copied completely
34.21 Start copying a to 12
34.29 5 is copied completely
35.23 Start copying a to 13
35.78 6 is copied completely
36.78 7 is copied completely
37.49 8 is copied completely
39.24 9 is copied completely
40.3 10 is copied completely

```

Then I check log.txt, when one thread which see in the htop program terminates, I can see log is written.

```

Input the file name: a
Input the new name: 6
Input the file name: a
Input the new name: 7
Input the file name: a
Input the new name: 8
Input the file name: a
Input the new name: 9
Input the file name: a
Input the new name: 10
Input the file name: exit
waiting for threads finished

```

```

0:01.31 evince /home/hyun/Desktop/3-2/network
0:00.11 evince /home/hyun/Desktop/3-2/net
0:00.00 evince /home/hyun/Desktop/3-2/net
0:00.00 evince /home/hyun/Desktop/3-2/net
0:00.25 evince /home/hyun/Desktop/3-2/net
0:09.33 /usr/lib/gnome-terminal/gnome-termi
0:00.04 bash
0:01.78 htop
0:00.03 bash
0:01.33 python3 test.py
0:00.11 python3 test.py
0:00.09 python3 test.py
0:00.10 python3 test.py
0:00.09 python3 test.py
0:00.10 python3 test.py
0:00.16 python3 test.py
0:00.11 python3 test.py
0:00.00 /usr/lib/gnome-terminal/gnome-ter
0:00.32 /usr/lib/gnome-terminal/gnome-ter
0:00.00 /usr/lib/gnome-terminal/gnome-ter

```

```

1788 hyun 20 0 823M 50016 33856 S 0.0 0.6
1787 hyun 20 0 823M 50016 33856 S 0.0 0.6

```

When the copy operation is not end (threads are not terminate), exit operation wait for all threads finish their action.

```

Input the new name: 9
Input the file name: a
Input the new name: 10
Input the file name: exit
waiting for threads finished
^[[B^[[Bhyun@HYUNPC-asus-linux:~/Desktop/3-2/network/assignment1$

```

```

390 82700 S 0.0 1.2 0:00.23 evince /home/hy
316 33856 S 4.5 0.6 0:11.50 /usr/lib/gnome-te
148 3460 S 0.0 0.1 0:00.04 bash
544 3904 R 1.3 0.1 0:02.38 htop
372 3352 S 0.0 0.1 0:00.03 bash
316 33856 S 0.0 0.6 0:00.00 /usr/lib/gnome
316 33856 S 0.0 0.6 0:00.37 /usr/lib/gnome
316 33856 S 0.0 0.6 0:00.00 /usr/lib/gnome
1682 hyun 20 0 838M 158M 40416 S 0.0 2.0 0:14.08 gedit /home/hyun/
1686 hyun 20 0 838M 158M 40416 S 0.0 2.0 0:00.01 gedit /home/hy

```

After all transmission is end, Main program can terminate.

Although the picture is not included, I also check new copy operation can continue.