

Introduction to Computer Networks

Assignment 1: Concurrent File Copy Program

1. Goal

- Copy multiple files in parallel.
 - Using multi-threads (one thread for each file transfer)

2. Development environments

- You have to use Python (version 3.6+)
- TA will evaluate your results on Linux. Python can be run over both Window and Linux, but you must NOT use window OS dedicated APIs.

*** You can use simple basic libraries (ex: os, time, thread, etc.), but must implement the main functionalities by yourself. You are NOT allowed to use some libraries that make it easy to implement your assignment. If you want to know whether a particular library is acceptable or not, ask me via the anonymous google sheet.**

=> Allowed library example: "os", "time", "thread"

=> NOT allowed library example: "shutil"

3. Functionalities to implement

- Assume that there are both text and binary files (text files, image files, and video files) in the same directory where your program runs.
- Get two input strings via a keyboard; one for the source (existing) file name, and one for the destination (non-existent) file name to be copied.
- Read the source file every 10 Kbytes repeatedly, and store it into the destination file.
- Must allow a new copy request while doing previous file copies in parallel.
 - TA will evaluate up to 10 simultaneous file copies.

- If a file copy is completed, write the **file name** with the **completion time** in "log.txt".
 - The time is assumed to be zero seconds when the program starts.
 - Present the time information up to two decimal places (e.g. 10.05)
- Enter 'exit' to terminate this program (instead of a file name)

4. Sample Results

```
Input the file name: GoodMovie.avi
Input the new name: GreateMovie.avi

Input the file name: BadMovie.avi
Input the new name: NotBadMovie.avi

Input the file name: exit
```

Figure 1. Console screen

```
3.43  Start copying GoodMovie.avi to GreateMovie.avi
10.21 Start copying BadMovie.avi to NotBadMovie.avi
32.54 NotBadMovie.avi is copied completely
47.02 GreateMovie.avi is copied completely
```

Figure 2. A sample of log.txt

5. Submission

- The deadline is 3.21 (Sun) 23:59.
 - For delayed submissions, a penalty of -15 points applies every 24 hours. After 72 hours, you get zero points.
 - In the case of plagiarism, you will receive the **F** grade.
- Submit a zip file including a **report** file and a **program** file to iCampus
 - Name the program file "StudentID_HW1.py" (ex: 2018001.py)
 - The report file must be the **PDF** format as "StudentID_HW1.pdf" and include as following;
 - 1) Describe your development environments:
(version of operating system, python version...)
 - 2) Present how to design your assignment such as data structures and algorithms.
 - 3) Explain how to test your program by showing the screen capture.

6. Scoring criteria

- Total 100 points
 - 20 points: Get source and destination file names from keyboard
 - 20 points: Allow to copy multiple files concurrently
 - 20 points: Append every copy completion information in 'log.txt'
 - 20 points: The new copied files must be valid. (e.g. possible to play videos)
 - 10 points: Termination when entering 'exit'
 - 10 points: The report file should describe your development environment and how to run your programs.

7. Q&A

- Leave your questions on the google sheet