1. 程式的設計

以smaple code為原型，加入以memory-mapped傳輸的方法。

2. 執行結果

1.master(file I/O)

```
jerry@jerry-VirtualBox:~/Downloads/project2/user_program$ sudo ./master ../data/
file3_in fcntl
Transmission time: 34984.206800 ms, File size: 9695 bytes
```

slave

```
jerry@jerry-VirtualBox:~/Downloads/project2/user_program$ sudo ./slave ../data/f
ile3_out fcntl 127.0.0.1
[sudo] password for jerry:
Transmission time: 0.885500 ms, File size: 9695 bytes
```

master(memory-mapped I/O)

```
jerry@jerry-VirtualBox:~/Downloads/project2/user_program$ sudo ./master ../data/
file3_in mmap
Transmission time: 6930.936800 ms, File size: 9695 bytes
```

slave

```
jerry@jerry-VirtualBox:~/Downloads/project2/user_program$ sudo ./slave ../data/f
ile3_out mmap 127.0.0.1
Transmission time: 0.139300 ms, File size: 9695 bytes
```

2.master file I/O

```
jerry@jerry-VirtualBox:~/Downloads/project2/user_program$ sudo ./master ../data/
file5_in fcntl
Transmission time: 5041.516200 ms, File size: 354129 bytes
```

master memory-mapped I/O

```
jerry@jerry-VirtualBox:~/Downloads/project2/user_program$ sudo ./master ../data/
file5_in mmap
Transmission time: 6990.896100 ms, File size: 354129 bytes
```

slave

```
jerry@jerry-VirtualBox:~/Downloads/project2/user_program$ sudo ./slave ../da
ile5_out fcntl 127.0.0.1
Transmission time: 2.240800 ms, File size: 354129 bytes
jerry@jerry-VirtualBox:~/Downloads/project2/user_program$ sudo ./slave ../da
ile5_out mmap 127.0.0.1
Transmission time: 1.976200 ms, File size: 354129 bytes
```

3. 比較file I/O 跟 memory-mapped I/O，並解釋造成差異的原因

memory-mapped I/O is faster since when using file I/O what Linux will do is first see if the the file is present in the file cache. If not present, then it reads the file into the page cache and finally copies the file onto the buffer specified by the read() system call. In memory-mapped I/O the

data on disk can be mapped directly to memory without any undue copying.

4. 各組員的貢獻

簡暐晉: write src code, compile kernel, run testing data, discuss how to write the report.

周明德: discuss how to write src code, write the report.

沙佳哲: none

劉昕: none