CS342 – Operating Systems

Spring – 2021

Project 1

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Section: 1

**Sample commands that are used to test the normal mode and their results.**

make

./isp 1000 1

$isp ls

Output: consumer consumer.c isp isp.c Makefile producer producer.c

Total time = 0.002286 seconds

$isp cp isp.c ispCopy.c

Output: Total time = 0.002752 seconds

$isp ls -l | sort

Output:

-rw-rw-r-- 1 mustafa mustafa 12012 Şub 23 22:33 isp.c

-rw-rw-r-- 1 mustafa mustafa 12012 Şub 23 23:19 ispCopy.c

-rw-rw-r-- 1 mustafa mustafa 163 Şub 23 21:44 consumer.c

-rw-rw-r-- 1 mustafa mustafa 230 Şub 14 10:47 Makefile

-rw-rw-r-- 1 mustafa mustafa 436 Şub 23 21:25 producer.c

-rwxrwxr-x 1 mustafa mustafa 19416 Şub 23 23:18 consumer

-rwxrwxr-x 1 mustafa mustafa 19832 Şub 23 23:18 producer

-rwxrwxr-x 1 mustafa mustafa 28152 Şub 23 23:18 isp

total 104

Total time = 0.007162 seconds

$ ps aux

Output: { Since the output is very long, I only add the total time }

Total time = 0.020728 seconds

$ ps aux | sort

Output: { Since the output is very long, I only add the total time }

Total time = 0.028575

**Sample commands that are used to test the tapped mode and their results.**

./isp 1000 2

Isp$ ls

Output:

consumer consumer.c isp isp.c ispCopy.c Makefile producer producer.c

Total time = 0.002492 seconds

$isp cp isp.c ispCopy2.c

Output:

Total time = 0.002465 seconds

$isp ls -l | sort

Output:

-rw-rw-r-- 1 mustafa mustafa 12012 Şub 23 22:33 isp.c

-rw-rw-r-- 1 mustafa mustafa 12012 Şub 23 23:19 ispCopy.c

-rw-rw-r-- 1 mustafa mustafa 12012 Şub 23 23:23 ispCopy2.c

-rw-rw-r-- 1 mustafa mustafa 163 Şub 23 21:44 consumer.c

-rw-rw-r-- 1 mustafa mustafa 230 Şub 14 10:47 Makefile

-rw-rw-r-- 1 mustafa mustafa 436 Şub 23 21:25 producer.c

-rwxrwxr-x 1 mustafa mustafa 19416 Şub 23 23:18 consumer

-rwxrwxr-x 1 mustafa mustafa 19832 Şub 23 23:18 producer

-rwxrwxr-x 1 mustafa mustafa 28152 Şub 23 23:18 isp

total 116

character-count: 1000

read-call-count: 1

write-call-count: 1

Total time = 0.004550 seconds

$isp ps aux

Output:

Total time = 0.018373

$isp ps aux |sort

Output:

character-count: 33000

read-call-count: 33

write-call-count: 33

Total time = 0.029765 seconds

**Experiments**

1st case, when the number of bytes to read/write in one system call is 256.

Mode 1:

M = 5000 -> Total time = 0.001931 sec

M = 10000 -> Total time = 0.002252 sec

M = 20000 -> Total time = 0.002520 sec

M = 40000 -> Total time = 0.002868 sec

M = 80000 -> Total time = 0.003765 sec

Mode 2:

M = 5000 -> Total time = 0.003489 sec

M = 10000 -> Total time = 0.003586 sec

M = 20000 -> Total time = 0.003983 sec

M = 40000 -> Total time = 0.004123 sec

M = 80000 -> Total time = 0.004504 sec

We can see that Mode 1 is significantly faster compared to Mode 2.

2nd case, when the number of bytes to read/write in one system call is 1024.

Mode 1:

M = 5000 -> Total time = 0.002027 sec

M = 10000 -> Total time = 0.002344 sec

M = 20000 -> Total time = 0.002487 sec

M = 40000 -> Total time = 0.002822 sec

M = 80000 -> Total time = 0.003575 sec

Mode 2:

M = 5000 -> Total time = 0.003452 sec

M = 10000 -> Total time = 0.003705 sec

M = 20000 -> Total time = 0.003790 sec

M = 40000 -> Total time = 0.004469 sec

M = 80000 -> Total time = 0.005185 sec

3rd case, when the number of bytes to read/write in one system call is 2048.

Mode 1:

M = 5000 -> Total time = 0.001965 sec

M = 10000 -> Total time = 0.002268 sec

M = 20000 -> Total time = 0.002379 sec

M = 40000 -> Total time = 0.002702 sec

M = 80000 -> Total time = 0.003388 sec

Mode 2:

M = 5000 -> Total time = 0.003452 sec

M = 10000 -> Total time = 0.003499 sec

M = 20000 -> Total time = 0.003798 sec

M = 40000 -> Total time = 0.004540 sec

M = 80000 -> Total time = 0.004867 sec

4th case, We will adjust the number of bytes to read/write to 2 so that we can compare with the first 3 cases.

Mode2:

M = 5000 -> Total time = 0.005005 sec

M = 10000 -> Total time = 0.005673 sec

M = 20000 -> Total time = 0.007609 sec

M = 40000 -> Total time = 0.012410 sec

M = 80000 -> Total time = 0.018256 sec