Test case 1:

./simpsh --rdonly a0.txt \

--wronly err.txt \

--pipe --wronly out.txt \

--profile \

--command 0 3 1 cat \

--command 2 4 1 sort \

– 0 4 1 sed ‘s/hello/hi/g’ \

--close 0 \

--wait

 1

user time is 0.000000, system time is 0.000008 s

user time is 0.000000, system time is 0.000071 s

user time is 0.001253, system time is 0.037796 s

user time is 5.662395, system time is 0.352749 s

user time is 0.000000, system time is 0.000161 s

 2

user time is 0.000000, system time is 0.000009 s

user time is 0.000000, system time is 0.000070 s

user time is 0.000000, system time is 0.034963 s

user time is 5.586349, system time is 0.352983 s

user time is 0.000000, system time is 0.000213 s

 3

user time is 0.000000, system time is 0.000007 s

user time is 0.000000, system time is 0.000079 s

user time is 0.000000, system time is 0.036410 s

user time is 5.880713, system time is 0.382275 s

user time is 0.000000, system time is 0.000193 s

 4

user time is 0.000000, system time is 0.000008 s

user time is 0.000000, system time is 0.000075 s

user time is 0.000000, system time is 0.037025 s

user time is 5.831753, system time is 0.355229 s

user time is 0.000000, system time is 0.000211 s

 5

user time is 0.000000, system time is 0.000008 s

user time is 0.000000, system time is 0.000071 s

user time is 0.000000, system time is 0.035908 s

user time is 5.590928, system time is 0.361369 s

user time is 0.000000, system time is 0.000217 s

avg usr = 5.710427 s

avg sys = 0.390785 s

bash: time (cat a0.txt | sort > out.txt; sed ‘s/hello/hi/g’ a0.txt > out.txt) 2> err.txt

 1

real 0m7.790s

user 0m5.774s

sys 0m0.359s

 2

real 0m7.836s

user 0m5.739s

sys 0m0.424s

 3

real 0m7.838s

user 0m5.751s

sys 0m0.421s

 4

real 0m7.765s

user 0m5.793s

sys 0m0.428s

 5

real 0m7.518s

user 0m5.759s

sys 0m0.383s

avg usr = 5.75 s

avg sys = 0.355

dash:

$ time cat a0.txt | sort > out.txt

0.00user 0.04system 0:04.99elapsed 0%CPU (0avgtext+0avgdata 712maxresident)k

0inputs+0outputs (0major+223minor)pagefaults 0swaps

$ time cat a0.txt | sort > out.txt

0.00user 0.03system 0:05.02elapsed 0%CPU (0avgtext+0avgdata 716maxresident)k

0inputs+0outputs (0major+224minor)pagefaults 0swaps

$ time cat a0.txt | sort > out.txt

0.00user 0.03system 0:05.04elapsed 0%CPU (0avgtext+0avgdata 716maxresident)k

0inputs+0outputs (0major+223minor)pagefaults 0swaps

$ time cat a0.txt | sort > out.txt

0.00user 0.03system 0:05.05elapsed 0%CPU (0avgtext+0avgdata 716maxresident)k

0inputs+0outputs (0major+223minor)pagefaults 0swaps

time cat a0.txt | sort > out.txt $

0.00user 0.03system 0:04.98elapsed 0%CPU (0avgtext+0avgdata 716maxresident)k

0inputs+0outputs (0major+223minor)pagefaults 0swaps

avg usr = 0 s

avg sys = 0.3 s

|  |  |  |  |
| --- | --- | --- | --- |
|  | simpsh | bash | dash |
| user | 5.71 | 5.75 | 0 |
| System | 0.39 | 0.355 | 0.0325 |

Test case 2:

     ./simpsh \

        --rdonly a0.txt \

        --pipe \

        --trunc \

        --wronly err.txt \

        --wronly out.txt \

        --profile \

        --command 0 2 3 sort \

        --command 1 4 3 tr A-Z a-z \

        --command 0 4 3 grep 1234 \

        --wait | grep 'user'

1

user time is 0.000001, system time is 0.000009 s

user time is 0.000005, system time is 0.000057 s

user time is 0.000006, system time is 0.000068 s

user time is -0.001067, system time is 0.008480 s

user time is 7.470527, system time is 0.168155 s

user time is 7.555543, system time is 0.316634 s

user time is 0.000013, system time is 0.000147 s

 2

user time is 0.000001, system time is 0.000010 s

user time is 0.000006, system time is 0.000085 s

user time is 0.000005, system time is 0.000057 s

user time is 0.000103, system time is 0.022618 s

user time is 7.490230, system time is 0.170621 s

user time is 7.580800, system time is 0.322298 s

user time is 0.000000, system time is 0.000243 s

 3

user time is 0.000000, system time is 0.000009 s

user time is 0.000000, system time is 0.000073 s

user time is 0.000000, system time is 0.000083 s

user time is 0.000000, system time is 0.020262 s

user time is 7.462774, system time is 0.178215 s

user time is 7.568067, system time is 0.304133 s

user time is 0.000000, system time is 0.000186 s

 4

user time is 0.000001, system time is 0.000009 s

user time is 0.000006, system time is 0.000068 s

user time is 0.000006, system time is 0.000059 s

user time is -0.001045, system time is 0.021555 s

user time is 7.359420, system time is 0.171748 s

user time is 7.447429, system time is 0.306017 s

user time is 0.000015, system time is 0.000165 s

 5

user time is 0.000000, system time is 0.000009 s

user time is 0.000977, system time is 0.000000 s

user time is 0.000000, system time is 0.000000 s

user time is -0.000977, system time is 0.020177 s

user time is 7.371696, system time is 0.154280 s

user time is 7.462935, system time is 0.288390 s

user time is 0.000000, system time is 0.000000 s

avg usr = 7.5075

avg sys = 0.4628

bash: time (sort a0.txt | tr A-Z a-z > out.txt; grep 1234 < a0.txt > out.txt)2>err.txt

 1

real 0m3.153s

user 0m7.476s

sys 0m0.296s

 2

real 0m3.469s

user 0m7.480s

sys 0m0.326s

 3

real 0m3.316s

user 0m7.431s

sys 0m0.324s

 4

real 0m3.238s

user 0m7.484s

sys 0m0.276s

 5

real 0m3.117s

user 0m7.499s

sys 0m0.304s

avg usr = 7.45

avg sys = 0.3

dash:

[haoranz@lnxsrv09 ~/cs111/lab1/1c\_test]$ dash

$ time sort a0.txt | tr A-Z a-z > out.txt; grep 1234 < a0.txt > out.txt

7.39user 0.13system 0:01.66elapsed 452%CPU (0avgtext+0avgdata 286508maxresident)k

0inputs+0outputs (0major+1707minor)pagefaults 0swaps

$ time sort a0.txt | tr A-Z a-z > out.txt; grep 1234 < a0.txt > out.txt

7.43user 0.16system 0:02.02elapsed 375%CPU (0avgtext+0avgdata 288496maxresident)k

0inputs+0outputs (0major+892minor)pagefaults 0swaps

$ time sort a0.txt | tr A-Z a-z > out.txt; grep 1234 < a0.txt > out.txt

7.44user 0.13system 0:01.67elapsed 451%CPU (0avgtext+0avgdata 288492maxresident)k

0inputs+0outputs (0major+821minor)pagefaults 0swaps

$ time sort a0.txt | tr A-Z a-z > out.txt; grep 1234 < a0.txt > out.txt

$ 7.48user 0.14system 0:01.77elapsed 429%CPU (0avgtext+0avgdata 286516maxresident)k

0inputs+0outputs (0major+877minor)pagefaults 0swaps

$ time sort a0.txt | tr A-Z a-z > out.txt; grep 1234 < a0.txt > out.txt

7.37user 0.15system 0:01.69elapsed 444%CPU (0avgtext+0avgdata 288488maxresident)k

0inputs+0outputs (0major+774minor)pagefaults 0swaps

avg usr = 7.42

avg sys = 0.142

|  |  |  |  |
| --- | --- | --- | --- |
|  | simpsh | bash | dash |
| user | 7.5075 | 7.45 | 7.42 |
| System | 0.4628 | 0.3 | 0.142 |

test case 3:

    ./simpsh \

        --rdonly a0.txt \

        --pipe \

        --trunc --wronly new \

        --wronly err.txt \

        --wronly out.txt \

        --profile \

        --command 0 2 4 cat \

        --command 1 3 4 sort \

        --command 0 5 4 sleep 5 \

        --wait | grep 'user'

 1

user time is 0.000000, system time is 0.000022 s

user time is 0.000000, system time is 0.000080 s

user time is 0.000000, system time is 0.000058 s

user time is 0.000764, system time is -0.009388 s

user time is 0.002073, system time is 0.025960 s

user time is 5.707646, system time is 0.346048 s

user time is 0.000000, system time is 0.000260 s

 2

user time is 0.000000, system time is 0.000000 s

user time is 0.000000, system time is 0.000198 s

user time is 0.000000, system time is 0.000000 s

user time is -0.000988, system time is -0.009301 s

user time is -0.000988, system time is 0.032142 s

user time is 5.712139, system time is 0.387959 s

user time is 0.000000, system time is 0.000319 s

 3

user time is 0.000000, system time is 0.000010 s

user time is 0.000000, system time is 0.000067 s

user time is 0.000000, system time is 0.000057 s

user time is 0.000771, system time is -0.010238 s

user time is 0.001865, system time is 0.024775 s

user time is 5.785441, system time is 0.370809 s

user time is 0.000000, system time is 0.000224 s

 4

user time is 0.000000, system time is 0.000009 s

user time is 0.000000, system time is 0.000065 s

user time is 0.000000, system time is 0.000045 s

user time is 0.000000, system time is 0.025000 s

user time is 0.000739, system time is 0.025000 s

user time is 5.646131, system time is 0.329236 s

user time is 0.000000, system time is 0.000234 s

 5

user time is 0.000000, system time is 0.000010 s

user time is 0.000000, system time is 0.000071 s

user time is 0.000000, system time is 0.000078 s

user time is 0.001038, system time is 0.027728 s

user time is 0.001748, system time is 0.027728 s

user time is 5.596903, system time is 0.358856 s

user time is 0.000000, system time is 0.000252 s

avg usr = 5.69

avg sys = 0.374

 1

real 0m12.500s

user 0m5.798s

sys 0m0.396s

 2

real 0m12.272s

user 0m5.666s

sys 0m0.397s

 3

real 0m12.543s

user 0m5.581s

sys 0m0.352s

 4

real 0m12.597s

user 0m5.805s

sys 0m0.406s

 5

real 0m13.512s

user 0m5.827s

sys 0m0.347s

avg usr = 5.735

avg sys = 0.3796

dash:

$ time cat a0.txt | sort > new; sleep 5 < a0.txt > out.txt

0.00user 0.03system 0:05.07elapsed 0%CPU (0avgtext+0avgdata 716maxresident)k

0inputs+0outputs (0major+224minor)pagefaults 0swaps

$ time cat a0.txt | sort > new; sleep 5 < a0.txt > out.txt

0.00user 0.03system 0:05.02elapsed 0%CPU (0avgtext+0avgdata 716maxresident)k

0inputs+0outputs (0major+223minor)pagefaults 0swaps

time cat a0.txt | sort > new; sleep 5 < a0.txt > out.txt

$ 0.00user 0.03system 0:05.09elapsed 0%CPU (0avgtext+0avgdata 716maxresident)k

0inputs+0outputs (0major+223minor)pagefaults 0swaps

$ time cat a0.txt | sort > new; sleep 5 < a0.txt > out.txt

0.00user 0.03system 0:04.94elapsed 0%CPU (0avgtext+0avgdata 716maxresident)k

0inputs+0outputs (0major+224minor)pagefaults 0swaps

$ time cat a0.txt | sort > new; sleep 5 < a0.txt > out.txt

0.00user 0.04system 0:05.08elapsed 0%CPU (0avgtext+0avgdata 716maxresident)k

0inputs+0outputs (0major+223minor)pagefaults 0swaps

avg usr = 0

avg sys = 0.032

|  |  |  |  |
| --- | --- | --- | --- |
|  | simpsh | bash | dash |
| user | 5.69 | 5.735 | 0 |
| System | 0.374 | 0.3796 | 0.032 |

Whole table:

|  |  |  |  |
| --- | --- | --- | --- |
|  | simpsh | bash | dash |
| user1 | 5.71 | 5.75 | 0 |
| System1 | 0.39 | 0.355 | 0.0325 |
| user2 | 7.5075 | 7.45 | 7.42 |
| System2 | 0.4628 | 0.3 | 0.142 |
| user3 | 5.69 | 5.735 | 0 |
| System3 | 0.374 | 0.3796 | 0.032 |

Conclusion:

It seems dash runs pretty fast except for test case 2, and I think that is because in test case 2, we have to write all the grep lines into file, and that is done in user mode, that’s probably why the time is counted as user. And also dash may be running under multithreading, so it can read fast but write slowly since it is hard for a program to write correctly into a file simultaneously. As for Bash and simpsh, their running time are very close except for some cases simpsh runs faster and some slower.