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Lab 1 Report

1. Benchmarks

#	simpsh	Dash/Bash
1	./simpsh --profile --rdonly a \ --creat --append --wronly c \ --pipe --pipe --pipe --pipe \ --creat --wronly b \ --command 0 3 1 cat \ --command 2 5 1 sort \ --command 4 7 1 tr A-Z a-z \ --command 6 9 1 grep 'abcd' \ --command 8 10 1 wc \ --close 3 --close 5 --close 7 --close 9 \ --wait	cat a | sort | tr A-Z a-z | grep 'abcd' | wc >b 2>c
2	./simpsh --profile --rdonly a \ --creat--append --wronly c\ --creat --wronly b\ --pipe --pipe --pipe \ --command 0 4 1 cat \ --command 3 6 1 uniq \ --command 5 8 1 sort \ --command 7 2 1 wc \ --close 4 --close 6 --close 8 \ --wait	cat a | uniq | sort | wc >b 2>c
3	./simpsh --profile --pipe --pipe --pipe \ --creat rdonly foo --creat --append wronly c \ --creat wronly b \ --command 6 1 7 ls \ --command 0 3 7 sed '/report/d' \ --command 2 5 7 sort \ --command 4 8 7 grep 'abcd' \ --close 1 --close 3 --close 5 \ --wait	ls | sed '/report/d' | sort | grep 'abcd' >b 2>c

2. Time

Format of the time is followed by:

System Time   User time

Children System   Children User time

#	Bash	simpsh	Dash
1	0m0.00090s 0m0.00140s 0m0.00270s 0m0.00540s	0m0.00009s 0m0.00012s 0m0.00264s 0m0.00296s	0m0.00010s 0m0.00000s 0m0.00260s 0m0.00390s
2	0m0.00050s 0m0.00110s 0m0.00130s 0m0.00430s	0m0.00012s 0m0.00014s 0m0.00190s 0m0.00225s	0m0.00000s 0m0.00010s 0m0.00200s 0m0.00290s
3	0m0.00070s 0m0.00170s 0m0.00170s 0m0.00590s	0m0.00005s 0m0.00008s 0m0.00315s 0m0.00375s	0m0.00010s 0m0.00000s 0m0.00190s 0m0.00560s

3. **Analysis**
   I ran bash and dash both ten times with the same command and took the average time. However, total system time and user time of ten times in dash is still too small, which makes the measurement not very precise. From what we can see in the table, simpsh has relatively good performance on system time, children system time and it also has the best performance on children user time. Bash has the worst performance in all cases and its system time user time is significantly greater than simpsh and dash. Dash also has relatively good performance on system time and children system. Dash also has the best performance on user time.

4. **Conclusion**
   (i)   Bash is the worst shell and it has the worst performance in all test cases.
   (ii)   Dash and simpsh both have relatively good performance. According simpsh seems to be better on children process time while dash seems to perform better in terms of user and system time.