

James Campbell 2398110c SP Exercise 2

Status:

My code is a multi-threaded implementation. It compiles and runs successfully on the school stlinux servers, and produces no output when run through diff with the sample output for the given files.

2.

```
-bash-4.2$ pwd
/users/level3/2398110c/ae2
-bash-4.2$ make
clang++ -Wall -Werror -std=c++17 -o dependencyDiscoverer dependencyDiscoverer.cpp -lpthread
-bash-4.2$ clang++ -Werror -Wall dependencyDiscoverer\ -\ Copy.cpp -o dependencyDiscovererSequential -lpthread
-bash-4.2$ time ./dependencyDiscovererSequential -Itest test/*.c test/*.l test/*.y > temp

real    0m0.098s
user    0m0.005s
sys     0m0.025s
-bash-4.2$ export CRAWLER_THREADS=1
-bash-4.2$ time ./dependencyDiscoverer -Itest test/*.c test/*.l test/*.y > temp

real    0m0.053s
user    0m0.014s
sys     0m0.010s
-bash-4.2$
```

From this screenshot, you can see:

The directory I am compiling in, and the successful compilation of my crawler (dependencyDiscoverer), and the original sequential crawler (dependencyDiscoverer – Copy.cpp).

Then, the timings for the sequential crawler, then my crawler with one thread.

3a

```
/users/level3/2398110c/ae2
-bash-4.2$ export CRAWLER_THREADS=1
-bash-4.2$ time ./dependencyDiscoverer -Itest test/*.c test/*.l test/*.y > temp

real    0m0.085s
user    0m0.008s
sys     0m0.022s
-bash-4.2$ export CRAWLER_THREADS=2
-bash-4.2$ time ./dependencyDiscoverer -Itest test/*.c test/*.l test/*.y > temp

real    0m0.031s
user    0m0.006s
sys     0m0.020s
-bash-4.2$ export CRAWLER_THREADS=3
-bash-4.2$ time ./dependencyDiscoverer -Itest test/*.c test/*.l test/*.y > temp

real    0m0.040s
user    0m0.009s
sys     0m0.018s
-bash-4.2$ export CRAWLER_THREADS=4
-bash-4.2$ time ./dependencyDiscoverer -Itest test/*.c test/*.l test/*.y > temp

real    0m0.023s
user    0m0.012s
sys     0m0.016s
-bash-4.2$ export CRAWLER_THREADS=6
-bash-4.2$ time ./dependencyDiscoverer -Itest test/*.c test/*.l test/*.y > temp

real    0m0.034s
user    0m0.012s
sys     0m0.032s
-bash-4.2$ export CRAWLER_THREADS=8
-bash-4.2$ time ./dependencyDiscoverer -Itest test/*.c test/*.l test/*.y > temp

real    0m0.019s
user    0m0.013s
sys     0m0.022s
-bash-4.2$
```

From this screenshot, you can see where the testing is being run from, and the execution time for 1,2,3,4,6 and 8 threads

3b

CRAWLER_THREADS	1	2	3	4	6	8
	Elapsed Time	Elapsed Time	Elapsed Time	Elapsed Time	Elapsed Time	Elapsed Time
Execution 1	0.085	0.041	0.04	0.023	0.034	0.019
Execution 2	0.085	0.03	0.024	0.024	0.026	0.024
Execution 3	0.049	0.029	0.026	0.036	0.02	0.019
Median	0.085	0.03	0.026	0.024	0.026	0.019

3c:

As you can see, adding more cores did decrease execution time, but by 8 threads we were getting to the point of diminishing returns with this test project. The times are fairly variable, I was doing this testing the afternoon before the deadline, and all the stlinux servers were busy, which could be a major factor for the inconsistency of the timings.