

note

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Assignment 2

Assignment 2: Multi-Threaded Programming

Due: April 2nd. No late assignment will be accepted.

In this assignment, you will be asked to increase the speed of a program by making it multi-threaded using pthread. Look at chapter 4 of the textbook for information on pthread programming.

The program takes an array of integers from standard input and returns 4 if there is a prime number and returns 2 otherwise.

Don't forget to add your name and cwid to the #define at the top of the assignment and test it out with `./as2 -n` to make sure your name and cwid gets printed out. If you don't do this right, you won't get points.

Do not change any code in the sections marked as not to be changed or you will get a 0. You must use the `is_prime()` function provided to test prime.

To get the number concurrent threads your computer supports try this:

```
#include <thread>

//in your main:
unsigned concurrentThreadsSupported = std::thread::hardware_concurrency();
if (concurrentThreadsSupported == 0) {
    concurrentThreadsSupported = 16;
}
```

Compile your code as follows:

```
g++ -std=c++11 main.cpp -o as2
```

main.cpp

To test generate input files of integers separated by lines like these: `test10000.txt` `test20000.txt`
`cat test10000.txt | ./as2`

To time how long it took:

```
time cat test10000.txt | ./as2
```

Submit here:

<https://www.dropbox.com/request/SENWkGP7yIViL7XqJ0DB>

#pin

assignment2

Updated 7 hours ago by Andrew Huy

followup discussions for lingering questions and comments

☒ Resolved ☐ Unresolved



Jason O'Neill 7 days ago

Could you give examples of how the program is supposed to be used? Without any modifications of the base program you supplied, it is crashing on `"buffer[i] = c;"` every time.



Andrew Huy 7 days ago It's reading from stdin. Either pipe the content of a space separated file containing numbers into the program. Or type the number in manually and press Ctrl-D for the EOF.



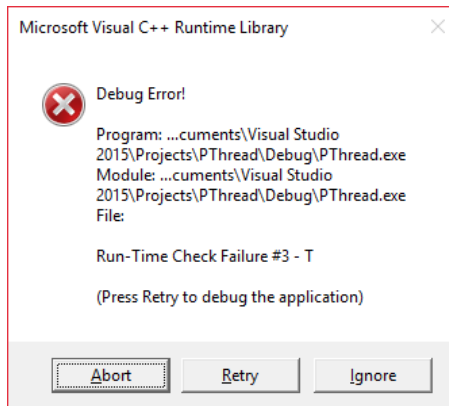
Jason O'Neill 7 days ago Ok. Why is it that the program crashes on the first character read in?



Andrew Huy 7 days ago what do you mean crash? I ran it fine. You might be confusing the stdin wait for input with crashing.



Jason O'Neill 7 days ago



This program shouldn't have anything OS specific, so I was starting on it on Windows. This is what I was getting after inputting the first number and pressing enter.



Jason O'Neill 6 days ago Weird, I tested it on cpp.sh and it works. Ok



Rocio Salguero 5 days ago I keep getting segmentation fault while running "cat test.txt | ./as2" where test.txt is just "10 22 33"

[Edit] Nevermind I switched everything to use std::cin. Makes it easier.

☒ Resolved ☐ Unresolved



Maziar Bastani 7 days ago
When is Assignment 2 due?



Anonymous 7 days ago It says at the top that it's due April 2nd.



Maziar Bastani 7 days ago Thank you !

☒ Resolved ☐ Unresolved



Troy Wise 7 days ago
Is_prime() function does not cycle through odd values. It increments by one, which will catch all prime numbers and label them as not prime.



Jason O'Neill 6 days ago

```
for(int i = 3; i < num / 2; i+= 2)
```

It looks like it's starting at 3 and counting by 2.



Troy Wise 6 days ago Nevermind it's good.

☒ Resolved ☐ Unresolved



Michael Romero 6 days ago

A **wrapper function** is a subroutine in a software library or a computer program whose main purpose is to call a second subroutine or a system call with little or no additional computation.



Anonymous 5 days ago Yeah but the threaded function will make computations for each thread to use (this case look through an array) , right?

☒ Resolved ☐ Unresolved



Karissa Bowser 4 days ago
On Monday (3/13) I believe Professor Huy mentioned adding something to the main.cpp file, is that still happening?



Anonymous 3 days ago Current main.cpp runs fine. You just have to modify it to make it thread safe. (I get no more segmentation faults now)



Andrew Huy 8 hours ago I added the note about how to get the number of supported concurrent threads and how you should now compile your code in the description above.


☒ Resolved ☐ Unresolved



Jason O'Neill 2 days ago
Could you tell us how you will be doing the time comparison so we can use the same method to check our program?



Andrew Huy 8 hours ago I'm planning on using this:

 time cat <testfile> | ./as2☒ Resolved ☐ Unresolved**Anonymous** 8 hours ago**g++ -std=c++11 main.cpp -o as2** Won't compile pthreads because it won't link to the thread library which require pthread_create and pthread_join.