

Live Lecture Chat Window Q&A
April 5, 2021

12:05:38 From Chun-Yu Chen (Charlie) to Everyone : Is the shell script required in Proj0 to run the 1 and 4 NUMT?

You can, but it is only 2 tests.

12:07:26 From Metz, Josiah to Everyone : Was there any guidance on whether we should average or not?

Don't average, only use the peak performance values. Anything less is contaminated with more background load. The peak numbers are probably contaminated too, but less so than the others.

12:19:14 From Nathanael Butler to Everyone : stack size isn't increased right?

12:19:29 From Nathanael Butler to Everyone : its just split among the threads?

Correct.

12:20:56 From Taylor, James Edward to Everyone : I prefer

`#ifndef _OPENMP`

`# error OpenMP is not included.`

`#endif`

Good idea.

12:26:13 From Thomas Draxler to Everyone : A real-time OS could give you more precise control over scheduling right?

I assume so, but I am not sure how much control *you* would have over it.

12:30:46 From Jacob Eckroth(He/him/his) to Everyone : Project 0 didn't have default(none) in it, was that just for ease for us?

Yes.

12:30:52 From Jacob Eckroth(He/him/his) to Everyone : so we didn't have to declare variables as private

If anything, we would have done: `shared(A,B,C)`

12:32:31 From Wichser, Ben Jameson to Everyone : So using default(none) is to make us notice if we haven't thought through private/shared?

Correct. It's to ultimately save debugging time.

12:34:32 From Jacob Eckroth(He/him/his) to Everyone : so openMP for-Loop is really for data-parallel operations

Yes.

12:37:31 From Jacob Eckroth(He/him/his) to Everyone : do you just keep putting commas?

Yes, or spaces.

12:50:29 From Thomas Draxler to Everyone : Should we just use a large chunk size by default? Because of spatial locality caching, if we're reading from an array or something in the for loop, would it be more beneficial to try to encourage sequential read access?

Possibly. But, then you also run the risk that some for-loop passes take much longer than others and some threads will

13:04:55 From Jacob Eckroth(He/him/his) to Everyone : do the other threads just skip it [a `#pragma omp single`]?

They skip it but wait on the other side for that single thread to catch up. I should point out that most of the OpenMP pragmas allow a *nowait* clause which prevents threads from having to wait at the end or on the other side of something.

13:07:45 From Stachura, Ryan to Everyone : does `omp_test_lock()` return 1 if locked?

Yes, it gives you the lock and returns a `!= 0` – you then do what you want to do then unset the lock.

13:08:28 From Tony Fiore to Everyone : What's the difference between test lock and set lock?

set lock blocks, test lock returns

13:09:11 From Goodwin, Jake Owen to Everyone : so it's trylock?

Great idea for a rename!

13:09:33 From Tony Fiore to Everyone : Does test lock just skip the block completely then if the lock is being used?

It returns 0 and allows the code to continue.

13:10:03 From Nathanael Butler to Everyone : oh could you section the sequential for-loops from the question earlier?

We typically don't try to combine sections and for-loops, but sections do play very well with the SPMD design pattern.

13:10:53 From Shuler, Patrick Logan to Everyone : do both of those sections run concurrently, or do they run sequentially? i.e. section 1 runs before section 2

They try to run concurrently.

13:13:29 From Dattalo, Amanda to Everyone : what happens if you have more threads than sections?

I believe that some threads do nothing.

13:14:14 From Child, April Santa Cordova to Bailey, Mike(Direct Message) : How does parallelism fair with Class objects in c++? can we include `#pragma(s)` in Class functions?

Yes.

13:15:59 From Scott Fleishman to Everyone : couldnt you have a more threads than sections but add a pragma to a section?

Not sure. I suspect not, but I will try to find something about it in the spec.

13:17:53 From Goodwin, Jake Owen to Everyone : As there a hard limit on how many threads you can spawn before it crashes?

Probably, but I'm not sure what it is. I'm sure one of you will find out and tell me.

13:20:09 From Goodwin, Jake Owen to Everyone : Are the gpus we're going to use the tesla cards like k80s?

The low-power server has an Nvidia Titan Black. The high-power server has Nvidia V100s.

13:23:11 From Sanchez, Eric Benjamin to Everyone : Does the scheduler always try to spread the threads among the available cores? I.e. 4 threads on a 4 core processor will always run one per core?

Yes.

13:23:50 From Scott Fleishman to Everyone : could you think of critical like recursion? what you explained sorta made me think of that

Not really recursion, more like temporarily lowering the gate for all other threads.

13:25:38 From Nathanael Butler to Everyone : first google search for openmp linter gives me this repo: <https://github.com/rofirrim/omp-lint>

13:26:05 From Zach Rogers to Everyone : very dated and not maintained sadly

Hmmm, still might be useful!

13:26:17 From Zach Rogers to Everyone :

<https://software.intel.com/content/www/us/en/develop/articles/parallel-lint.html>

Also worth looking at.

13:28:17 From Zach Rogers to Everyone : Canvas says the project 1 due date is the 16th but the website says the 13th -- which due date is correct?

It's April 16 – sorry.

13:28:27 From Hawkins, Matthew R to Everyone : @Zach P - there's work that goes on to set up the for loop and multithreading, so you won't quite get an absolutely perfect speedup ratio, there's still some work in the program that isn't multithreaded.

Yes, that's why your Fp will always be < 1.

13:37:12 From Jordan to Everyone : Is the castle a single point, or does it cover an area?

The castle ranges in horizontal distance from d-TOL to d+TOL.

13:37:13 From Hershberger, Jacob to Everyone : what's the purpose of the ?????, do we replace them? if so with what?

Those lines are left as an exercise for the reader.

13:38:25 From Jordan to Everyone : Sorry, you said the castle is 10 meters wide?

Yes, d-TOL to d+TOL.

13:38:38 From Kevin to Everyone : just to confirm is the distances/the location of the castle is randomized?

Yes, d is randomized.

13:39:22 From John Teeter to Everyone : so you don't want us to vary numtrials?

Yes, but not as one of the random Monte Carlo variables. Vary NUMTRIALS from your script.

13:40:30 From John Teeter to Everyone : so then we don't vary numtries

NUMTRIES is whatever you want it to be to try to determine peak performance.

13:41:28 From Alcaide, Tiffanie Charlyne Yu to Everyone : So parallel fraction can be calculated by hand here, just like project 0?

Yes.

13:48:49 From Jordan to Everyone : The rubric lists the 2 graphs as performance vs num trials, and performance vs num threads. How does that translate into swapping the rows and cols to make 2 graphs?

Look at the example in the Project Notes noteset. I modeled that after a Monte Carlo project.

13:51:05 From Trieu, Huy to Everyone : I see the code as "float t = ???" and then a few lines down, it was t = ???, is t being changed twice? not sure if im understanding

t stands for "time". It is being re-used after one set of calculations is done with it.

13:57:27 From Wichser, Ben Jameson to Everyone : Why are we calculating if the projectile hits the ground before the cliff, or the cliff face? Don't those slow down the calculation?

Think of this whole thing as a compound it statement:

```
if( Doesn'tHitInFrontOfTheCliff && GetsAboveTheTopOfTheCliffFace && HitsWithinTOLofTheCastle ) numHits++;
```

In order to evaluate the true-ness of the entire if-statement, we need to evaluate the true-ness of each piece.

14:00:30 From Jordan to Everyone : does the castle have a width but no height?

That's correct – just check horizontal distance.

14:37:03 From Saydemir, Abdullah to Everyone : I get "Permission denied" when I try to run .sh files on flip

Do one of the following:

1. `sh loop.sh`
2. `chmod 0755 loop.sh`
`loop.sh`

14:51:12 From Singh, Bhavya to Everyone : Still can't figure out how to transfer my code on flip. Is there anyone who uses a MacBook who can help me?

14:55:37 From Shivam to Everyone : `scp <file to upload> <username>@<hostname>:<destination path>`

Good answer!

15:43:54 From Trieu, Huy to Everyone : Does c++ do t^2 automatically?

When you need t^2 , just say `t*t`. `pow(t,2.)` is very inefficient.