

Live Lecture Chat Window

April 10, 2024

13:59:40 From Bailey, Mike to Everyone:

[How to create the arrays if you are using PowerShell and put NUMT and NUMTRIALS on the command line:]

```
float *BeforeY = new float [NUMTRIALS];
```

14:14:23 So should we use reduction because of false sharing? Or just not create our own sums array.

In P1, use the OpenMP reduction clause because it is easy to use and will result in the summation giving you the right answer.

14:18:27 Is it alright to change the number of trials? I need to start around 500,000 otherwise I'm getting "Inf" for my max performance. I've got a range of 500,000-4,000,000

Yes, feel free to experiment.

14:20:11 If you wanted to use randoms inside a multithreading loop, could you avoid the sequence problem by getting a new seed every time?

Interesting idea – I'll try it sometime. Where would you get the new seed from?

14:21:54 To show estimate of the probability, how we can do then?

Pick one of your runs with the maximum number of NUMTRIALS. That will give you the best result.

14:22:46 What if we use a c file?

Much of the time should be OK. Every so often I absent-mindedly slip some code in that is actually a C++-ism. gcc would reject that, but you can probably fix it. Project #3 uses a *std::string* which is a C++-ism. You could change that to a *char **.

14:23:37 So all we need to change/edit from this starter code are the question marks?

Yes.

14:24:41 For the question mark values for vs, t, and dx, are we replacing those with the formulas?

Yes, but you also have to correctly use the equation that answers the question "Did the ball fall in the hole?"

14:25:01 What was the program that you recommended we purchase?

I mentioned that there are other spreadsheets (free ones) that might work instead of Excel, like the Open Office spreadsheet, Google Sheets, etc.

14:25:36 And also for computing the parallel fraction, we just use the same equation from proj0?

Use the equation from Slide #9 of the Amdahl notes. It takes into account the number of cores. The equation in P0 assumed 4 cores.

14:27:14 How should we use the function for getting random numbers within a Range?

```
for( int n = 0; n < NUMTRIALS; n++ )
{
    BeforeY[n] = Ranf( BEFOREY - BEFOREYDY, BEFOREY + BEFOREYDY );
    AfterY[n]   = Ranf( AFTERY - AFTERYDY,   AFTERY + AFTERYDY );
    DistX[n]   = Ranf( DISTX - DISTXDX, D    ISTX + DISTXDX );
}
```

14:32:01 Off topic, is there any requirement to truly be in person or can we get by just by watching the live lectures?

You can get all the *material* through the videos, but by avoiding class or the Live Lecture, you miss all the asked questions and project hints.

14:37:10 I'm still confused on the significance of speedup and parallel fraction

We need Parallel Fraction to determine the maximum speedup possible, but we can't measure Parallel Fraction. What we *can* measure is the SpeedUp (T_1/T_n or P_n/P_1) and then use the equation on Slide #9 of the Amdahl notes to compute what the Parallel Fraction must have been to get that SpeedUp. This then lets us compute the Maximum Speedup.

15:16:15 So back to the while loops - NumAtBarrier is being changed elsewhere?

It's being changed every time a thread calls WaitBarrier(). Essentially it counts how many threads are waiting at the barrier and releases them all at once when that hits the expected number.

15:16:15 Is it ok to change the code you give us?

As long as it involves creativity not cheating.

15:17:32 Presumably, it seems like we could use OpenMP's approach to barriers (#pragma) if we use the thread number to decide which function to do just before the barrier, right? Or is there something like False Sharing in the way?

I suppose, but the essence of Functional Decomposition programming is to isolate each quantity into its own function that looks at the global state and decides just what that single quantity does in the next timestep.

15:17:47 The syntax of the while statement just throws me off

The syntax is:

```
while( true_or_false_expression_is_stll_true )
{
    Keep doing this code;
}
// when that expression turns false, end up here
```

15:41:06 Do you have any recommendations for career discovery other than internships? An internship would be great but I'm trying to finish up in a year and I still feel like I don't know the route I want to follow.

Not sure I have any good recommendations, but I've seen a lot of resumes. If you'd like your resume reviewed, email me a PDF of it.