Homework 9: Introduction to OpenMP

Due Date: Before class on Thursday, April 28th.

We watched Tim Mattson give an introduction to OpenMP. You can find all the videos we watched in a youtube playlist, which also has links to his slides and source code.

For this assignment, the first twelve videos (ending with "Introduction to OpenMP: 10 Discussion 4") are relevant. We didn't watch all of these in class!

Calculating pi

You will follow Mattson's example, write some OpenMP code, and time it to see a parallel speedup. Specifically:

1. Start with the `pi.c` from his example code. Move the calculation loop into a function called `serial_pi`.
2. I asked you to try parallelizing the code after the second day of videos. Put that code in a function `my_parallel_pi`.
3. Mattson's presentation and example code have a few tricks that may make the parallel calculation even faster. Put that code into a function `final_parallel_pi`.
4. Have your code call the functions, timing the completion time, and print the result in a simple table. It should look like:

```
                    execution time (sec.) for threads:
code                1       2       3       4
-----------------------------------------------------
serial              10.1    -       -       -
my_parallel         10.5    8.3     6.5     5.7
final_parallel      10.4    5.7     3.2     2.7
```

5. Put a copy of the output in a comment at the top of your code, as well as information about your computer's CPU: type, speed, number of cores.

Turning it in

Make a folder labeled `Homework 09` in your turn-in folder, and copy in your source code.