

CS 385 Lab 5 – Wed., Mar. 4, 2009

Summary

In this lab, you will get started with TBB and tune a parallel for-loop. You should have time to finish Lab 4 after you complete this exercise.

Preparation

Add the following line to your `~/.bash_profile` file (ignore the line breaks):

```
source
/home/faculty/srivoire/cs385/tbb21_015oss/em64t/cc4.1.0_lib
c2.4_kernel2.6.16.21/bin/tbbvars.sh
```

At the UNIX prompt, type the following:

```
source ~/.bash_profile
```

Then type the following:

```
echo $CPATH
```

If the output includes

```
/home/faculty/srivoire/cs385/tbb21_015oss/include
```

then it's working.

Testing TBB

Type the following C++ program:

```
#include "tbb/task_scheduler_init.h"
using namespace tbb;

int main() {
    task_scheduler_init init;
    return 0;
}
```

Compile this program using the `-ltbb` flag (that's a lowercase L):

```
g++ -ltbb [source] -o [output]
```

If the program compiles and runs without errors, TBB is correctly set up.

Parallel For

Copy the following file into your directory:

```
~srivoire/cs385/pickup/L5-stub.cpp
```

Add code to initialize and print the array where indicated in `main()`. You may copy your array initialization and printing functions from previous labs. If you use `cout` for printing, keep in mind that you will have to qualify it with `std::`:

Add timing calls just before and after the `parallel_for()`. Using a much larger value of `N`, take three timing measurements with the current code.

Modify your code to specify the grain size; the call to `parallel_for` will now look like:

```
parallel_for(  
    blocked_range<int>(0, N, GRAINSIZE),  
    IncAll(A, B));
```

Choose a grain size and take three timing measurements again. It's OK if the measurements are very small or don't show an appreciable difference.

Deliverables

1. Your modified code with a specified grain size and array initialization, printing, and timing code
2. Your timing measurements with `auto_partitioner()`
3. Your timing measurements with the grain size specified

You should submit `yourlastnameL5.cpp` to `~srivoire/cs385/submit`. If you are successful, you will see your file listed at

<http://rivoire.cs.sonoma.edu/cs385/lab5sub.txt>