

OpenMP

Blue Waters Petascale Institute 2017

Day 3 (Week 1, Wednesday, May 31), 10:00am-4:45pm

Lead instructor: Aaron Weeden

Job submission

OpenMP can run on max 1 node. It can run on an XE (32 integer cores) or XK (16 integer cores) node. Replace the highlighted part:

```
qsub -I -l nodes=1:ppn=32:xe,walltime=HH:MM:SS,advres=bajy<ENTER>
```

Code download

```
wget https://shodor.org/media/content//petascale/materials/BW2017/openmp.zip<ENTER>
```

```
unzip openmp.zip<ENTER>
```

Compilation

Replace the highlighted parts:

```
cc -o executable filename.c<ENTER>
```

Setting number of threads

Replace the highlighted part:

```
export OMP_NUM_THREADS=number of threads<ENTER>
```

Running

Replace the highlighted parts:

```
aprun -n 1 -d number of cores ./executable other options<ENTER>
```

Example serial (non-parallel) JavaScript versions

Sieve: <http://shodor.org/~aweeden/sieve/>

Fire: <http://www.shodor.org/interactivate/activities/Fire/>

Heat: <http://shodor.org/~aweeden/diffusion/>

Example problem sizes

Sieve: Primes under 5M

Fire: 10K rows, 10K columns

Heat: 3K rows, 3K columns