

Using OpenMP on Crescent

Logging in and environment To run the exercises, you'll need to log into the Crescent system, with a command like

```
ssh -X s67890@crescent.central.cranfield.ac.uk
```

where you need to substitute your account in place of `s12345`.

The system provides multiple compilers to support the OpenMP directives; you will use the GNU compiler.

For additional information, please go to the Intranet and search for Services/IT Services/Research Computing/User Guides/Crescent user guide.

GNU Compiler To use the GNU compiler, which will also be used for the CUDA section of the course, you have to set up the appropriate environment variables with the commands

```
module load fosscuda/2019b
export CC=$(which gcc)
```

The `fosscuda/2019b` module loads GCC 8.3.0 which is compatible with CUDA 10. These commands must be issued every time you log into the system (i.e. for every session). To compile a source file you will need the `-fopenmp` option, as in the following:

```
gcc -fopenmp -O4 -o hello hello.c
```

Many of the source files also require the `-std=c99` option.

Job submission See the example job submission files `openmp_add.sub` and similar in the source directories; change the email address your Cranfield email; then submit a batch job with the command

```
qsub -V openmp_add.sub
```

If everything has been set up properly, the system will respond with a message like

```
35291.crescentpbs
```

(with a new number assigned to each invocation).

During the class the students will be able to submit jobs to the **reserved** queue. After the class, the MSc students can submit their jobs to other queues; this can be done by editing the submission script, or by overriding from the command line with the `-q` option.