

# Crib Sheet: Morar MPI Exercises

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In the unlikely event of ARCHER being unavailable, we have access to an EPCC system called **morar**.

## 1 Logging on

Use your username (`visitXX`) and password to access morar: `ssh -X visitXX@ph-cplab.ph.ed.ac.uk`

## 2 Obtaining source code

You can obtain `MPP-templates.tar` by using `wget` on morar:

```
wget http://www.archer.ac.uk/training/course-material/2015/05/intro_dublin/Exercises/sharpen.tar.gz
```

To obtain this URL, cut and paste it from the Exercise Material section of the course web pages. Now unpack the tar file: `tar xvf MPP-templates.tar` and change directory into it: `cd MPP-templates`

## 3 Compiling code

You **must** load a non-default module to access the correct version of MPI:

```
module load mpich2-pgi
```

You can compile the using the supplied Makefile

```
make -f Makefile_morar
```

**The compiler definitions in the morar Makefile are different from those in the the ARCHER makefile**

## 4 Running

You can run parallel jobs interactively from the command line, e.g.:

```
mpiexec -n 4 ./sharpen
```

Running on the front-end like this you are sharing resources with other users. This is fine for development work, but if you want accurate timings for benchmarking you must run on the compute nodes using the Sun Grid Engine (SGE) batch system.

An SGE template batch file is included with the code: `sharpen.sge`

This can be used for any MPI based task to be run on Morar by making a copy of the SGE file to match your executable. For example, to run `hello` copy of the SGE template batch file to match the executable `hello`, e.g. `cp sharpen.sge hello.sge`

Now submit to the batch system: `qsub -pe mpi 4 sharpen.sge`

which will run on 4 processes. The batch system will respond with a unique ID, `XXXXXX`, for your job.

You can monitor the progress of your job with `qstat`. The letters "qw" indicates the job is queued, "r" that it is running, and no listing that it has finished.

When the job has finished, the standard output will appear in a file called `sharpen.sge.oXXXXX`. There will also be a file with any error messages called `sharpen.sge.eXXXXX`; this will always contain some spurious errors regarding modules which can be ignored.