

# Debugging MPI Programs Lab

This lab is designed to teach you about the basics of using the GNU debugger, gdb, with MPI programs.

## Lab Exercise

- Log into the cluster using your assigned account
- `$ YOUR-FAVORITE-EDITOR eratosthenes-mpi.c` (where YOUR-FAVORITE-EDITOR is whatever editor you choose)
- Insert `if (rank == 0) { int catch = 1; while (catch); }` just before the `MPI_Barrier()` call
- `$ mpicc -g eratosthenes-mpi.c -o e-m`
- `$ mpirun -np 2 ./e-m &`
- `$ ps` (note the lowest PID for the e-m processes)
- `$ gdb`
- `symbol-file e-m`
- `attach LOWEST-PID`
- `break 34`
- `set var catch=0`
- `list`
- `next`
- `...`
- `quit`

Techniques that gdb supports which are useful for debugging parallel (OpenMP and MPI) programs:

- Break points
- Displaying scalar and structured variables
- Step over and step in to functions
- Attaching to particular threads
- Watch points