MPI Setup

Aaron Morgenegg

09/7/18

OpenMPI setup instructions for linux mint 19

1. Download latest stable release of openmpi

   https://www.open-mpi.org/software/ompi/v3.1/

2. Open up the tar to desired location

   mv /Downloads/openmpi-3.1.2.tar.gz /Projects/OpenMPI
   tar -xzf openmpi-3.1.2.tar.gz
   rm openmpi-3.1.2.tar.gz

3. Run MPI Configuration

   cd /Projects/OpenMPI
   ./configure

4. Build OpenMPI - this will take a while

   sudo make all install

5. Run this config (https://askubuntu.com/questions/738667/problem-with-mpicc)

   sudo ldconfig

6. Test the installation was successful

   mpiexec –version

Simple message pasing program to demonstrate usage of MPI.

```
#include <iostream>
#include <mpi.h>

int main(int argc, char** argv) {
// initialize MPI
MPI_Init(&argc, &argv);

// stores number of processes in world_size
int world_size;
MPI_Comm_size(MPI_COMM_WORLD, &world_size);

// Get the rank of this process
int world_rank;
MPI_Comm_rank(MPI_COMM_WORLD, &world_rank);

int data = world_rank;
MPI_Send(
&data, // data to send
1, // count, or number of things passed
MPI_INT, // datatype
(world_rank+1)%world_size, // destination
0, // tag of message
MPI_COMM_WORLD // MPI communicator
);

MPI_Recv(
&data, // data to recieve
1, // count, or number of things passed
     MPI_INT, // datatype
MPI_ANY_SOURCE, // source
MPI_ANY_TAG, // tag of message
MPI_COMM_WORLD, // MPI communicator
```

```
MPI_STATUS_IGNORE // MPI status
);

std::cout << "I am " << world_rank << " of " << world_size <<
", recieving a message from number " << data << std::endl;

// Finalize the MPI environment.
MPI_Finalize();
return 0;
}
```