MPI Hello World

This guide tells you how to compile and run a simple MPI program on the mc cluster.

Copy the following program into a file named "MPI_hello.c"

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

int main(int argc, char *argv[]) {
  int numprocs, rank, namelen;
  char processor_name[MPI_MAX_PROCESSOR_NAME];

  MPI_Init(&argc, &argv);
  MPI_Comm_size(MPI_COMM_WORLD, &numprocs);
  MPI_Comm_rank(MPI_COMM_WORLD, &rank);
  MPI_Get_processor_name(processor_name, &namelen);

  printf("Process %d on %s out of %d\n", rank, processor_name, numprocs);

  MPI_Finalize();
}
```

Compile the above program using the MPI compiler
mpicc MPI_hello.c -o hello

You can provide a list of machines on which your MPI program should run. Please save the following list into a file named "machines"

mc01.cs.purdue.edu
mc02.cs.purdue.edu
mc03.cs.purdue.edu
mc04.cs.purdue.edu

You can run "Hello" on the machines listed above using

mpirun -machinefile machines -np 4 hello

-np flag above specifies the number of processes to run. mpirun -help can provide details about all other flags and options to run MPI programs.
Please note that the you need passwordless ssh setup on the above list of mc cluster machines in order to use mpirun. In case you do not have it setup already please use

ssh-keygen

to generate a pair of keys and copy your credentials to each of the machines above using

ssh-copy-id *user_name*@mc02.cs.purdue.edu

where user_name is your LDAP.