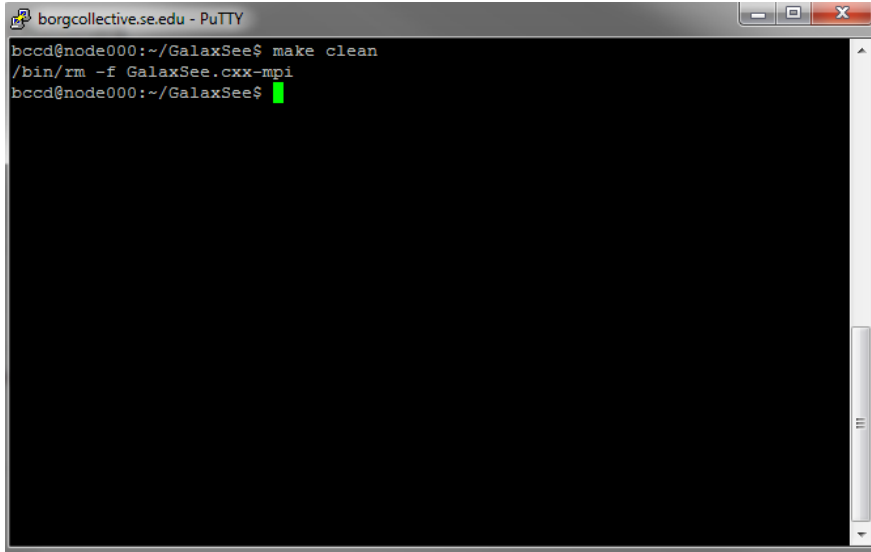


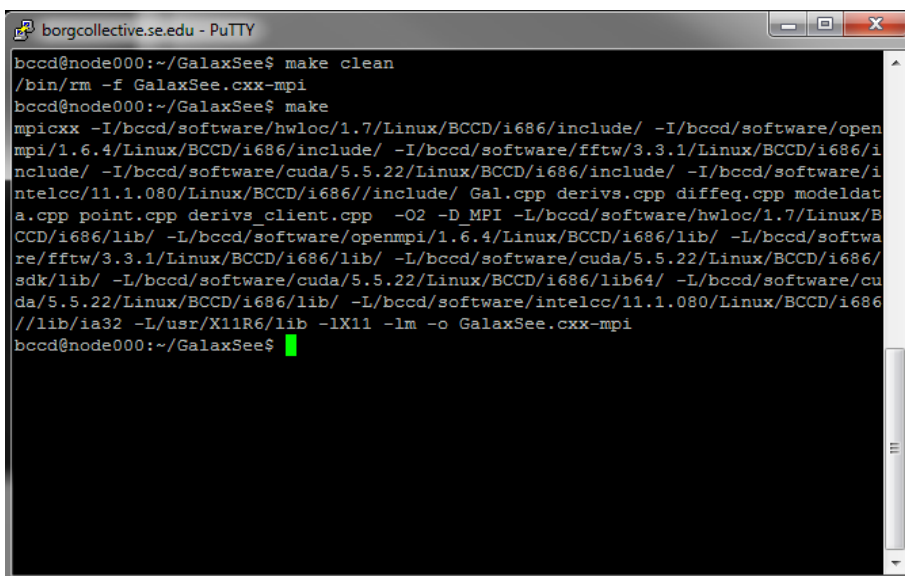
## How to Compile and Run a Program on Super Computer

1. Make sure you are logged in with your personal user account.  
Navigate to your GalaxSee directory with “cd ~/GalaxSee ”.  
If you have previously compiled the program you will need to “make clean”.  
If you have not previously compiled you can skip step 1, but it will not harm anything if you do “make clean” regardless.



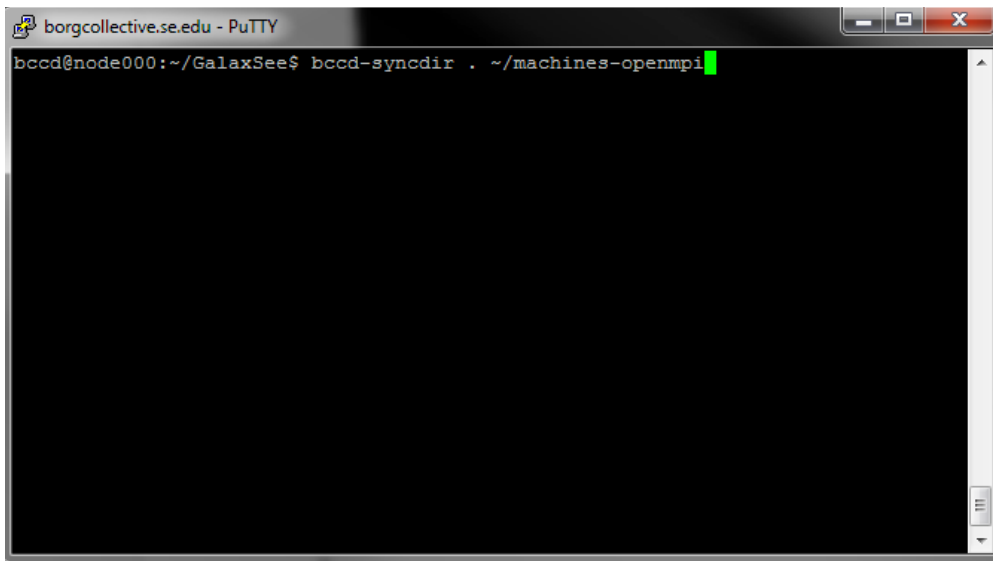
```
borgcollective.se.edu - PuTTY
bccd@node000:~/GalaxSee$ make clean
/bin/rm -f GalaxSee.cxx-mpi
bccd@node000:~/GalaxSee$
```

2. You will then need to recompile the program with the “make” command.



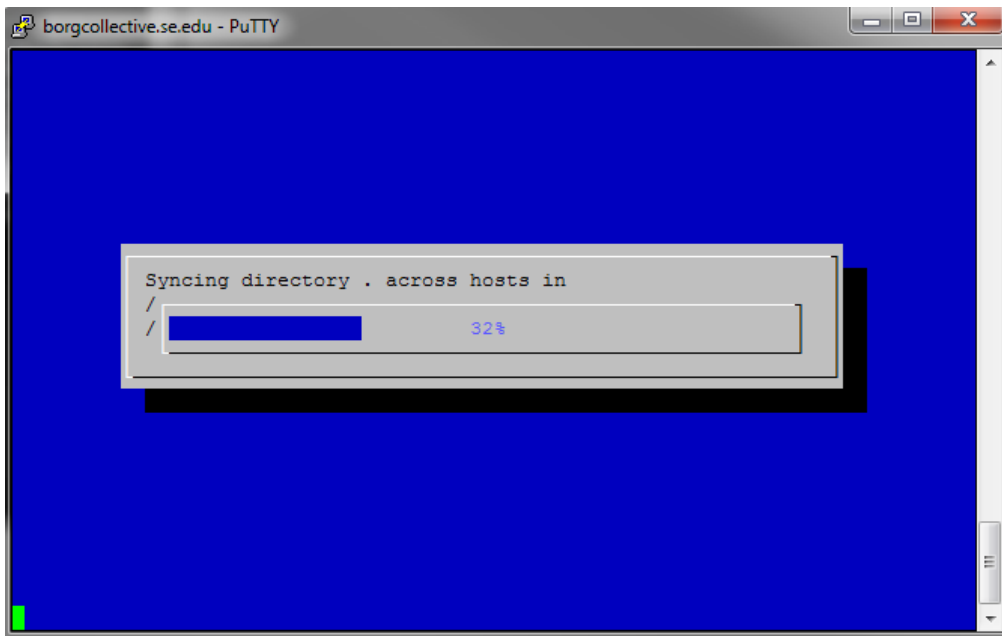
```
borgcollective.se.edu - PuTTY
bccd@node000:~/GalaxSee$ make clean
/bin/rm -f GalaxSee.cxx-mpi
bccd@node000:~/GalaxSee$ make
mpicxx -I/bccd/software/hwloc/1.7/Linux/BCCD/i686/include/ -I/bccd/software/open
mpi/1.6.4/Linux/BCCD/i686/include/ -I/bccd/software/fftw/3.3.1/Linux/BCCD/i686/i
nclude/ -I/bccd/software/cuda/5.5.22/Linux/BCCD/i686/include/ -I/bccd/software/i
ntelcc/11.1.080/Linux/BCCD/i686//include/ Gal.cpp derivs.cpp diffeq.cpp modeldat
a.cpp point.cpp derivs_client.cpp -O2 -D_MPI -L/bccd/software/hwloc/1.7/Linux/B
CCD/i686/lib/ -L/bccd/software/openmpi/1.6.4/Linux/BCCD/i686/lib/ -L/bccd/softwa
re/fftw/3.3.1/Linux/BCCD/i686/lib/ -L/bccd/software/cuda/5.5.22/Linux/BCCD/i686/
sdk/lib/ -L/bccd/software/cuda/5.5.22/Linux/BCCD/i686/lib64/ -L/bccd/software/cu
da/5.5.22/Linux/BCCD/i686/lib/ -L/bccd/software/intelcc/11.1.080/Linux/BCCD/i686
//lib/ia32 -L/usr/X11R6/lib -lX11 -lm -o GalaxSee.cxx-mpi
bccd@node000:~/GalaxSee$
```

3. You will need to sync the compiled code across all the nodes so each node will have its own copy to run. "bccd-syncdir . ~/machines-openmpi" (there is a space between the . and ~)



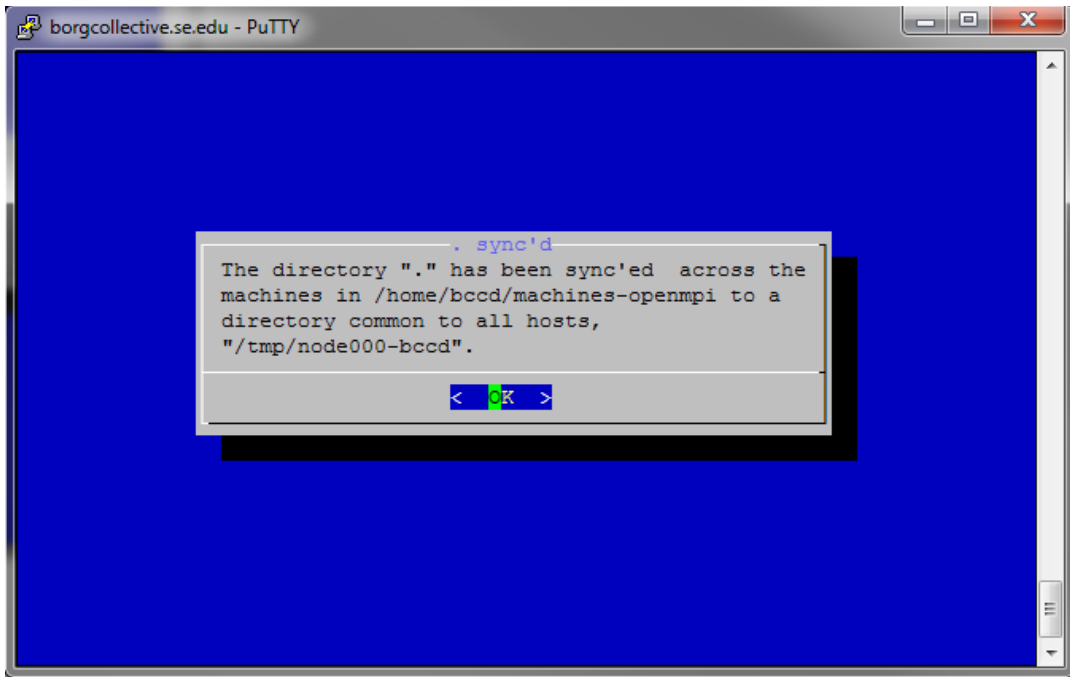
```
borgcollective.se.edu - PuTTY  
bccd@node000:~/GalaxSee$ bccd-syncdir . ~/machines-openmpi
```

4. This is what the syncing process looks like.

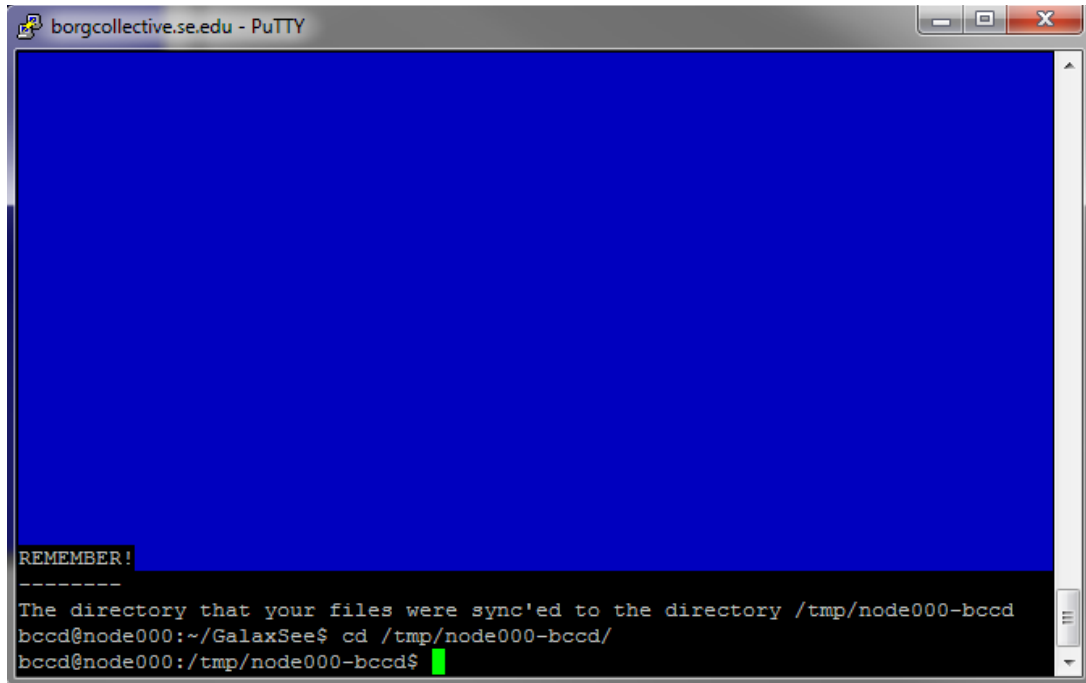


```
borgcollective.se.edu - PuTTY  
Syncing directory . across hosts in  
/  
/ [██████████] 32%
```

5. Once the process is complete a dialogue box will appear, hit enter.



6. Navigate to the directory where the sync'd code resides. Your directory may have a different name than pictured. "cd /tmp/node000-bccd/"



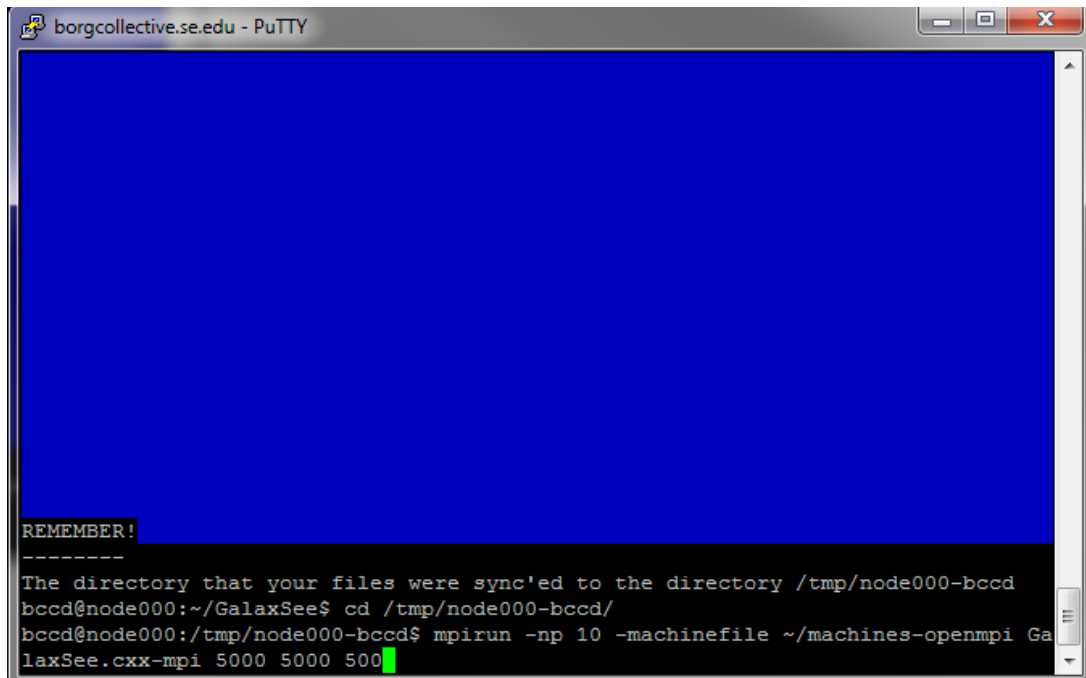
The image shows a PuTTY terminal window titled "borgcollective.se.edu - PuTTY". The terminal background is blue. At the bottom, there is a black banner with white text that reads "REMEMBER!" followed by a dashed line and a reminder: "The directory that your files were sync'ed to the directory /tmp/node000-bccd". Below this, the terminal shows the prompt "bccd@node000:~/GalaxSee\$" and the command "cd /tmp/node000-bccd/" being entered. The prompt then changes to "bccd@node000:/tmp/node000-bccd\$" with a green cursor.

```
REMEMBER!  
-----  
The directory that your files were sync'ed to the directory /tmp/node000-bccd  
bccd@node000:~/GalaxSee$ cd /tmp/node000-bccd/  
bccd@node000:/tmp/node000-bccd$
```

7. Run the code using MPI commands. After `-np` you will need to put the number of nodes that your snarfhost shows. The three numbers at the end specify how many objects, how much solar mass each object has, and the length in Myears. These 3 numbers can be set to whatever you want.

“`mpirun -np 10 -machinefile ~/machines-openmpi GalaxSee.cxx-mpi 5000 5000 500`”

This command assumes we have a 10 node cluster running 5000 objects of 5000 solar mass for 500 Myears.



```
borgcollective.se.edu - PuTTY
REMEMBER!
-----
The directory that your files were sync'ed to the directory /tmp/node000-bccd
bccd@node000:~/GalaxSee$ cd /tmp/node000-bccd/
bccd@node000:/tmp/node000-bccd$ mpirun -np 10 -machinefile ~/machines-openmpi GalaxSee.cxx-mpi 5000 5000 500
```

If you are remotely accessing your master node to send out this command you will not see the visual that displays on the screen. You can check to see if it's running on child nodes with "top". Or wait for the cursor in your command prompt to reappear after the program is successfully run.