

CS 598: Parallel Migratable Objects

Fall 2014

Due Date: September 4th, 10 PM CDT

This MP is an introductory assignment to learn how to build Charm++ and run Charm++ programs. You will also learn how to use the **Projections** performance analysis and visualization tool.

For learning Charm++ programming and concepts, please refer to the [Charm++ Manual](#), the [Charm++ Tutorial](#), and the [Charm++ Webpage](#).

Step 1: To run Charm++ programs, you need to have a Charm++ build installed. On both EWS and Taub (the campus cluster), there are two installations of Charm++ that can be used. The path is the same on both machines.

- /home/acun2/charm/net-linux-x86_64
- /home/acun2/charm/net-linux-x86_64-smp

If you want to build your own installation, follow the build instructions [here](#). For Linux we recommend the following build line:

- `./build charm++ net-linux-x86_64 -j8`

For Mac we recommend the following build line:

- `./build charm++ net-darwin-x86_64 -j8`

You can also run the interactive smartbuild script and pick your build options using `./build`.

For this MP0, you only need to use EWS. Taub has a batch system to submit jobs which you will be required to use later, however for this MP it is optional. For EWS login instructions go to [EWS FAQ page](#). For Taub login instructions go to [Taub User Guide](#).

Step 2: An svn repository for the class has been created [here](#), where you can find the Charm++ code for MP0.

- Checkout the code from the repository by:
`svn co https://subversion.ews.illinois.edu/svn/fa14-cs598lvk/netID`
 where netID is your actual netID
- A directory named mp0 should be created, go into that directory:
`cd netID/mp0`
- You may need to modify the Makefile to point CHARMC at your installation of Charm++. Don't forget to include `/bin/charmc` at the end.
- Analyze the code and run the program with the command `make test`. It should print "Total number of primes within the range [0 - 100000] is 9591." In the program, the Master chore creates k chores. The i'th Worker chore created is responsible for computing the number of primes between $[i*M .. (i+1)*M]$. Each Worker chore returns their count to the Master chore. M and k are command line arguments. You can change these numbers in the `Makefile` and experiment.

To run a program on Taub you need to submit batch scripts. A sample batch script is included in your SVN repositories.

Step 3: After running the program, you will see `Projections` logs created in the same directory. Analyze them using the `Projections` tool, take a snapshot of the timeline of the program, and turn it in. `Projections` can be downloaded from [here](#) and the `Projections` manual can be found [here](#).

Submission: Submission will be done via your SVN repository.

- For each file F you create and want to check in, do:
`svn add F`
- And frequently (after you have modified F and have a newer version) do:
`svn ci F`
- There will be a penalty for late submissions.