- In week 38 we covered "Shared Memory Programming: Threads and OpenMP" and started with "Distributed Memory Machines and Programming" including MPI (Chapters 6 and 7 in the course book).

- In week 39 we will finish the part "Distributed Memory Machines and Programming" (including MPI) and start with Chapter 3 of the course book.

- Note that in week 39 (Friday, 11:00 sharp) the first mandatory assignment is due. **There will be no extension of the deadline.**

- Note also that you are responsible if you use too much computation time on the supercomputer(s), and that you will not get additional computation time, in case you run out of computation hours. Please check the NIM web interface at `http://www.nersc.gov/nusers/accounts/nim/`.

- The final version of the second mandatory programming assignment will be published on Sep. 30th.

- In contrast to the method on Franklin Cluster (or Hopper) (see for example `http://www.nersc.gov/nusers/systems/franklin/running_jobs/`), MPI programs are started with `mpirun` on the IMADA pool. This will also be discussed in the tutorial in week 39. You have to make sure that it is possible to login to all machines you want to use via `ssh` without being asked for your password. This can be accomplished with ssh keys as follows. SSH keys allow authentication between two hosts without the need of a password. SSH key authentication uses two keys a private key and a public key. To generate the keys, from a terminal prompt enter:

```
ssh-keygen -t dsa
```

This will generate keys using a DSA authentication identity of the user. During the process you will be prompted for a password. Do not enter a password. Simply hit Enter when prompted to create the key. By default the public key is saved in the file /.ssh/id_dsa.pub, while /.ssh/id_dsa is the private key. Now append id_dsa.pub to /.ssh/authorized_keys2. (On the IMADA pool all machines use the same file system, therefore this is not a remote operation. If you want to login to another remote machine without being asked for the password, you have to append the key to the corresponding file on the remote machine):

```
cat id_dsa.pub >> .ssh/authorized_keys2
```

Finally, double check the permissions on the authorized_keys2 file, only the authenticated user should have read and write permissions. If the permissions are not correct change them by:

```
chmod 644 .ssh/authorized_keys2
```

You should now be able to SSH to the host without being prompted for a password. Note that you have to login to all machines that you want to use once manually and answer the question

```
Are you sure you want to continue connecting (yes/no)?
```

once.

In the directory /home/daniel/bin on the IMADA pool you will find three small scripts to check the status of the pool machines, and to update a file that can be used as the hostfile of the mpirun command. The name of the files are

```
imada-pinghosts-color,
imada-pinghosts,
imada-pinghost-nicelayout , and
imada-poollist-update.sh.
```