Programming of Supercomputers

Assignment 2
Milestone 2 - Communication Model
14.11.2014

Deadline: `01 December 2014 @ 08:00 CET`

In this milestone you are asked to build up the model to be used for exchanging the computation data between the processes.

1 Send & Receive lists

Every process should have a send and a receive list for each of its neighbouring processes. Send and receive lists hold the indexes of the cells to be exchanged with the corresponding neighbour.

The actual exchange of cells will be implemented in the next milestone, when parallelizing the computation loop. For this milestone, you are asked to only initialize the given data structures with the corresponding indexes. Your code should still execute correctly for all input and distribution strategies, i.e. *allread*, *oneread*, *classic*, and *metis*.

Make sure to not exchange the same cells several times between neighbouring processes.

2 Test and evaluation

2.1 Statistics output

Using the provided interface, output the corresponding size of the send and receive lists along with the ghost cells indexes predefined in the source code. Use the `drall` and `cojack` input files, run your code with 9 processes and choose first the *allread* with *classic* distribution and then the *oneread* with *dual* distribution.

2.2 Visual output

Using ParaView, generate the following images from an execution with 9 processes and corresponding strategies and input files:

- drall.SENDandRECEIVE.rank5.neighbour0.dual.jpg
- pent.SEND.rank3.neighbour1.nodal.jpg

- pent.SEND.rank3.neighbour1.classic.jpg

2.3 Submission

Add to your git repository the appropriate folders for this new milestone:

- folder `A2.2/code/`: *.c, *.h, and Makefile
- folder `A2.2/plots/`: *.jpg
- folder `A2.2/scripts/`: job files, etc.

Note: please, do no commit the input files along with your solution.