TDDC78 Labs

Introduction

August Ernstsson, 2018

Outline

- **Intro**: workflow, demonstrations, reports, resources
- Lesson 1a: distributed memory
  - Labs 1, 3, (5)
- Lesson 1b: shared memory
  - Labs 2, 4

4+1 labs

- Lab 1: **Image filters**, MPI (distributed memory)
- Lab 2: **Image filters**, Pthreads (shared memory)
- Lab 3: **Heat solver**, OpenMP (shared memory)
- Lab 4: **Particle simulation**, MPI (distributed memory)
- Lab 5: **Tools** (only report, do it when you like to!)

Workflow

- Terminal on IDA computers -> log in to Triolith
  - `ssh username@triolith.nsc.liu.se`
- Sometimes possible to develop locally (shared memory)
- Usage of your own computers is possible
  - Log in to Triolith as usual
  - Development may require installing e.g. OpenMPI

Demonstrations

- Show and explain your code to the assistant
    - Illustrations can help explaining!
- Have plots ready from multiple runs to show scaling
- Do at least one test run live and show the output

Reports

- Write a short report (~1 page of **text**) explaining your approach to solving the problem for each lab
    - Lab 1 and 2 can be combined into a single document and share sections
    - Try to follow the PCAM model
    - **An image says more than a thousand words!** Make illustrations that
        - Show your problem decomposition, etc
        - Show performance results
- Send via email to your assistant
  (write LiU IDs and group number in email and document)

Resources

- Lab compendium
- Source files
- NSC + TDDC78 lecture, lesson slides
- NSC website + other online resources (e.g. MPI docs)
- Quick reference sheet (handout)

Suggestions

- Create Makefiles for compiling
- Create scripts for performance measurements
- Establish a good (automated?) plotting workflow
- **Use Git for managing files across IDA and Triolith**
  - IDA Gitlab: https://gitlab.ida.liu.se