Assignment 4, due April 5th 2019

Resources (in GitHub repository):

- `week_03/heat_stencil`
  Includes solution using convenience header `cl_utils.h` – can be used!

Assignment:

- Extend the OpenCL implementation with a computation of the MFLOPs (million floating point operations per second) achieved for the simulation
- Copy the OpenCL implementation and include the use of local memory for caching input data per work group (as discussed in the lecture's Sobel example)
  - Compare the attainable performance for both variants for 3 different problem sizes
  - Explain the performance difference between both variants
- Examine at least three different work group sizes. Which effects can be observed?

Hints:

- For computing the MFLOPs: the number of operations can be computed using N and T
- For using local memory
  - Create a local memory buffer of appropriate size
  - Load input data into the buffer in parallel
  - Do not forget the barrier (local mem fence)
  - Compute the result using local data

Goal:

- Increased efficiency due to the use of local memory; tuning of configuration parameters (work group size)

Solution upload:

- Via e-mail to philipp.gschwandtner@uibk.ac.at – one submission per group only!
  Subject: "`[PS703106] [AS04] GR_## - NAME1, NAME2, NAME3`"
  Solution must be submitted before Friday 09:15!