Assignment 2, due March 22th 2019

Resources (in GitHub repository):

- `week_02/matrix_mul`
  Last week's solution, including a convenience header `cl_utils.h` – can be used!
- `week_03/heat_stencil`
  Sequential implementation of heat diffusion simulation in 2D, to be parallelized

Assignment:

- Parallelize the simulation using OpenMP (see `ASSIGNMENT` markers in `heat_stencil_omp.c`)
- Parallelize the simulation using OpenCL (see `ASSIGNMENT` markers in `heat_stencil_ocl.c`)

Hints:

- OpenMP
  - Consider which of the three nested loops (`t`, `i`, and `k`) can be parallelized safely and use OpenMP to parallelize it/them.
- OpenCL
  - Follow the same approach as in the matrix-multiplication example
  - Transfer as minimal data as possible between host and device
  - Hint: multiple kernel calls required!

Goal:

- Correct implementation (same output as reference), no memory leaks
- Performance and scalability comparison for the sequential, OpenMP and OpenCL implementation for multiple problem sizes (e.g. 100, 500, 1000, …), documented in PDF

Solution upload:

- Via e-mail to philipp.gschwandtner@uibk.ac.at – one submission per group only!
  Subject: "`[PS703106] [AS02] GR_## - NAME1, NAME2, NAME3`"
  Solution must be submitted before Friday 09:15!