

Assignment 1, due March 15th 2019

Resources (in GitHub repository):

- `week_01/vector_add`
OpenMP / OpenCL example from the first course, including a Makefile to compile in RR 15
- `week_02/matrix_mul`
Sequential implementation for matrix multiplication, to be parallelized

Assignment:

- Parallelize the matrix-matrix-multiplication using OpenMP (see ASSIGNMENT markers in `mat_mul_omp.c`)
- Parallelize the matrix-matrix-multiplication using OpenCL (see ASSIGNMENT markers in `mat_mul_ocl.c`)

Hints:

- OpenMP
 - Consider which of the three nested loops (`i`, `j` and `k`) can be safely parallelized and use OpenMP as in the `vector_add` example.
- OpenCL
 - Create memory objects for matrices A, B and C
 - Transfer A and B from host to device
 - Run kernel with A, B, C, and N as parameters (note: 2D kernel!)
 - Compute C from A and B inside kernel
 - Transfer C from device to host
 - Cleanup

Goal:

- Correct implementation (Verification: OK), no memory leaks
- Performance and scalability comparison for the sequential, OpenMP and OpenCL implementation for multiple matrix sizes (e.g. 100, 500, 1000, 2000, ...), documented in PDF

Solution upload:

- Via e-mail to philipp.gschwandtner@uibk.ac.at – one submission per group only!
Subject: “[PS703106] [AS01] GR_## - NAME1, NAME2, NAME3”
Solution must be submitted before Friday 09:15!