MKL-lab2 : FFT with pragma offload and Native Execution

In this example we learn how to offload MKL function calls using offload pragmas.

1. Objectives and learning goals

- To control memory allocation on MIC
- Understand data transferring and data persistence
- Set up the build environment
- Compile the program on the host without modifying the original code
- icc –no-offload –mkl mkl_fft.c –o mkl_fft
- Run the program: ./mkl_fft
- Code to offload, replace the LRZ WORK FOR YOU comments with MKL calls
- Compile the program for offload: icc –mkl mkl_fft.c –o mkl_fft
- Run the program: ./mkl_fft
- Check the performance results

- What about the performance:
- Compile the program for Native execution on KNC:
  - icc –mmic –mkl_fft.c –o mkl_fft.mic
  - add this setting:
    export KMP_AFFINITY=explicit,granularity=fine,proclist=[1-240:1]
    and run again.
  - On KNL use: icc –qopenmp –O3 –xMIC-AVX512 –mkl_fft.c –o mkl_fft.mkl

Try now to understand the performance numbers.