

# OpenMP - CPU Parallel Programming

In this project you will be exposed to the parallel execution. This does not mean only multicore execution but also multithreaded execution. In addition, you learn the problems we must be aware of as well as the limitations of the parallel execution. You will write programs and make comparisons between sequential and parallel processing. Visual studio projects you are given, which contain code that you have to make it run in parallel using C++ and OpenMP. You will add the code, and then change the thread number, the data size and do some memory manipulation to compare the execution timings. There are more details on what you have to do at the beginning of each project's .cpp file

Major topics that are required to analyze in the report are:

1. Parallel computers.
2. Threads vs process.
3. Multithreading vs multicore.
4. Flynn's taxonomy.
5. Moore's, Amdahl's laws and Gustafson's observations.
6. Issues in parallel programming.
7. OpenMP.
8. Parallel designs.
9. Xeon-phi.
10. Examples / Exercises / Results.
11. Anything else you might find interesting.