

### Specific Submission Guidelines:

1. Please submit your assignment as username.zip
2. Root directory should include Prime and Sort two directories. Each directory should include Sequential, GPU, and GPU\_MPI (for extra point only) sub directories. Folder name should be as indicated above.
3. Each sub directory must contain a Makefile and source file.
4. Name of the executable file (after running make command), should be as same as source file (e.g. for sort.cu file, the executable -o file should be named as sort)
5. For each program, when <-t problem size> arguments are passed, it should print out the results and execution time. For example, when running ./sort -t 100, it should print out the sorted result for problem size 100 on standard output along with execution time.
6. Submit your report as username.pdf.
7. In your report, please include execution time for the following cases. (For sorting problem, please set maximum number as equal to  $10 * \text{problem size}$ )

Program	Number of cores and device	Problem size
Sequential	1 node 1 task-per-node 0 GPU	100,000
Sequential	1 node 1 task-per-node 0 GPU	1,000,000
GPU	1 node 1 task-per-node 1 GPU	100,000
GPU	1 node 1 task-per-node 1 GPU	1,000,000
GPU_MPI	1 node 2 task-per-node 2 GPU	100,000
GPU_MPI	2 node 4 task-per-node 2 GPU	100,000
GPU_MPI	2 node 4 task-per-node 2 GPU	1,000,000
MPI	2 node 4 task-per-node 0 GPU	1,000,000
OpenMP	1 node 8 task-per-node 0 GPU	1,000,000

You should also include other experiment cases in your report.

Note: username in this context is your UB username, and the other file names should be followed exactly as stated.