

IHPC 2009 In-Class Exercises #2

Friday, August 7, 2009

1. Strong Scaling of HYDRO

Perform a strong scaling test using the example program HYDRO. An example input file can be found on the website under `ss_hydro.in`.

(a) Run the strong scaling for 1, 2, 4, 8, 16, 32, 64, 128, and 256 processors.

2. Weak Scaling of HYDRO

Perform a strong scaling test using the example program HYDRO. An example input file for `nproc=1` can be found on the website under `ws_hydro.in`.

(a) Run the weak scaling for 1, 2, 4, 8, 16, 32, 64, 128, and 256 processors. Be sure to determine a reasonable way to double the problem size for each case.

(b) For a single doubling, do the results differ if the grid is doubled in the x direction rather than the y direction? Can you think of any reason why this may be?

3. Profiling of HYDRO using CrayPAT on Bigben

For this exercise, step by step instructions are given below.

(a) Log into Bigben

(b) Packages of software on Bigben (and on many supercomputing systems) are managed using modules. Load the CrayPAT module,
`module load xt-craypat`

(c) Erase any previously compiled version of HYDRO
`make clean`

(d) Set the following variables in the Makefile