Homework 1
Benchmark Studying and Tuning

Due: 2/8, 2017

Goal

This assignment helps you get familiar with benchmark, including installation, tuning, and study, etc.

Problem Description

The HPCG (High Performance Conjugate Gradients) Benchmark is a complete, stand-alone code that measures the performance of basic operations in a unified code.

The HPL Benchmark is a high performance linpack, which is used to measure the floating point rate of the computer, and it is part of the competition of SC, too.

Working Items

1. Installation Document

   HPCG

   a. You can download the hpcg code from its official website: *http://www.hpcg-benchmark.org/software/index.html*
   You should install the HPCG 3.0 Reference Code.

   b. After you install successful, please write the **installation scripts** of the HPCG 3.0 Reference Code, and write a readme file to teach others how to use your script.

   (NOTICE: You should make sure that by just using your script and the hpcg code, you can install hpcg successfully.)

   HPL

   a. In your winter program, you have installed the benchmark, and we encourage you to try different configuration (MPI, compiler, BLAS) in order to

get a better performance.

2. Tuning Report

You just need to write the tuning report for **HPL**:

a. **Strong scalability** and **Weak scalability** tests are required.
b. You also need to compare the result of different input argument (you can plot the **relationship between input argument and the performance**).
c. You also need to compare the result of different configuration (MPI, compiler, BLAS…….)
d. You should write down all the information of the **best result** of your HPL tuning(under **4 nodes**):

HPL	
HPL version	
MPI	
Compiler	
N	
NB	
P	
Q	
Result	

e. The report has no space limitation. Please try your best to show everything you've learned from HPL.

Please notice that:

Please package your script and report in a file named HW1.tar.gz which contains:

i、 HW1_install_hpcg.sh (you can also upload the hpcg code)

ii、 HW1_install_hpcg_readme.txt

iii、 HW1_install_hpl.sh

iv、 HW1_hpl_report.pdf (for HPL)

And upload to /home/username/homework/HW1 directory of the cluster (140.114.91.183) before 2/8(Wed) 23:59