SSP Proposal 2001: Benchmarking and development of the Java Grande Benchmark Suite

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Description of the proposed project

EPCC have developed a suite of benchmarks (the Java Grande Benchmark Suite) to measure different execution environments of Java against each other and native code implementations. In addition to the serial benchmark suite, a threaded version and an inter-language version exist. Work is currently underway on an MPI version.

It is essential to the success of the benchmark suite that the suite is used to test the performance of a range of Java execution environments and systems on a regular basis. Hence this project will involve benchmarking the serial, threaded and inter-language comparison benchmarks on a range of systems. Some development work on the benchmark suite may also be required.

10-week workplan

- **week 1** Courses
- **week 2** Literature/web survey on new JDKs + benchmarks
- **weeks 3,4,5** Installing JVMs and running the serial benchmark suite on a range of systems.
- **weeks 6,7** Installing C/Fortran compilers and running the inter-language benchmark suite on a range of systems.
- **weeks 8,9** Running the threaded benchmark suite on a range of HPC systems.
- **weeks 10** Writing up

Skills required of the student

Java experience is required. Some C programming skills would also be advantageous.

Computing resources required

Access to a range of HPC and serial systems including Lomond and various PCs.

EPCC training courses

Whilst none of the training courses are essential to this project I believe the student would benefit from some background knowledge in HPC and in programming tools + techniques. Hence the following courses would be of interest: *Introduction to High Performance Computing* and *Practical Software Development for Computational Scientists and Engineers*.