Priorities for version 1.12

Chapel Team, Cray Inc.

Chapel version 1.11

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Top Priorities for version 1.12

1. **Memory Management Improvements**
   - automatic mgmt, constr/destr/noinit, begin semantics, array refcounts
2. **Strings: record-based, leak-free, rich library support, UTF-8**
3. **Multi-locale performance and scalability**
4. **NUMA/KNL tuning/porting (incl. pointer representation, first touch)**
5. **Chapel for Data Analytics case studies**
6. **Numerical Libraries: BLAS, GSL, more FFTW, LAPACK**
7. **Improve resolution for IPE, optimizations, constrained generics**
8. **Reductions: intents, re-implement op, scalability, partial reductions**
9. **Single-locale performance: vectorization, OpenMP comparisons**
10. **Module namespace improvements (filtering, renaming, bug fixes)**
11. **Interpreter improvements, ideally including parallel execution**
12. **Complete shootout entry**

On Deck

- **Memory consistency model: Definition and implementation**
  - (this effort has already started)
- **Constrained generics/interfaces/concepts**
- **Task teams and collectives on them**
  - Barriers within coforalls (and possibly foralls)
- **Protect users from internal errors**
- **Improved interoperability, especially with MPI**
- **Additional compilation time improvements**
- **Anonymous associative domains**
- **Further investment in LLVM back-end**

Process Improvement Priorities

- **Issue Tracker: make public; tie into testing system**
- **Modernize maintenance of chapel.cray.com**
- **Test System Improvements**
  - YAML-based test configuration files
  - Support for multi-locale testing configurations
    - Including automating scalability runs
- **Documentation Improvements**
  - Documentation of additional library-like language features
  - Increase use of Markdown and reStructuredText in other docs for web

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