Proposed Priorities for Chapel 1.20

Chapel version 1.19
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Top Priorities for Chapel 1.20

• **Language Stability:**
  • **Initializers:** support for partial Instantiation
  • **Nilability:** complete design and implement if accepted
  • **Strings:** complete current plans for UTF-8 and byte strings
  • **List / Set types:** move current functionality out of domain / array types

• **Interoperability:** support for multi-locale libraries

• **Data Ingest & AI:** improved support and study (with CSV focus for ingest)

• **Performance:** studies and improvements, particularly for slices & const domains

• **LLVM back-end:** enable by default

• **Mason:** testing and namespace-related improvements

• **Shasta:** readiness for first systems shipping
Additional Priorities for Chapel 1.20

- User Support

- Language Stabilization:
  - Overload Sets
  - Partial Reductions
  - Static vs. Dynamic type issues
  - Constrained Generics

- **GPU Support:** via interoperability with GPU libraries and/or code generation

- Vectorization

- Interoperability: multidimensional Fortran, NumPy arrays

- Compiler Performance

- Memory Leaks: close remaining cases
Performance-Related Priorities for Chapel 1.20

- Continue with Bale-driven optimizations
  - Enable unordered compiler optimization by default
  - Flesh out unordered operation API
  - Port and tune additional Bale applications
  - Start on aggregation library and performance experiments

- Continue Locality-oriented improvements
  - Optimize slicing
  - Optimize communication for distributed fields in records/classes
  - Improve bulk transfer for distributed arrays

- Tune comm=ofi performance

- Implement a task-resetting policy
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QUESTIONS?

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