Accelerating Axom
Refining the Software Pyramid

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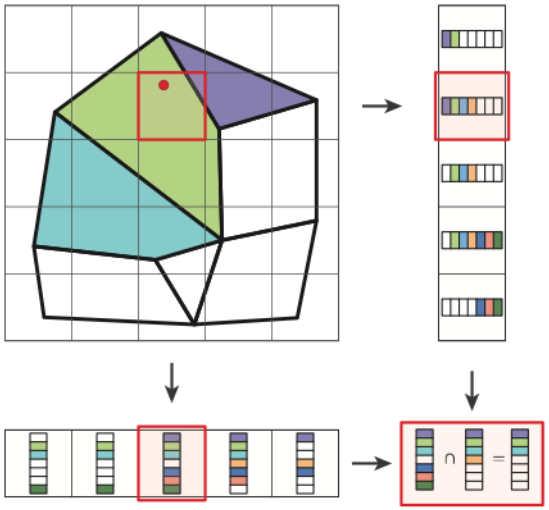
Motivation

Improve efficiency of Axom's ImplicitGrid class via RAJA

- Axom
  - A collection of classes and abstractions which serve as a foundation for physics applications and computational tools
- ImplicitGrid
  - A class for efficient spatial indexing
  - Often used with 1000s of queries at a time
- RAJA
  - A collection of abstractions to enable easier portability of code with regards to accelerators



Process

- Documentation
  - Reading user and developer documentation, both to understand the proper code style, and how to employ existing code
- Code
  - Tracing dependencies, in order to select targets for modification (or, in some cases, stop using a dependency)
  - Determined important loops to target
  - Reviewing compilation error logs, for bug fixing and easier dependency tracing
- Interpersonal
  - Collaboration and communication enabled a better understanding and faster modification of various code

Accomplishments

- Implemented bitwise operators as reduction policies in RAJA
  - Bitwise operators were an unknown foundational component of future work
- Bugfix in ImplicitGrid
  - Constructor referred to uninitialized data
- Task was larger in scope than originally thought, foundation for future work was laid
  - Documented necessary targets for task completion