Mason, Chapel's Package Manager

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For most of Chapel's existence, there has been a high barrier to sharing libraries among users. Users essentially had two options for sharing Chapel code:

1. Host the code online for other users to find, download, and install manually
2. Get the code merged into the Chapel repository.

The latter approach requires the user to sign a contributor license agreement, get the library reviewed in a pull request, and required the library to be broadly useful to the community. Furthermore, once the library was merged, it's availability would be gated by the Chapel compiler release cycle. These hurdles to sharing libraries were not conducive to building a healthy ecosystem of Chapel libraries.

In an effort to tackle this challenge, the Chapel team has developed Mason, a package manager for Chapel. Mason provides a command line interface for managing dependencies and building Chapel projects. Mason acts as a build tool in that it allows users to create, build, and run their Chapel programs. Mason serves as a project dependency manager in that it resolves dependency conflicts, downloads dependencies, and makes them available to the user's Chapel code.

Users specify their dependencies and any other package metadata through a manifest file called `Mason.toml`. When the user executes `mason build`, the package dependency versions are resolved using semantic versioning, and they are pulled from a git repository to be made available to the user Chapel code. Packages are published by hosting them on a public git repository and adding the manifest file to the Mason registry.

This talk will present an overview of Mason's basic usage, the features available in the current release, and features planned for future versions. The overview will show how to use Mason to create, build, and run a Chapel project with dependencies, as well as how to publish a library to the Mason registry, making it accessible to the Chapel community.

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