The Five Ws of
Macaulay2 packages

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Overview

Following the doctrine of five Ws, we examine the What, Who, Where, When, and Why of *Macaulay2* packages.

GOAL: Convince you to write packages.

What is a package?

ANSWER: Easiest/preferred way to add new functions, features, datatypes, et cetera to *Macaulay2*.

The functions `installPackage` and `needsPackage` are the basic ways to use a *Macaulay2* package.

What is a package?

ANSWER: An `*.m2` file with 5 key parts.

1. Preamble
2. Export list(s)
3. Code
4. Documentation
5. Tests

See `FirstPackage`.

Who?

ANSWER: Everyone with enough code (including you).

Where to put your packages?

ANSWER: Your packages need only be on your path.

Start *Macaulay2* in the correct directory or append to your path.

Which version of the package is being installed?

Where to find other packages?

ANSWER: The list of packages distributed with *Macaulay2* accessible via `viewHelp`.

When to create a package?

ANSWER: As soon as you anticipate having some code not currently in a package.

Encourage you to make "packages" your default environment for coding in *Macaulay2*.

Write packages in service of your large research program.

Why is useful for you?

ANSWER: Most convenient way to bundle your *Macaulay2* code.

Packages provide the optimal framework for developing and maintaining your code;

- improved debugging
- accompanying documentation (you will be using your code in 6 months)
- error checking (particularly useful while in development)

Why is useful for your collaborators?

ANSWER: Productive way to share code.

Highlights from my experiences:

- simplicity helps comparative newbies
- documentation makes it possible for teammates to use your code without you (especially the examples)
- straightforward to incorporate other developments and contributions

Why is useful for the community?

ANSWER: Release your code into the world.

Some benefits sharing your code:
- allow others to stand on your shoulders
- find new collaborators and contributors
- make your work discoverable by adding your package to the *Macaulay2* distribution
- forward compatibility (future proof)

Why is useful?

ANSWER: Publish your software.

The *Journal of Software for Algebra and Geometry* is a natural venue. The process will
- improve your package
- increase the visibility of your work
- allow you to receive appropriate credit (including citations)

How to create a stylish package?

See Style Guide
```
https://github.com/Macaulay2/M2/
  wiki/Package-Writing-Style-Guide
```