



Installing and using Macaulay2

Douglas A. Torrance

April 16, 2023

MAAG, Georgia Tech

Piedmont University

Questions

- How do I install Macaulay2?
- How do I use Macaulay2?

Web interface maintained by Paul Zinn-Justin. No installation required!

<https://www.unimelb-macaulay2.cloud.edu.au/>

Homebrew

- Maintained by Mahrud Sayrafi
- Also works in Linux.
- Install Homebrew from <https://brew.sh/>.
- Run the following:

```
brew tap Macaulay2/tap  
brew install M2
```

Apple Disk Image

- Maintained by Dan Grayson
- <https://faculty.math.illinois.edu/Macaulay2/Downloads/MacOSX/>

Windows Subsystem for Linux

- Run the following:

```
wsl --install
```

- <https://learn.microsoft.com/en-us/windows/wsl/>

Debian-based Linux distributions

- Debian
- Ubuntu
- Linux Mint
- Raspberry Pi OS

Official repositories

- Maintained by Doug Torrance
- Slightly older versions of Macaulay2
 - Debian 11 (Bullseye): 1.17.1
 - Ubuntu 22.04 (Jammy Jellyfish): 1.19.1
- Run the following:

```
sudo apt install macaulay2
```

Debian-based Linux distributions (cont.)

Personal Package Archive

- Maintained by Doug Torrance
- Latest version of Macaulay2
- Run the following:

```
sudo add-apt-repository ppa:macaulay2/macaulay2  
sudo apt install macaulay2
```

- Like to live dangerously? Check out the latest changes on the development branch:

```
sudo add-apt-repository ppa:profzoom/macaulay2  
sudo apt install macaulay2
```

- Debian PPA: <https://people.debian.org/~dtorrance/>

Repositories on Macaulay2 webpage

- Maintained by Dan Grayson
- <https://faculty.math.illinois.edu/Macaulay2/Downloads/GNU-Linux/Debian/>
- <https://faculty.math.illinois.edu/Macaulay2/Downloads/GNU-Linux/Ubuntu/>

Official repositories

- Maintained by Jerry James
- Run the following:

```
sudo dnf install Macaulay2
```

Arch User Repository

- Maintained by Connor Behan
- <https://aur.archlinux.org/packages/macaulay2>

We've installed Macaulay2. Now how do we *use* it?

For a quick computation, just run M2 in the terminal.

<https://www.gnu.org/software/emacs/>

M2-emacs

- <https://github.com/Macaulay2/M2-emacs>
- Recommended interface
- Distributed with Macaulay2
 - *Debian/Ubuntu*: Install `elpa-macaulay2` package
 - *Others*: Run `setupEmacs()` inside Macaulay2
- Two major modes:
 - M2-mode: source code
 - M2-comint-mode: Macaulay2 process (M-x M2)
 - F11 sends code to process

`https://jupyter.org/`

Macaulay2 Jupyter Kernel

- Maintained by Radoslav Raynov
- `https://github.com/rz839/Macaulay2-Jupyter-Kernel`
- *Debian/Ubuntu*: `sudo apt install macaulay2-jupyter-kernel`
- *Other*: `pip install macaulay2-jupyter-kernel`

`https://code.visualstudio.com/`

Macaulay2 extension

- Maintained by Corey Harris
- `https://github.com/coreysharris/vscode-macaulay2`
- `ext install coreysharris.macaulay2`

Thank you!

<https://webwork.piedmont.edu/~dtorrance/research>

