

Help Topic: Installing and Using the Homebrew Package Manager

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Installing and Using the Homebrew Package Manager

We will use Homebrew to install open source software packages as needed for the class. Initially this is required to reach the goal of building the MOOS-IvP course software. If you already have MacPorts installed (an alternative, older package manager), you can safely skip installing Homebrew as long as you are able to get the needed packages described below.

This document describes how to obtain Homebrew and install needed packages for building MOOS-IvP. If you're using a course-provided computer, Homebrew and most of the common packages are already installed. This topic is for someone using their own Mac for the class who may not have installed a package manager yet.

*Note: If you have a course-provided computer, with Homebrew already installed, you still need to augment your shell path as described in the Section "Add Homebrew to Your Shell Path".

From the <https://brew.sh> page: Homebrew is the easiest and most flexible way to install the UNIX tools Apple didn't include with MacOS. It can also install software not packaged for your Linux distribution to your home directory without requiring sudo.

Note: You need to have installed XCode before Homebrew may be installed. If you have not installed XCode yet, or if you are not sure, return to the XCode topic and do so.

Getting the Homebrew base

Homebrew is a package manager that allows you to easily download software packages needed in our labs. But the package manager itself, the Homebrew base, first needs to be downloaded and installed in the steps described here.

(In most Linux distributions, the analogous package manager (apt-get) is present with the out-of-the-box Linux installation. Perhaps because many Mac users are not developers, the steps of installing XCode and a package manager are left as options for developers.)

Here's how to get Homebrew:

- Point your web browser to: <https://brew.sh>. At the very top of the page you will see "Installing Homebrew":

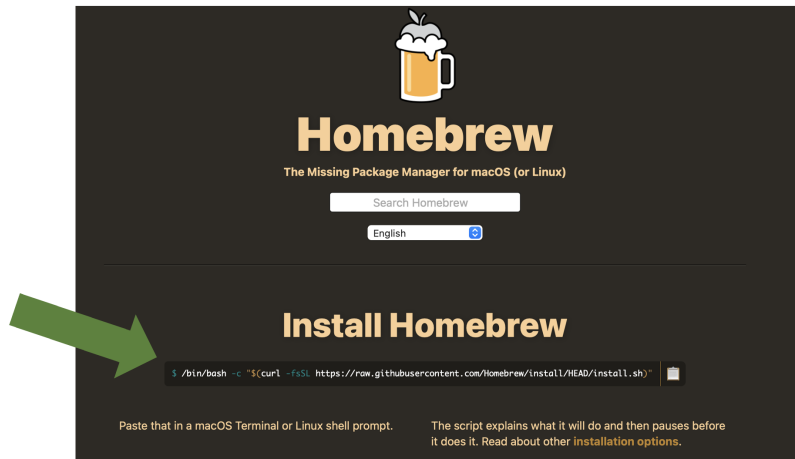


Figure 1: The Homebrew main page has instructions for obtaining Homebrew by cut-and-pasting the text in this window into your MacOS Terminal window.

- Follow the instructions to cut and paste the text into your terminal window and hit enter.
- Confirm that installation succeeded by checking that the `brew` command exists in the folder `/opt/homebrew/bin`, or in the folder `/usr/local/bin`, or in the folder `/usr/local/Homebrew/bin`. If not, see a TA.

Related Mac Note:

- Around 2022 Apple started selling MacBook laptops with their own M1 (and now M2 and M3) chips, instead of the Intel chips they had always used. For some reason, on the older Intel computers, homebrew would install all of its binaries in `/usr/local/bin`. And on the newer Apple M1 and M2 chip machines, homebrew would install binaries in `/opt/homebrew/bin`. You will need to know which case is you since this bin path will need to be added to your shell path in the steps described below.
- If you're not sure what type of processor you have, you can go to the Apple pull-down menu (upper left corner of your screen), select "About this Mac", which should be the very first option. The very first line should describe the Processor. Check if it says Intel or M1 (or M2).
- **2026 Note:** In the cases of Intel machines, sometimes Homebrew binaries installed in `/usr/local/Homebrew/bin`. If you're an Intel Mac user and have installed Homebrew, check in this location if you don't find binaries in `/usr/local/bin`.

Before you do anything else, let's install the `wget` command. It will come in handy very soon. Since the `brew` command is not yet in our shell path, we'll invoke it with its full path name:

```
$ /opt/homebrew/bin/brew install wget
```

Add Homebrew to Your Shell Path

Homebrew packages are installed in `/opt/homebrew/bin`, (or `/usr/local/bin` per the above note on this issue). The `brew` command line tool should be installed in this bin directory, and you add it to

your shell path. If you're not sure how to augment your shell path, see the help topic for augmenting your shell path.:

2026 Note: If you are an Intel Mac user, also check in `/usr/local/Homebrew/bin`.

Download Packages Needed for our Labs

Once Homebrew is installed, we need to use the Homebrew package manager to download and install common open source software packages used in this course. This part is relatively easy and is all done from the command line in a terminal window. Again make sure the `brew` command is in your shell path and then:

```
$ brew install cmake
$ brew install subversion
$ brew install wget
$ brew install libtiff
$ brew install fltk
```

Or simply:

```
$ brew install cmake subversion wget libtiff fltk
```

- Note: Not all of the above packages result in an executable, i.e., *program*, installed on your machine. Some do, like `cmake`, `wget`, and `svn` from the subversion package. The others install libraries that other programs need later in the course.
- Hint: The `brew install` command accepts a *list* of packages on the command line like the last entry above. This obviates the need for re-typing your password each time.
- Hint: The `brew list` command, with no arguments, returns a list of already installed packages. You may notice a number of packages installed that you didn't request. The Homebrew package manager will also download dependency packages as-needed, to build the ones you did explicitly request.
- Hint: The `brew leaves` command, with no arguments, returns a list of installed packages that have been explicitly requested, as opposed to those that were installed because they were a dependency of a requested package.