

MAE 253 - Experimental Aerodynamics 1
Lab 3/4/5 - Airfoil Aerodynamics
XFoil Installation Instructions

Windows:

- Go to <https://web.mit.edu/drela/Public/web/xfoil/>
- Scroll down to the Software section and find the link to XFOIL6.99.zip -- Xfoil 6.99 for Windows.
- Download the file and extract it to a location of your choice. Preferably somewhere that does not require administrator privileges, e.g. C:\Users\{you}\Documents\XFOIL6.99
- Open the directory, and make sure there are three executables in it: pplot.exe, pxplot.exe, and xfoil.exe.
- Next, we need to add this directory to the Windows path so that we can run xfoil from the command prompt. Instructions: <https://www.computerhope.com/issues/ch000549.htm>

You should now be able to open a command prompt window and run xfoil like so:

```
xfoil
```

Linux:

- Ubuntu / RHEL package managers have xfoil available. Do apt-get install xfoil or yum install xfoil depending on your distro.
- Other distros also probably have an xfoil package. Check if yours does.
- Xfoil and its accompanying programs pplot and pxplot will now be installed on your computer. You should be able to start xfoil from the terminal with

```
xfoil
```

- If the package manager for your distro doesn't provide xfoil, you're going to have to compile xfoil from source. Instructions here: <https://giuseppeschettini.wordpress.com/2008/11/27/how-to-compile-xfoil-697-in-linux/>

Mac OSX:

- Install XQuartz <https://www.xquartz.org/>
XQuartz is a window system that xfoil uses to open new windows.
- Install Command Line Tools for XCode <https://developer.apple.com/download/more/>
You need command line tools to install the compilers we'll use later.
- Install Homebrew <https://brew.sh/>
Homebrew is a package manager for Mac that we'll use to install the gcc and gfortran libraries that xfoil needs.
- Open a terminal window and install gcc and gfortran libraries with

```
brew install gcc  
brew install gfortran
```
- Extract the Xfoil_macOSX.zip file provided with the instructions to a directory that is **not in Downloads**, to avoid accidentally deleting xfoil if/when you clear your Downloads directory. For example, I extracted it to ~/Xfoil. “~” is a synonym for your home directory, and on Macs, your

home directory is /Users/{your_username}. Remember that OSX is a UNIX-based system, so file names are case sensitive. (“Xfoil” ≠ “xfoil”)

- Go into the directory you just extracted the zip file to. Look at the directory contents with

```
cd ~/Xfoil
ls
```

You should see the following files:

```
[Hal9000:Xfoil phosang$ ls
README                osrc                sessions.txt        xfoil_doc.txt
bin                   plotlib            src
orrs                  runs               version_notes.txt
```

If you see only a folder called Xfoil, navigate inside that directory and check its contents.

- Navigate to the bin directory, and check its contents. Among a bunch of other files, there will be three executables called xfoil, pplot, and pplot
- Run xfoil with

```
./xfoil
```

- If you see this screen, quit and move to the next step.

```
=====
XFOIL Version 6.99
Copyright (C) 2000  Mark Drela, Harold Youngren

This software comes with ABSOLUTELY NO WARRANTY,
subject to the GNU General Public License.

Caveat computer
=====

File xfoil.def not found

QUIT  Exit program
```

If you see an error saying a library was not loaded, go to the section titled “[Locating and copying libraries](#)”

```
[Hal9000:bin phosang$ xfoil
dyld: Library not loaded: /usr/local/lib/libgfortran.3.dylib
  Referenced from: /Users/phosang/Xfoil/bin/xfoil
  Reason: image not found
Abort trap: 6
```

- Find out what directory the xfoil executable is in

```
pwd
```

Copy the output of this command.

- Now let’s add the bin directory to path so that you can open xfoil from anywhere on your computer..
 - Open the file ~/.bash_profile in your favorite text editor. For example, from terminal, do:

```
nano ~/.bash_profile
```

- At the end of the file, add the following:

```
export PATH="{path_to_xfoil_bin}:$PATH"
```

Replace `{path_to_xfoil_bin}` with the output of the `pwd` command you copied earlier.

- Save the file, exit the text editor, close the terminal (In nano, control+O will save the file, control+X will exit).
- Open another terminal. Now try running xfoil with

```
xfoil
```

Xfoil should start even if you aren't in the xfoil bin directory

- If that doesn't work for you, you're going to have to compile xfoil from the source code. Instructions here: <https://solarianprogrammer.com/2014/01/23/xfoil-mac-os-x/>

Locating and copying libraries:

Xfoil looks for a few gfortran dynamic libraries in the location they were on my computer when I compiled from the source code. Homebrew should have installed these libraries in the correct place, but just in case they weren't, you will need to put them there.

The first library we need is called `libgfortran.3.dylib`

- Find where homebrew installed the library with:

```
gfortran --print-file-name libgfortran.3.dylib
```

- Since you installed gfortran using homebrew, the located path should begin with `/usr/local/Cellar/...` Copy the file to `/usr/local/lib`.

```
cp {located_path} /usr/local/lib/
```

Repeat steps above for the library `libquadmath.0.dylib`