Resolving the Combability Problem between M-chip Mac and R packages

In this tutorial, we are going to talk about 2 different scenarios that might happen in reality

* You are installing R with a brand-new MacBook
* You are changing your default complier in R midway because you are running into issues

Senario 1: If you are setting up your Macbook for the very first time

1. In your terminal, install xcode:

xcode-select --install or sudo xcode-select --install

1. Install homebrew if you don’t have homebrew following this website <https://docs.brew.sh/Installation>

(To check if you have homebrew simply check the output of: brew help or which brew)

1. After that you need to use homebrew to install c++ compiler:

brew install gcc (This can take a while)

1. Go to your /opt/homebrew/bin/ to see if you have your gcc installed correctly and find its path
2. Also, look for your gfortran (included in your gcc installation) path:

which gfortran

Copy these 2 path and we are going to need it in the next step

1. Install R: <https://posit.co/download/rstudio-desktop/> make sure you selected the m-chip version
2. When you successfully installed R, to your ~/.R/Makvars file using vim or nano or whatever editor you prefer (Create this file if it does not exist):

CC = /opt/homebrew/bin/your\_gcc\_version

CXX = /opt/homebrew/bin/your\_gcc\_version

CXX11 = /opt/homebrew/bin/your\_gcc\_version

CXX14 = /opt/homebrew/bin/your\_gcc\_version

CXX17 = /opt/homebrew/bin/your\_gcc\_version

CXX20 = /opt/homebrew/bin/your\_gcc\_version

FC = /opt/homebrew/bin/gfortran

F77 = /opt/homebrew/bin/gfortran

FLIBS = -L/opt/homebrew/lib/gcc/version\_number -lgfortran -lquadmath -lm

1. After you finish all the steps above, you may now begin installing all the R packages you like but make sure the messages show the correct compiler of c++ not xclang

You might want to install the Rcpp package first in your R console:

install.packages("Rcpp", type = "source")

to make sure you can integrate R and c++ packages seamlessly

And if you want to test whether you fixed your compilation issue by installing a package, you must make sure that you have the correct compiler. If any one of them went wrong, you need to delete the R package and reinstall it again with the correct compiler (VERY IMPORTANT). Having different compiled packages can kill your IDE without giving you any warnings.

Senario 2: If you are changing the compiler after using R for a while

The very first step you need to do is to delete all the packages in R. The best way to avoid any mistakes is to delete your R completely and reinstall it.

1. Install homebrew <https://docs.brew.sh/Installation> if you need to
2. Run:

xcode-select --install

brew cleanup

brew update

brew upgrade

brew reinstall gcc

And follow the section above starting from step 4