Intro to R

Introduction to R

R and RStudio

R refers to a software environment that comes with a GUI (Graphical User Interface). R GUI looks more similar to the old DOS console or the terminal. RStudio is an IDE (Integrated Development Environment) that makes R easier to use and is more similar to other software. It includes a code editor, debugging and visualization tools. Believe me, you want RStudio in order to have a nice R experience.

Please make sure that you have the latest version of R (R 3.6.1 or above) and RStudio (RStudio 1.2.5) installed on your computers (see instructions below).

Extra package info

Tidyverse

The Tidyverse provides a set of packages that augment R capabilities and share an underlying design, philosophy, grammar, and data structures. Basically it's a different way to work within R that more and more people are using. Most people find that is more intuitive than base R and the code is often easier to read for others, as well as yourself when you come back to old code.

We only have limited time and will not have time to really introduce Tidyverse but you can continue exploring it on your own. We highly recommend this free book written by the Hadley Wickham, one of the creators of Tidyverse. It gives a general good introduction for beginners but also veterans who want to learn the tidy way.

Swirl

Swirl is very useful package for learning R on your own. Swirl is an interactive package with different courses to teach you R programming in R. We won't have time to work through the lessons in class, but you can easily use it on your own Note: swirl mainly uses base R and not tidyverse

See you soon!

Mac Users

To Install R

1. Open an internet browser and go to https://www.r-project.org
2. Click the "download R" link in the middle of the page under "Getting Started."
3. Select a CRAN location (a mirror site, eg Sweden or Denmark) and click the corresponding link.
4. Click on the "Download R for (Mac) OS X" link at the top of the page.
5. Click on the file containing the latest version of R "R-3.6.1.pkg"
6. Save the .pkg file, double-click it to open, and follow the installation instructions.
7. Now that R is installed, you need to download and install RStudio.

To Install RStudio

1. Go to https://www.rstudio.com and click on the "Download RStudio" button.
2. Under the free version of Rstudio Desktop click "Download"
3. Click on the version recommended for your system, "RStudio 1.2.5019 - macOS 10.12+ (64-bit)". Save the .dmg file on your computer, double-click it to open, and then drag and drop it to your applications folder.

To Install Packages

1. Open RStudio
2. Inside the Console type one line at a time to install each package

```
install.packages("swirl")
install.packages("ape")
install.packages("phangorn")
install.packages("seqinr")
install.packages("BiocManager")
BiocManager::install("msa")
install.packages("tidyverse")
install.packages("grDevices")
install.packages("maps")
```

To Test Installation

Test to load the packages to make sure the installation worked

```
library(swirl)
library(msa)
library(ape)
library(phangorn)
library(seqinr)
library(tidyverse)
library(grDevices)
library(maps)
```

Windows Users

To Install R:

1. Open an internet browser and go to https://www.r-project.org
2. Click the "download R link in the middle of the page under"Getting Started."
3. Select a CRAN location (a mirror site, eg Sweden or Denmark) and click the corresponding link.
4. Click on the "Download R for Windows" link at the top of the page.
5. Click on the "install R for the first time" link at the top of the page.
6. Click "Download R 3.6.1 for Windows" and save the executable file somewhere on your computer. Run the .exe file by double clicking it and follow the installation instructions.
7. Now that R is installed, you need to download and install RStudio.

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1. Go to https://https://www.rstudio.com and click on the "Download RStudio" button.
2. Under the free version of Rstudio Desktop click "Download"
3. Click on the version recommended for your system, "RStudio 1.2.5019 - macOS 10.12+ (64-bit)", and save the executable file. Run the .exe file by double clicking on it and follow the installation instructions.

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Linux Users

(Ubuntu 19.04/18.04/16.04 / Debian / Linux Mint distribution)

Update system:

```
sudo apt update
sudo apt upgrade
```

To Install R:

```
sudo apt install r-base
```

To Install RStudio

1. Go to www.rstudio.com and click on the "Download RStudio" button.
2. Under the free version of Rstudio Desktop click "Download"
3. Click on the version recommended for your system, and save the .deb package.

Run the following two lines after adding the path to your downloaded file.

```
sudo apt-get install gdebi
sudo gdebi path_to_file/file_name.deb
```

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