

# Getting Started with R

Tony Yao-Jen Kuo

## Getting Started

# The characteristics of R

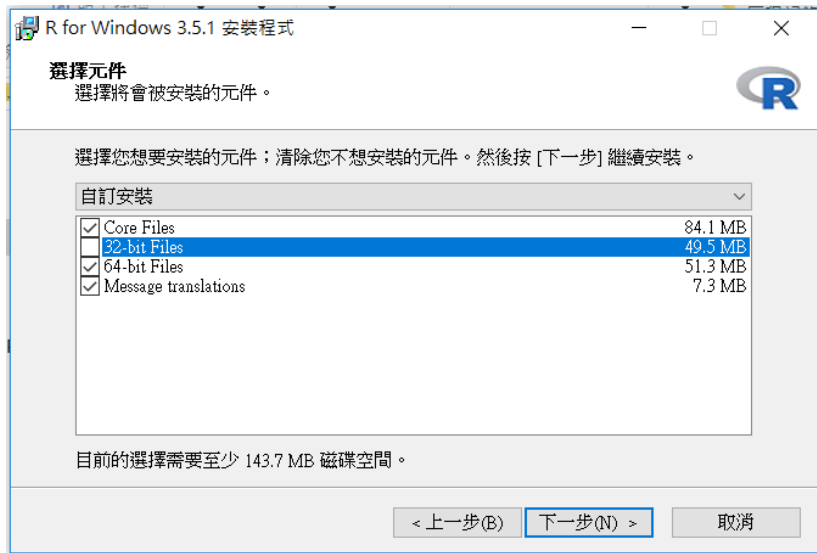
- ▶ Comparing to Matlab, SAS, SPSS: Free
- ▶ Comparing to Julia: Larger community
- ▶ Functional Programming

## R in one sentence

*Applying functions to objects.*

## R: core of computation

- ▶ Download from <https://cran.r-project.org/>



# RStudio: the IDE

- ▶ Download from  
<https://www.rstudio.com/products/rstudio/download>

## Interface of RStudio

## Four blocks

- ▶ Script
- ▶ Console
- ▶ Environment
- ▶ Multi-functional



## Console tricks

- ▶ Using `Ctrl + L` for clearing
- ▶ Using Up and Down arrow checking executed scripts

# Keyboard shortcuts

- ▶ Using `Alt + Shift + K` for shortcuts

## Quickstart

## Using `<-` for assignment

- ▶ `=` is OKAY, but `<-` is more common
- ▶ Using `Alt + -` to get `<-`

## Using # for comments

```
# Declaring objects
```

```
# Declaring function
```

## Assignment in action

```
# Declaring objects
my_favorite_star <- "Tom Cruise"
my_lucky_number <- 24
r_is_easy <- TRUE

# Declaring function
say_hello <- function(){
  return("Hello R!")
}
```

## Printing objects or calling function

```
# Printing objects
```

```
my_favorite_star
```

```
my_lucky_number
```

```
r_is_easy
```

```
# Calling function
```

```
say_hello()
```

```
## [1] "Tom Cruise"
```

```
## [1] 24
```

```
## [1] TRUE
```

```
## [1] "Hello R!"
```

## Using `rm()` to remove objects

```
rm(r_is_easy)
r_is_easy # Error
```



## Why is R Console showing +?

- ▶ The reason is that R is still expecting inputs from us

```
my_favorite_player <- "Steve Nash
```

```
say_hello <- function(){  
  return("Hello R!")  
}
```

```
help(print
```

## 2 ways to solve it

1. Complete your inputs
2. ESC

## Install packages

- ▶ `install.pacakges()`
- ▶ Do it once

## Library packages

- ▶ `library()`
- ▶ Do it every time

Useful functions

## Function to query functions or data

```
help(print) # ?print  
help(cars) # ?cars
```

## Function to show relative information

```
sessionInfo()
```

```
## R version 3.4.4 (2018-03-15)
## Platform: x86_64-apple-darwin15.6.0 (64-bit)
## Running under: macOS High Sierra 10.13.6
##
## Matrix products: default
## BLAS: /Library/Frameworks/R.framework/Versions/3.4/Resources/lib/libBLAS.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/3.4/Resources/lib/libLAPACK.dylib
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats      graphics  grDevices  utils      datasets  methods  base
##
## loaded via a namespace (and not attached):
## [1] compiler 3.4.4  backports 1.1.2  magrittr 1.5      rprojro
```

## Function to get locale

```
Sys.getlocale()
```

```
## [1] "en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/e"
```



## Function to get current working directory

```
getwd()
```

```
## [1] "/Users/kuoyaojen/r_programming"
```

## Function to set working directory

- ▶ Always use forward slash when declaring path
- ▶ Back slash has other functionalities, such as escape, Unicode. . .
- ▶ Try not to use non-English username

```
setwd("/Users/USERNAME/Desktop") # MacOS desktop  
setwd("C:/Users/USERNAME/Desktop") # Windows desktop
```

## Function to quit RStudio

- ▶ Not saving workspace image is recommended

```
q()
```

# Common learning path for programming

- ▶ Installation of compiler or interpreter
- ▶ Choosing a friendly IDE
- ▶ Quickstart
- ▶ Variable type
- ▶ Control flow
- ▶ Data structure
- ▶ Iteration
- ▶ Function
- ▶ (Optional) Class
- ▶ (Optional) Package