

R 語言基礎

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開始上課前，請先完成這些事！

- 安裝好最新版的 R
- 安裝好最新版的 RStudio
- 下載本次上課的程式碼 (<https://github.com/dlab-berkeley/R-Fundamentals>)



RStudio 環境介紹

Write Code

Navigate tabs
Open in new window
Save
Find and replace
Compile as notebook
Run selected code

R Support

Import data with wizard
History of past commands to run/copy
Display .RPres slideshows
File > New File > R Presentation

The screenshot shows the RStudio IDE interface with several components labeled:

- Source Editor:** Contains R code with annotations for "Cursors of shared users", "Re-run previous code", "Source with or without Echo", "Show file outline", "Multiple cursors/column selection with Alt + mouse drag", "Code diagnostics that appear in the margin. Hover over diagnostic symbols for details.", "Syntax highlighting based on your file's extension", "Tab completion to finish function names, file paths, arguments, and more.", "Multi-language code snippets to quickly use common blocks of code.", "Jump to function in file", and "Change file type".
- Environment Pane:** Shows the "Global Environment" with a list of objects. Annotations include "Load workspace", "Save workspace", "Delete all saved objects", "Search inside environment", "Choose environment to display from list of parent environments", and "Display objects as list or grid".
- Data Viewer:** Displays the "iris" dataset with 150 observations and 5 variables. Annotations include "Displays saved objects by type with short description", "View in data viewer", and "View function source code".
- Files Pane:** Shows the file browser for the working directory. Annotations include "Create folder", "Upload file", "Delete file", "Rename file", "Copy...", "Move...", "Export...", "Set As Working Directory", "Go To Working Directory", "Change directory", and "Path to displayed directory".
- Console:** Shows the command history. Annotations include "Working Directory", "Maximize, minimize panes", "Press ↑ to see command history", and "Drag pane boundaries".

<https://github.com/rstudio/cheatsheets/raw/master/rstudio-ide.pdf>

R 檔案格式

- .R == R script
- .Rmd == R Markdown (標記式語言)
- .Rproj == R project



Package 裡面有什麼？

- 函式 (function)
- 說明文件 (documentation)
- 資料集 (data) *



本次課程重點

- Object definition (three piece recipe): `X <- 5`
- Data types: numeric, integer, character, logical, factor
- Data structures: vector, matrix, list, data frame
- Pseudo-random generation: `set.seed`, `seq`, `:`, `runif`, `rnorm`, `sample`
- Save and practice: `write.csv()` and `swirl()`

命名原則

- 常見命名法：

- snake_case （蛇式）
- camelCase （駝峰式）

- 命名規則：

- 首字不為數字、標點符號；
- 非為內建function的名稱。



There are only two hard things in
Computer Science: cache
invalidation and naming things.



— PHIL KARLTON

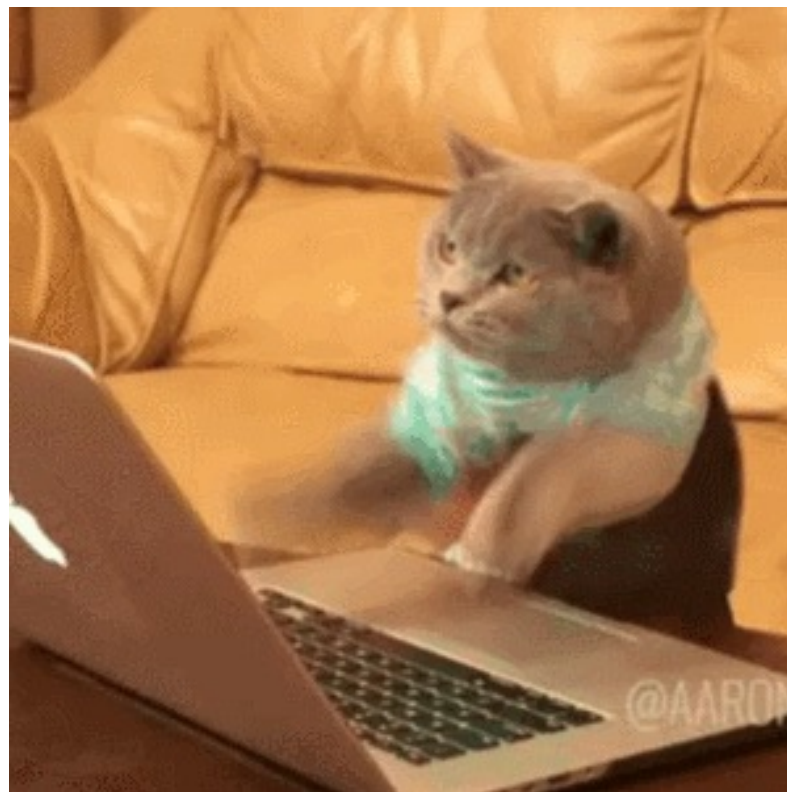
資料類型

- 數值 (numeric)
- 字串 (character, string)
- 邏輯判斷 (logical)

儲存格式

	Homogeneous	Heterogeneous
1d	Atomic vector	List
2d	Matrix	Data frame
nd	Array	

開始 coding !



下次上課前，請完成這些事！

- 註冊 Piazza 帳號。
- 複習本週上課的code，如果有問題請上 Piazza 發問。

