**使用 apply 函數家族**

# apply 函數家族的成員

* apply()
* lapply()
* sapply()
* tapply()

**lapply()**

* l as in list，輸出 list 的意思
* 輸入：dataframe 或 list
* FUN：所使用的函數

**my\_list <- list(1:10, 1:100)**

**lapply(my\_list, FUN = mean)**

**unlist(lapply(my\_list, FUN = mean))**

***#result <- rep(NA, times = 2)***

***#for (i in 1:length(my\_list)) {***

***# result[i] <- mean(my\_list[[i]])***

***#}***

***#result***

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\* [Contents](javascript:w3c_slidy.toggle_table_of_contents())

**lapply()**

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***#}***

***#result***

> lapply(cars, FUN = sum)

$speed

[1] 770

$dist

[1] 2149

> lapply(cars, FUN = sum)$speed

[1] 770

> lapply(cars, FUN = sum)$dist

[1] 2149

**tapply()**

* 輸入：vector
* INDEX：分組的類別變數
* FUN：所使用的函數

**tapply(iris$Sepal.Length, INDEX = iris$Species, FUN = mean)**

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\* [Contents](javascript:w3c_slidy.toggle_table_of_contents())

> sapply(cars, FUN = sum)

speed dist

770 2149

> sapply(cars, FUN = sum)['speed']

speed

770

同

> unlist(lapply(cars, FUN = sum))

speed dist

770 2149

**tapply()**

* 輸入：vector
* INDEX：分組的類別變數
* FUN：所使用的函數

**tapply(iris$Sepal.Length, INDEX = iris$Species, FUN = mean)**

# 自訂函數

# circle\_calculator

circle.calculate <- function(radius, area\_cal=TRUE) {

circle\_area <- pi \* radius^2

circle\_circum <- 2 \* pi \* radius

if (area\_cal == TRUE) {

return(circle\_area)

} else {

return(circle\_circum)

}

}

# 呼叫 circle.calculate 函數

circle.calculate(3) # 預設計算圓面積

circle.calculate(area\_cal = FALSE, radius = 3) # 計算圓周

> # circle\_calculator

> circle.calculate <- function(radius, area\_cal=TRUE) {

+ circle\_area <- pi \* radius^2

+ circle\_circum <- 2 \* pi \* radius

+ if (area\_cal == TRUE) {

+ return(circle\_area)

+ } else {

+ return(circle\_circum)

+ }

+ }

> # 呼叫 circle.calculate 函數

> circle.calculate(3) # 預設計算圓面積

[1] 28.27433

> circle.calculate(area\_cal = FALSE, radius = 3) # 計算圓周

[1] 18.84956