LOOP: PLOT

par(mfrow = c(2, 2))

boxplot(iris$Sepal.Length ~ iris$Species, main = "Sepal length by species")

boxplot(iris$Sepal.Width ~ iris$Species, main = "Sepal width by species")

boxplot(iris$Petal.Length ~ iris$Species, main = "Petal length by species")

boxplot(iris$Petal.Width ~ iris$Species, main = "Petal width by species")

改為用loop:

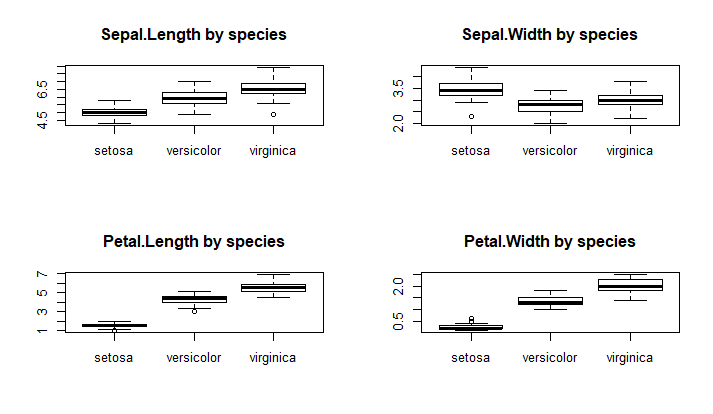
par(mfrow = c(2, 2))

names\_iris <- names(iris)

for (idx in 1:4){

boxplot(iris[, names\_iris[idx]] ~ iris[, names\_iris[5]], main = paste(names\_iris[idx], "by species"))

}



My Own:

印poker:

outer\_vector = c("黑桃", "梅花", "方塊", "愛心")

inner\_vector = c(1:13)

for (outer\_i in outer\_vector) {

for (inner\_i in inner\_vector) {

print(paste(outer\_i, as.character(inner\_i)))

}

}[1] "黑桃 1"

[1] "黑桃 2"

[1] "黑桃 3"

[1] "黑桃 4"

[1] "黑桃 5"

[1] "黑桃 6"

[1] "黑桃 7"

[1] "黑桃 8"

[1] "黑桃 9"

[1] "黑桃 10"

[1] "黑桃 11"

[1] "黑桃 12"

[1] "黑桃 13"

[1] "梅花 1"

[1] "梅花 2"

[1] "梅花 3"

[1] "梅花 4"

[1] "梅花 5"

[1] "梅花 6"

[1] "梅花 7"

[1] "梅花 8"

[1] "梅花 9"

[1] "梅花 10"

[1] "梅花 11"

[1] "梅花 12"

[1] "梅花 13"

[1] "方塊 1"

[1] "方塊 2"

[1] "方塊 3"

[1] "方塊 4"

[1] "方塊 5"

[1] "方塊 6"

[1] "方塊 7"

[1] "方塊 8"

[1] "方塊 9"

[1] "方塊 10"

[1] "方塊 11"

[1] "方塊 12"

[1] "方塊 13"

[1] "愛心 1"

[1] "愛心 2"

[1] "愛心 3"

[1] "愛心 4"

[1] "愛心 5"

[1] "愛心 6"

[1] "愛心 7"

[1] "愛心 8"

[1] "愛心 9"

[1] "愛心 10"

[1] "愛心 11"

[1] "愛心 12"

[1] "愛心 13"

# TA:

patterns <- c("黑桃", "梅花", "方塊", "愛心")

values <- c("A", 2:10, "J", "K", "Q")

# poker\_cards <- rep(NA, times = length(patterns) \* length(values))

poker\_cards <- c()

for (outer\_i in patterns) {

for (inner\_i in values) {

print(paste(outer\_i, inner\_i))

poker\_cards <- c(poker\_cards, paste(outer\_i, inner\_i))

}

}

poker\_cards

[1] "黑桃 A"

[1] "黑桃 2"

[1] "黑桃 3"

[1] "黑桃 4"

[1] "黑桃 5"

[1] "黑桃 6"

[1] "黑桃 7"

[1] "黑桃 8"

[1] "黑桃 9"

[1] "黑桃 10"

[1] "黑桃 J"

[1] "黑桃 K"

[1] "黑桃 Q"

[1] "梅花 A"

[1] "梅花 2"

[1] "梅花 3"

[1] "梅花 4"

[1] "梅花 5"

[1] "梅花 6"

[1] "梅花 7"

[1] "梅花 8"

[1] "梅花 9"

[1] "梅花 10"

[1] "梅花 J"

[1] "梅花 K"

[1] "梅花 Q"

[1] "方塊 A"

[1] "方塊 2"

[1] "方塊 3"

[1] "方塊 4"

[1] "方塊 5"

[1] "方塊 6"

[1] "方塊 7"

[1] "方塊 8"

[1] "方塊 9"

[1] "方塊 10"

[1] "方塊 J"

[1] "方塊 K"

[1] "方塊 Q"

[1] "愛心 A"

[1] "愛心 2"

[1] "愛心 3"

[1] "愛心 4"

[1] "愛心 5"

[1] "愛心 6"

[1] "愛心 7"

[1] "愛心 8"

[1] "愛心 9"

[1] "愛心 10"

[1] "愛心 J"

[1] "愛心 K"

[1] "愛心 Q"

> poker\_cards

[1] "黑桃 A" "黑桃 2" "黑桃 3" "黑桃 4" "黑桃 5" "黑桃 6" "黑桃 7"

[8] "黑桃 8" "黑桃 9" "黑桃 10" "黑桃 J" "黑桃 K" "黑桃 Q" "梅花 A"

[15] "梅花 2" "梅花 3" "梅花 4" "梅花 5" "梅花 6" "梅花 7" "梅花 8"

[22] "梅花 9" "梅花 10" "梅花 J" "梅花 K" "梅花 Q" "方塊 A" "方塊 2"

[29] "方塊 3" "方塊 4" "方塊 5" "方塊 6" "方塊 7" "方塊 8" "方塊 9"

[36] "方塊 10" "方塊 J" "方塊 K" "方塊 Q" "愛心 A" "愛心 2" "愛心 3"

[43] "愛心 4" "愛心 5" "愛心 6" "愛心 7" "愛心 8" "愛心 9" "愛心 10"

[50] "愛心 J" "愛心 K" "愛心 Q"

\*\* 九九乘法表

outer\_vector <- c(1:9)

inner\_vector <- c(1:9)

for (outer\_i in outer\_vector) {

for (inner\_i in inner\_vector) {

print(paste(as.character(outer\_i), "X", as.character(inner\_i), "=",

as.character(outer\_i \* inner\_i)

))

}

}

[1] "1 X 1 1"

[1] "1 X 2 2"

[1] "1 X 3 3"

[1] "1 X 4 4"

[1] "1 X 5 5"

[1] "1 X 6 6"

[1] "1 X 7 7"

[1] "1 X 8 8"

[1] "1 X 9 9"

[1] "2 X 1 2"

[1] "2 X 2 4"

[1] "2 X 3 6"

[1] "2 X 4 8"

[1] "2 X 5 10"

[1] "2 X 6 12"

[1] "2 X 7 14"

[1] "2 X 8 16"

[1] "2 X 9 18"

[1] "3 X 1 3"

[1] "3 X 2 6"

[1] "3 X 3 9"

[1] "3 X 4 12"

[1] "3 X 5 15"

[1] "3 X 6 18"

[1] "3 X 7 21"

[1] "3 X 8 24"

[1] "3 X 9 27"

[1] "4 X 1 4"

[1] "4 X 2 8"

[1] "4 X 3 12"

[1] "4 X 4 16"

[1] "4 X 5 20"

[1] "4 X 6 24"

[1] "4 X 7 28"

[1] "4 X 8 32"

[1] "4 X 9 36"

[1] "5 X 1 5"

[1] "5 X 2 10"

[1] "5 X 3 15"

[1] "5 X 4 20"

[1] "5 X 5 25"

[1] "5 X 6 30"

[1] "5 X 7 35"

[1] "5 X 8 40"

[1] "5 X 9 45"

[1] "6 X 1 6"

[1] "6 X 2 12"

[1] "6 X 3 18"

[1] "6 X 4 24"

[1] "6 X 5 30"

[1] "6 X 6 36"

[1] "6 X 7 42"

[1] "6 X 8 48"

[1] "6 X 9 54"

[1] "7 X 1 7"

[1] "7 X 2 14"

[1] "7 X 3 21"

[1] "7 X 4 28"

[1] "7 X 5 35"

[1] "7 X 6 42"

[1] "7 X 7 49"

[1] "7 X 8 56"

[1] "7 X 9 63"

[1] "8 X 1 8"

[1] "8 X 2 16"

[1] "8 X 3 24"

[1] "8 X 4 32"

[1] "8 X 5 40"

[1] "8 X 6 48"

[1] "8 X 7 56"

[1] "8 X 8 64"

[1] "8 X 9 72"

[1] "9 X 1 9"

[1] "9 X 2 18"

[1] "9 X 3 27"

[1] "9 X 4 36"

[1] "9 X 5 45"

[1] "9 X 6 54"

[1] "9 X 7 63"

[1] "9 X 8 72"

[1] "9 X 9 81"

> outer\_vector <- c(1:9)

> inner\_vector <- c(1:9)

>

> for (outer\_i in outer\_vector) {

+ for (inner\_i in inner\_vector) {

+ print(paste(as.character(outer\_i), "X", as.character(inner\_i), "=",

+ as.character(outer\_i \* inner\_i)

+ ))

+ }

+

+

+ }

[1] "1 X 1 = 1"

[1] "1 X 2 = 2"

[1] "1 X 3 = 3"

[1] "1 X 4 = 4"

[1] "1 X 5 = 5"

[1] "1 X 6 = 6"

[1] "1 X 7 = 7"

[1] "1 X 8 = 8"

[1] "1 X 9 = 9"

[1] "2 X 1 = 2"

[1] "2 X 2 = 4"

[1] "2 X 3 = 6"

[1] "2 X 4 = 8"

[1] "2 X 5 = 10"

[1] "2 X 6 = 12"

[1] "2 X 7 = 14"

[1] "2 X 8 = 16"

[1] "2 X 9 = 18"

[1] "3 X 1 = 3"

[1] "3 X 2 = 6"

[1] "3 X 3 = 9"

[1] "3 X 4 = 12"

[1] "3 X 5 = 15"

[1] "3 X 6 = 18"

[1] "3 X 7 = 21"

[1] "3 X 8 = 24"

[1] "3 X 9 = 27"

[1] "4 X 1 = 4"

[1] "4 X 2 = 8"

[1] "4 X 3 = 12"

[1] "4 X 4 = 16"

[1] "4 X 5 = 20"

[1] "4 X 6 = 24"

[1] "4 X 7 = 28"

[1] "4 X 8 = 32"

[1] "4 X 9 = 36"

[1] "5 X 1 = 5"

[1] "5 X 2 = 10"

[1] "5 X 3 = 15"

[1] "5 X 4 = 20"

[1] "5 X 5 = 25"

[1] "5 X 6 = 30"

[1] "5 X 7 = 35"

[1] "5 X 8 = 40"

[1] "5 X 9 = 45"

[1] "6 X 1 = 6"

[1] "6 X 2 = 12"

[1] "6 X 3 = 18"

[1] "6 X 4 = 24"

[1] "6 X 5 = 30"

[1] "6 X 6 = 36"

[1] "6 X 7 = 42"

[1] "6 X 8 = 48"

[1] "6 X 9 = 54"

[1] "7 X 1 = 7"

[1] "7 X 2 = 14"

[1] "7 X 3 = 21"

[1] "7 X 4 = 28"

[1] "7 X 5 = 35"

[1] "7 X 6 = 42"

[1] "7 X 7 = 49"

[1] "7 X 8 = 56"

[1] "7 X 9 = 63"

[1] "8 X 1 = 8"

[1] "8 X 2 = 16"

[1] "8 X 3 = 24"

[1] "8 X 4 = 32"

[1] "8 X 5 = 40"

[1] "8 X 6 = 48"

[1] "8 X 7 = 56"

[1] "8 X 8 = 64"

[1] "8 X 9 = 72"

[1] "9 X 1 = 9"

[1] "9 X 2 = 18"

[1] "9 X 3 = 27"

[1] "9 X 4 = 36"

[1] "9 X 5 = 45"

[1] "9 X 6 = 54"

[1] "9 X 7 = 63"

[1] "9 X 8 = 72"

[1] "9 X 9 = 81"

\*\* TA:

mat\_99 <- matrix(nrow = 9, ncol = 9)

for (i in 1:9) {

for (j in 1:9) {

#mat\_99[i, j] <- i \* j

mat\_99[i, j] <- paste(i, "X", j, "=", i\*j)

}

}

\*\* 隨堂練習:

發撲克牌，直到發到黑桃2才停並印出來:

MY OWN:

patterns <- c("黑桃", "梅花", "方塊", "愛心")

values <- c("A", 2:10, "J", "K", "Q")

poker\_cards <- c()

for (outer\_i in patterns) {

for (inner\_i in values) {

#print(paste(outer\_i, inner\_i))

poker\_cards <- c(poker\_cards, paste(outer\_i, inner\_i))

}

}

#poker\_cards

poker\_logs <- c()

while(sum(poker\_logs == "黑桃 2") < 1){

poker\_flip <- sample(poker\_cards, size = 1)

poker\_logs <- c(poker\_logs, poker\_flip)

poker\_cards <- poker\_cards[which(poker\_cards != poker\_flip)]

}

poker\_logs

##TA:

# 一副撲克牌 52 張牌

# 洗牌後開始發牌

# 發出黑桃 2 才可以結束遊戲

# 總共發了幾次？

# 發出去的牌花色與大小分別為何？

patterns <- c("黑桃", "紅心", "方塊", "梅花")

values <- c(2:10, "Jack", "Queen", "King", "Ace")

poker\_cards <- c()

for (pattern in patterns) {

for (value in values) {

poker\_cards <- c(poker\_cards, paste(pattern, value))

}

}

shuffled\_poker\_cards <- poker\_cards[sample(1:52)]

poker\_card\_logs <- c()

while(sum(poker\_card\_logs == "黑桃 2") < 1) {

poker\_card\_logs <- c(poker\_card\_logs, shuffled\_poker\_cards[1])

shuffled\_poker\_cards <- shuffled\_poker\_cards[-1]

}

length(poker\_card\_logs)

poker\_card\_logs