```
# 2020/12/11(五), 109 學年第一學期 資料科學應用 R 期中考
>
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>
>       # (請依照規定)貼上執行程式碼及執行結果。
>       #詳見: R 程式作業繳交方式
> #http://www.hmwu.idv.tw/web/teaching/doc/R-how-homework.pdf
>
> # ex1(a)
> study <- function(Eng, Com){
+       Eng<- c(13:17)
+       Com<- c(8:12)
+       a <- matrix(0, 25, 5)
+       for(Eng in 13:17){
+             for(Com in 8:12){
+                u<- sqrt(Eng)*sqrt(Com)
+                Tuition <- 600*Com +400*Eng
+                cat(Eng, Com, Tuition, u )
+                if(u < 12000)
+                      cat("*")
+             }
+       }
+ }
> c <-study()
13 8 10000 10.19804*13 9 10600 10.81665*13 10 11200 11.40175*13 11 11800
11.95826*13 12 12400 12.49*14 8 10400 10.58301*14 9 11000 11.22497*14 10
11600 11.83216*14 11 12200 12.40967*14 12 12800 12.96148*15 8 10800
10.95445*15 9 11400 11.61895*15 10 12000 12.24745*15 11 12600 12.84523*15
12 13200 13.41641*16 8 11200 11.31371*16 9 11800 12*16 10 12400 12.64911*16
11 13000 13.2665*16 12 13600 13.85641*17 8 11600 11.6619*17 9 12200
12.36932*17 10 12800 13.0384*17 11 13400 13.67479*17 12 14000 14.28286*>
> # ex2(a)
> library(readxl)
> b <- read_excel("Score-109.xlsx", skip = 1)
> head(b, 5)
# A tibble: 5 x 3
   ID       Calculus English
   <chr> <chr>       <chr>
```

```
1 No.1    72          62
2 No.2    88          97
3 No.3    76          66
4 No.4    89          51
5 No.5    46          15
> tail(b, 5)
# A tibble: 5 x 3
   ID       Calculus English
   <chr> <chr>       <chr>
1 No.71 69          96
2 No.72 51          100
3 No.73 37          50
4 No.74 33          92
5 No.75 4           37
>
> # ex2(b)
> b[is.na(b)] <- 0
> length(b)
[1] 3
> for(i in 1:75){
+         if(b$"Calculus" < 60 && b$"English" < 60)
+                 cat(b[i])
+ }
>
>
> a[is.na(a)] <- 0
>
> sum(a$"Calcules", na.rm = TRUE)
[1] 0
Warning message:
Unknown or uninitialised column: `Calcules`.
> a$"Calcules"
NULL
Warning message:
Unknown or uninitialised column: `Calcules`.
> pi
[1] 3.141593
> #ex3(a)
```

```
> x <- seq(from = 1, to = 3, by = 1)
> y <- dnorm(x)
> my.dnorm <- function(x, y, z){
+          (1/sqrt(2*pi*z))*exp((x-y)^2)/(2*z^2)
+ }
> my.dnorm(2.5 , 3, 2)
[1] 0.04527711
>
> #ex3(b)
> my.dnorm(3, 0 ,1)
[1] 1616.331
> dnorm(3)
[1] 0.004431848
```