2020/11/13(五), 109學年第一學期 資料科學應用 R作業(3)

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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

```
> # ex1.25(a)
>  library(readxl)
>  Rscore <- read_excel("data/R-score.xlsx", skip = 1)
New names:
* `0.15` -> `0.15...6`
* `0.15` -> `0.15...7`
>  names(Rscore) <- c("no.", "系級", "學號", "姓名", "小考1", "小考2",
"小考3", "作業", "期末考", "點名")
>  head(Rscore, 5)
# A tibble: 5 x 10
    no. 系級        學號 姓名    小考1 小考2 小考3  作業 期末考  點名
  <dbl> <chr>      <dbl> <chr>  <dbl> <dbl> <dbl> <dbl>  <dbl> <dbl>
1     1 統計系1 32578012 周小如    55    95   100   100     86    10
2     2 統計系1 32578014 周抒如    30    65    70   100     94    10
3     3 會計系1 32578016 林育安    10     5    25    10     77    10
4     4 會計系1 32578018 林育辰    10    20    45    40     87    10
5     5 會計系1 32578020 黃季晴     5    15    20    25     86     0
>
> # ex1.25(b)
>  c(mean(Rscore$小考1), sd(Rscore$小考1))
[1] 25.00000 18.37117
>  c(mean(Rscore$小考2), sd(Rscore$小考2))
[1] 36.15385 33.05008
>  c(mean(Rscore$小考3), sd(Rscore$小考3))
[1] 51.15385 26.70470
>  c(mean(Rscore$作業), sd(Rscore$作業))
[1] 51.15385 38.57643
>  c(mean(Rscore$期末考), sd(Rscore$期末考))
[1] 77.23077 23.89963
>
```

```
> # ex1.25(c)
>   Rscore$grade <- Rscore$小考1*0.1+Rscore$小考2*0.15+Rscore$小考
3*0.15+Rscore$作業*0.2+Rscore$期末考*0.4
>   Semester.grade <- cbind(Rscore$學號, Rscore$grade)
>   semester.grade <- as.data.frame(Semester.grade)
>
> # ex1.29(a)
>   head(Rscore, 5)
# A tibble: 5 x 11
    no. 系級       學號 姓名   小考1 小考2 小考3  作業 期末考  點名 grade
  <dbl> <chr>     <dbl> <chr>  <dbl> <dbl> <dbl> <dbl>  <dbl> <dbl>
<dbl>
1     1 統計系1 32578012 周小如    55    95   100   100     86    10  89.2
2     2 統計系1 32578014 周抒如    30    65    70   100     94    10  80.8
3     3 會計系1 32578016 林育安    10     5    25    10     77    10  38.3
4     4 會計系1 32578018 林育辰    10    20    45    40     87    10  53.6
5     5 會計系1 32578020 黃季晴     5    15    20    25     86     0  45.2
>   tail(Rscore, 5)
# A tibble: 5 x 11
    no. 系級       學號 姓名   小考1 小考2 小考3  作業 期末考  點名 grade
  <dbl> <chr>     <dbl> <chr>  <dbl> <dbl> <dbl> <dbl>  <dbl> <dbl>
<dbl>
1     9 統計系1 32578030 黎奕璇    10    15    55    55     87     4  57.3
2    10 會計系1 32474226 蕭偲賢    15     5    30    45     76     7  46.2
3    11 會計系1 32475032 謝涵融    35    10     5     0     78    10  37.0
4    12 會計系1 32578002 羅順霓    50   100    65   100     90    10  85.8
5    13 統計系1 32578004 顧瀚薇    15    10    75    30      0    10  20.2
>   str(Rscore)
tibble [13 x 11] (S3: tbl_df/tbl/data.frame)
 $ no.   : num [1:13] 1 2 3 4 5 6 7 8 9 10 ...
 $ 系級  : chr [1:13] "統計系1" "統計系1" "會計系1" "會計系1" ...
 $ 學號  : num [1:13] 32578012 32578014 32578016 32578018 32578020 ...
 $ 姓名  : chr [1:13] "周小如" "周抒如" "林育安" "林育辰" ...
 $ 小考1 : num [1:13] 55 30 10 10 5 10 25 55 10 15 ...
 $ 小考2 : num [1:13] 95 65 5 20 15 35 50 45 15 5 ...
 $ 小考3 : num [1:13] 100 70 25 45 20 60 40 75 55 30 ...
 $ 作業  : num [1:13] 100 100 10 40 25 0 60 100 55 45 ...
 $ 期末考: num [1:13] 86 94 77 87 86 77 87 79 87 76 ...
```

```
 $ 點名  : num [1:13] 10 10 10 10 0 0 10 10 4 7 ...
 $ grade : num [1:13] 89.2 80.8 38.3 53.6 45.1 ...
>
> # ex1.29(b)
>  weather <- read.table("data/20140714-weather.txt", header = T)
>  head(weather, 5)
  locationName    lat     lon stationId TEMP ELEV
1        基隆 25.1348 121.7321    466940 29.1   27
2        淡水 25.1656 121.4400    466900 28.5   19
3        板橋 24.9993 121.4338    466880 29.0   10
4      竹子湖 25.1650 121.5363    466930 25.2  607
5        新竹 24.8300 121.0061    467571 29.8   34
>  tail(weather, 5)
   locationName    lat     lon stationId TEMP ELEV
25        臺北 25.0396 121.5067    466920 30.4    5
26        臺南 22.9952 120.1970    467410 30.0   41
27        金門 24.4074 118.2893    467110 28.4   48
28        馬祖 26.1694 119.9232    467990 28.0   98
29        新屋 25.0067 121.0475    467050 29.3   21
>  str(weather)
'data.frame':   29 obs. of  6 variables:
 $ locationName: chr  "基隆" "淡水" "板橋" "竹子湖" ...
 $ lat        : num  25.1 25.2 25 25.2 24.8 ...
 $ lon        : num  122 121 121 122 121 ...
 $ stationId   : chr  "466940" "466900" "466880" "466930" ...
 $ TEMP       : num  29.1 28.5 29 25.2 29.8 29.4 29.2 27.8 22.8
14.4 ...
 $ ELEV       : int  27 19 10 607 34 84 7 11 1015 2413 ...
>
> # ex1.29(c)
>  weather.delays14 <- read.csv("data/weather_delays14.csv")
>  head(weather.delays14, 5)
  year month day dep_time arr_time carrier tailnum flight origin dest
1 2014     1   1     1733     2024      AA  N3HPAA    199    JFK  ORD
2 2014     1   1     1718     1840      B6  N324JB   1734    JFK  BTV
3 2014     1   1      624      946      DL  N3751B    479    JFK  ATL
4 2014     1   1      910     1203      DL  N910DL   1174    LGA  PBI
5 2014     1   1     1850     2052      MQ  N1EAMQ   2839    LGA  STL
```

```
  carrier_delay weather_delay nas_delay aircraft_delay
1             0             7        51             11
2             0            18         6              0
3             0             9        45              0
4             0            52         0              0
5             0            35        12              0
>   tail(weather.delays14, 5)
     year month day dep_time arr_time carrier tailnum flight origin
dest
4655 2014    10  26     1135     1451      VX  N836VA    409    JFK  LAX
4656 2014    10  27     1042     1416      VX  N642VA    187    EWR  SFO
4657 2014    10  29     1507     1808      DL  N321NB   1923    LGA  MIA
4658 2014    10  31     1500     1751      DL  N338NB   1685    LGA  MCO
4659 2014    10  31     1323     1502      AA  N3KNAA    329    LGA  ORD
     carrier_delay weather_delay nas_delay aircraft_delay
4655             5            11         0              0
4656            12             9         0              0
4657             0            81         0              0
4658             0            28         0              0
4659             0           113         4              0
>   str(weather.delays14)
'data.frame':   4659 obs. of  14 variables:
 $ year          : int  2014 2014 2014 2014 2014 2014 2014 2014 2014
2014 ...
 $ month         : int  1 1 1 1 1 1 1 1 1 1 ...
 $ day           : int  1 1 1 1 1 2 2 2 2 2 ...
 $ dep_time      : int  1733 1718 624 910 1850 2049 738 5 1618
1657 ...
 $ arr_time      : int  2024 1840 946 1203 2052 45 1124 339 1958
2050 ...
 $ carrier       : chr  "AA" "B6" "DL" "DL" ...
 $ tailnum       : chr  "N3HPAA" "N324JB" "N3751B" "N910DL" ...
 $ flight        : int  199 1734 479 1174 2839 21 33 185 133 145 ...
 $ origin        : chr  "JFK" "JFK" "JFK" "LGA" ...
 $ dest          : chr  "ORD" "BTV" "ATL" "PBI" ...
 $ carrier_delay : int  0 0 0 0 0 0 0 0 0 0 ...
 $ weather_delay : int  7 18 9 52 35 87 8 53 32 6 ...
 $ nas_delay     : int  51 6 45 0 12 41 26 14 5 18 ...
```

```
 $ aircraft_delay: int  11 0 0 0 0 22 0 97 1 101 ...
>
> # ex2.10
>   score <- sample(1:100, 50, replace = TRUE)
>   ifelse(score > 95, "老師請同學吃飯", "老師很生氣")
 [1] "老師很生氣"     "老師很生氣"     "老師很生氣"     "老師很生氣"
 [5] "老師很生氣"     "老師很生氣"     "老師很生氣"     "老師很生氣"
 [9] "老師很生氣"     "老師很生氣"     "老師很生氣"     "老師很生氣"
[13] "老師很生氣"     "老師很生氣"     "老師很生氣"     "老師很生氣"
[17] "老師很生氣"     "老師很生氣"     "老師很生氣"     "老師很生氣"
[21] "老師很生氣"     "老師很生氣"     "老師請同學吃飯" "老師很生氣"
[25] "老師很生氣"     "老師很生氣"     "老師很生氣"     "老師很生氣"
[29] "老師很生氣"     "老師很生氣"     "老師很生氣"     "老師很生氣"
[33] "老師很生氣"     "老師很生氣"     "老師很生氣"     "老師很生氣"
[37] "老師請同學吃飯" "老師很生氣"     "老師很生氣"     "老師很生氣"
[41] "老師很生氣"     "老師很生氣"     "老師很生氣"     "老師很生氣"
[45] "老師很生氣"     "老師很生氣"     "老師很生氣"     "老師很生氣"
[49] "老師很生氣"     "老師很生氣"
>
> # ex2.21(a)
>   score02 <- read.csv("data/score02.csv")
>   head(score02, 7)
      學號 期中考 期末考
1 410072106     80     60
2 410073023     50     73
3 410079062     45     35
4 410079090     77     54
5 410079118     62     54
6 410079120     67     45
7 410079121     72     78
>
> # ex2.21(b)
>   names(score02) <- c("id", "mid", "final")
>   head(score02, 2)
        id mid final
1 410072106  80    60
2 410073023  50    73
>
```

```
> # ex2.21(c)
>   ifelse(score02$final>score02$mid,score02$id," ")
 [1] " "        "410073023" " "        " "        " "        " "
 [7] "410079121" "410172016" "410172027" " "        " "
"410173072"
[13] " "        " "        " "        "410173136" "410174210" " "
[19] " "        " "        " "        " "        " "        " "
[25] " "        " "        " "        "410273014" "410273016" " "
[31] " "        " "        " "        " "        " "        " "
[37] " "        " "        "410273042" "410273048" " "        " "
[43] " "        " "        " "        "410273062" " "
"410273067"
[49] " "        " "        "410273073" " "        "410273076" " "
[55] " "        " "        " "        " "        " "        " "
[61] "410273108" " "        " "        "410273116" " "        " "
[67] " "        "410275016" " "        " "        "410275029" " "
[73] " "        " "        " "        " "        "410275051" " "
[79] " "        " "        " "        "410279018" " "        " "
[85] "410279049" "410279054" "410279063" "410279075" " "        " "
[91] " "        " "        " "        "49981011"
>
```