```
> #2020/11/20(五) 109 學年第一學期 資料科學應用 R 作業(3)
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>
>
> #ex.1.25(a)
> library(readxl)
> x <- read_excel("R-score.xlsx", skip = 1)
New names:
* `0.15` -> `0.15...6`
* `0.15` -> `0.15...7`
> head(x, 5)
# A tibble: 5 x 10
     No 系級          學號 姓名    `0.1` `0.15...6` `0.15...7` `0.2` `0.4` `10 分`
  <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
>
> #ex.1.25(b)
> str(x)
tibble [13 x 10] (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" ...
 $ 0.1         : num [1:13] 55 30 10 10 5 10 25 55 10 15 ...
 $ 0.15...6: num [1:13] 95 65 5 20 15 35 50 45 15 5 ...
 $ 0.15...7: num [1:13] 100 70 25 45 20 60 40 75 55 30 ...
 $ 0.2         : num [1:13] 100 100 10 40 25 0 60 100 55 45 ...
 $ 0.4         : num [1:13] 86 94 77 87 86 77 87 79 87 76 ...
 $ 10 分       : num [1:13] 10 10 10 10 0 0 10 10 4 7 ...
> names(x) <- c("NO","系級", "學號", "姓名","小考 1","小考 2","小考 3", "作業","期末考", "點名")
> mean(x$"小考 1")
[1] 25
> mean(x$"小考 2")
```

```
[1] 36.15385
> mean(x$"小考 3")
[1] 51.15385
> mean(x$"期末考")
[1] 77.23077
> sd(x$"小考 1")
[1] 18.37117
> sd(x$"小考 2")
[1] 33.05008
> sd(x$"小考 3")
[1] 26.7047
> sd(x$"期末考")
[1] 23.89963
>
> #ex.1.25(c)
> no <- (x$"學號")
> score <- x$"小考 1"*0.1+x$"小考 2"*0.15+x$"小考 3"*0.15+x$"作業"*0.2+x$"期末考
"*0.4
> y <- list(x$"學號", score)
> y
[[1]]
 [1] 32578012 32578014 32578016 32578018 32578020 32578022 32578026 32578028
 [9] 32578030 32474226 32475032 32578002 32578004

[[2]]
 [1] 89.15 80.85 38.30 53.55 45.15 46.05 62.80 75.10 57.30 46.15 36.95 85.75 20.25

> df <- data.frame(no , score)
> df
          no score
1   32578012 89.15
2   32578014 80.85
3   32578016 38.30
4   32578018 53.55
5   32578020 45.15
6   32578022 46.05
7   32578026 62.80
8   32578028 75.10
9   32578030 57.30
10 32474226 46.15
11 32475032 36.95
12 32578002 85.75
13 32578004 20.25
```

```
> class(df)
[1] "data.frame"
>
>
> #ex.1.29(a)
> "R-score.xlsx"
[1] "R-score.xlsx"
> "20140714-weather.txt"
[1] "20140714-weather.txt"
> "weather_delays14.csv"
[1] "weather_delays14.csv"
> z <- read_excel("R-score.xlsx", skip = 1)
New names:
* `0.15` -> `0.15...6`
* `0.15` -> `0.15...7`
> x <- read.table("20140714-weather.txt", header = T, encoding = "utf-8")
> y <- read.csv("weather_delays14.csv", header = T)
> str(y)
'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 ...
> str(x)
'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 ...
> head(z, 5)
# A tibble: 5 x 10
      No 系級      學號 姓名    `0.1` `0.15...6` `0.15...7` `0.2` `0.4` `10 分`
```

```
   <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
> tail(z, 5)
# A tibble: 5 x 10
       No  系級           學號  姓名     `0.1` `0.15...6` `0.15...7` `0.2` `0.4` `10 分`
   <dbl> <chr>          <dbl> <chr>    <dbl>          <dbl>          <dbl> <dbl> <dbl>    <dbl>
1        9  統計系 1 32578030  黎奕璇       10             15             55      55       87
4
2       10  會計系 1 32474226  蕭偲賢       15              5             30      45       76
7
3       11  會計系 1 32475032  謝涵融       35             10              5       0       78
10
4       12  會計系 1 32578002  羅順霓       50            100             65     100       90
10
5       13  統計系 1 32578004  顧瀚薇       15             10             75      30        0
10
>
> #ex.1.29(b)
> head(x, 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(x, 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
>
```

```
> #ex.1.29(c)
> head(y, 5)
   year month day dep_time arr_time carrier tailnum flight origin dest carrier_delay
1 2014         1     1        1733        2024         AA    N3HPAA       199       JFK    ORD
0
2 2014         1     1        1718        1840         B6    N324JB      1734       JFK    BTV
0
3 2014         1     1         624         946         DL    N3751B       479       JFK    ATL
0
4 2014         1     1         910        1203         DL    N910DL      1174       LGA    PBI
0
5 2014         1     1        1850        2052         MQ    N1EAMQ      2839       LGA    STL
0
   weather_delay nas_delay aircraft_delay
1              7         51              11
2             18          6               0
3              9         45               0
4             52          0               0
5             35         12               0
> tail(y ,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
>
>
> #ex.2.10
> score <- sample(1:100, 50, replace = TRUE)
> x <- c(score)
> x
 [1] 90 88 61  8 85 94 15 32 46 25 78 37 79 83 61 26 28 71 32 27 45 90 55 26 23 96
```

```
[27] 83 43 76 80 81 93 59 17 16 34 63 23 73 91 53 81 22 77 12 29    1 88 57    2
> if(any(x > 95)) cat("老師請同學吃飯") else cat("老師很生氣")
老師請同學吃飯>
> #ex.2.21(a)
> x <- read.csv("score02.csv",header = T, encoding = "utf-8")
> head(x, 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
>
> #ex.2.21(b)
> str(x)
'data.frame':   94 obs. of    3 variables:
 $ 學號   : int    410072106 410073023 410079062 410079090 410079118 410079120
410079121 410172016 410172027 410172103 ...
 $ 期中考: int    80 50 45 77 62 67 72 62 82 92 ...
 $ 期末考: int    60 73 35 54 54 45 78 75 95 66 ...
> names(x) <- c("id", "mid", "final")
> names(x)
[1] "id"    "mid"    "final"
>
> #ex.2.21(c)
> a <- x$mid
> b <- x$final
> id <- (x$id)
>
> for( i in 1:94){
+     if(a[i] < b[i])
+         cat(id[i], "")
+ }
410073023 410079121 410172016 410172027 410173072 410173136 410174210
410273014 410273016 410273042 410273048 410273062 410273067 410273073
410273076 410273108 410273116 410275016 410275029 410275051 410279018
410279049 410279054 410279063 410279075 49981011 >
> #ex.2.21(d)
> count <- 0
> for( i in 1:94){
+     if(a[i] >= 60 & b[i] >= 60)
```

```
+         count <- count+1
+ }
> cat(count)
38>
> count <- 0
> for( i in 1:94){
+     if(a[i] >= 60 & b[i] < 60)
+         count <- count+1
+ }
> cat(count)
32>
> count <- 0
> for( i in 1:94){
+     if(a[i] < 60 & b[i] >= 60)
+         count <- count+1
+ }
> cat(count)
9>
> count <- 0
> for( i in 1:94){
+     if(a[i] < 60 & b[i] < 60)
+         count <- count+1
+ }
> cat(count)
15>
> #ex.2.21(e)
> mean.score<- (x$mid + x$final)/2
> id.mean.score<- data.frame(id, mean.score)
> id.mean.score
          id mean.score
1  410072106       70.0
2  410073023       61.5
3  410079062       40.0
4  410079090       65.5
5  410079118       58.0
6  410079120       56.0
7  410079121       75.0
8  410172016       68.5
9  410172027       88.5
10 410172103       79.0
11 410173029       26.5
12 410173072       64.0
13 410173101       73.0
14 410173134       85.0
```

15	410173135	77.5
16	410173136	84.0
17	410174210	56.5
18	410183004	92.5
19	410183012	51.0
20	410184012	45.5
21	410184015	48.5
22	410273002	62.5
23	410273004	77.5
24	410273005	57.5
25	410273007	88.0
26	410273010	56.0
27	410273011	50.0
28	410273014	51.0
29	410273016	81.0
30	410273018	62.5
31	410273019	68.5
32	410273020	75.0
33	410273024	65.0
34	410273031	76.5
35	410273032	69.5
36	410273034	58.5
37	410273040	61.5
38	410273041	42.5
39	410273042	77.5
40	410273048	57.0
41	410273049	56.0
42	410273050	49.5
43	410273051	26.5
44	410273057	75.0
45	410273060	45.0
46	410273062	68.0
47	410273065	77.5
48	410273067	78.0
49	410273069	73.5
50	410273070	86.0
51	410273073	81.5
52	410273075	63.5
53	410273076	61.0
54	410273081	60.5
55	410273094	54.0
56	410273095	77.0
57	410273096	78.5
58	410273102	100.0

```
59 410273105          68.5
60 410273106          75.5
61 410273108          92.0
62 410273109          85.0
63 410273110          87.0
64 410273116          91.0
65 410275001          35.0
66 410275005          82.5
67 410275015          47.5
68 410275016          57.5
69 410275017          52.0
70 410275020          88.0
71 410275029          86.0
72 410275032          59.0
73 410275033          44.5
74 410275034          83.0
75 410275036          49.0
76 410275040          63.5
77 410275051          62.5
78 410275055          69.0
79 410275058         100.0
80 410279001          74.0
81 410279006          23.0
82 410279018          51.0
83 410279021          37.0
84 410279039          65.5
85 410279049          53.5
86 410279054          43.0
87 410279063          77.0
88 410279075          64.0
89 410279080          63.0
90    49973086         79.0
91    49979003         55.0
92    49979046         68.5
93    49981006         68.5
94    49981011         96.5
> sort((x$mid + x$final)/2, decreasing = TRUE)
 [1] 100.0 100.0  96.5  92.5  92.0  91.0  88.5  88.0  88.0  87.0  86.0  86.0
85.0
[14]  85.0  84.0  83.0  82.5  81.5  81.0  79.0  79.0  78.5  78.0  77.5  77.5
77.5
[27]  77.5  77.0  77.0  76.5  75.5  75.0  75.0  75.0  74.0  73.5  73.0  70.0
69.5
[40]  69.0  68.5  68.5  68.5  68.5  68.5  68.0  65.5  65.5  65.0  64.0  64.0
```

```
63.5
[53]  63.5  63.0  62.5  62.5  62.5  61.5  61.5  61.0  60.5  59.0  58.5  58.0
57.5
[66]  57.5  57.0  56.5  56.0  56.0  56.0  55.0  54.0  53.5  52.0  51.0  51.0
51.0
[79]  50.0  49.5  49.0  48.5  47.5  45.5  45.0  44.5  43.0  42.5  40.0  37.0
35.0
[92]  26.5  26.5  23.0
>
```