```
> #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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>
> # ex1.25(a)
> library(readxl)
> mydata <- read_excel("data/R-score.xlsx", na = "NA", skip=1)
New names:
* `0.15` -> `0.15...6`
* `0.15` -> `0.15...7`
> names(mydata) <- 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(mydata, 5)
# A tibble: 5 x 10
     No 系級      學號 姓名   `小考(1)` `小考(2)` `小考(3)`
  <dbl> <chr>    <dbl> <chr>        <dbl>      <dbl>      <dbl>
1     1 統計系 1~ 3.26e7 周小如~         55         95        100
2     2 統計系 1~ 3.26e7 周抒如~         30         65         70
3     3 會計系 1~ 3.26e7 林育安~         10          5         25
4     4 會計系 1~ 3.26e7 林育辰~         10         20         45
5     5 會計系 1~ 3.26e7 黃季晴~          5         15         20
# ... with 3 more variables: 作業 <dbl>, 期末考 <dbl>,
#   點名 <dbl>
>
> # ex1.25(b)
> mean(mydata$"小考(1)")
[1] 25
> mean(mydata$"小考(2)")
[1] 36.15385
> mean(mydata$"小考(3)")
[1] 51.15385
> mean(mydata$"期末考")
[1] 77.23077
> sd(mydata$"小考(1)")
[1] 18.37117
> sd(mydata$"小考(2)")
[1] 33.05008
> sd(mydata$"小考(3)")
[1] 26.7047
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> sd(mydata$"期末考")
[1] 23.89963
>
> # ex1.25(c)
> mydata$"學期成績" <- (0.1*mydata$"小考(1)" + 0.15*mydata$"小考(2)" +
0.15*mydata$"小考(3)"
+                          + 0.2*mydata$"作業" + 0.4*mydata$"期末考")
> myGrades <- data.frame("學號"= mydata$"學號", "學期成績"= mydata$"學期成績
")
> myGrades
          學號  學期成績
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
>
> # ex1.29(a)
> myscore <- read_excel("data/R-score.xlsx", na = "NA", skip=1)
New names:
* `0.15` -> `0.15...6`
* `0.15` -> `0.15...7`
> names(myscore) <- 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(myscore, 5)
# A tibble: 5 x 10
        No  系級       學號  姓名    `小考(1)` `小考(2)` `小考(3)`
   <dbl> <chr>    <dbl> <chr>         <dbl>         <dbl>         <dbl>
1         1  統計系 1~ 3.26e7  周小如~              55             95            100
2         2  統計系 1~ 3.26e7  周抒如~              30             65             70
```

```
3        3  會計系 1~ 3.26e7  林育安~            10             5            25
4        4  會計系 1~ 3.26e7  林育辰~            10            20            45
5        5  會計系 1~ 3.26e7  黃季晴~             5            15            20
# ... with 3 more variables:  作業  <dbl>,  期末考  <dbl>,
#     點名  <dbl>
> tail(myscore, 5)
# A tibble: 5 x 10
       No  系級       學號  姓名    `小考(1)` `小考(2)` `小考(3)`
   <dbl> <chr>    <dbl> <chr>         <dbl>       <dbl>       <dbl>
1        9  統計系 1~ 3.26e7  黎奕璇~            10            15            55
2       10  會計系 1~ 3.25e7  蕭偲賢~            15             5            30
3       11  會計系 1~ 3.25e7  謝涵融~            35            10             5
4       12  會計系 1~ 3.26e7  羅順霓~            50           100            65
5       13  統計系 1~ 3.26e7  顧瀚薇~            15            10            75
# ... with 3 more variables:  作業  <dbl>,  期末考  <dbl>,
#     點名  <dbl>
>
> # ex1.29(b)
> myweather <- read.table("data/20140714-weather.txt", header=TRUE, sep="\t")
> head(myweather, 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(myweather, 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
>
> # ex1.29(c)
> myweather_delays <- read.csv("data/weather_delays14.csv", header = TRUE)
> head(myweather_delays, 5)
   year month day dep_time arr_time carrier tailnum flight
```

```
1 2014    1   1    1733    2024    AA  N3HPAA    199
2 2014    1   1    1718    1840    B6  N324JB   1734
3 2014    1   1     624     946    DL  N3751B    479
4 2014    1   1     910    1203    DL  N910DL   1174
5 2014    1   1    1850    2052    MQ  N1EAMQ   2839
  origin dest carrier_delay weather_delay nas_delay
1    JFK  ORD             0             7        51
2    JFK  BTV             0            18         6
3    JFK  ATL             0             9        45
4    LGA  PBI             0            52         0
5    LGA  STL             0            35        12
  aircraft_delay
1             11
2              0
3              0
4              0
5              0
> tail(myweather_delays, 5)
     year month day dep_time arr_time carrier tailnum flight
4655 2014    10  26     1135     1451      VX  N836VA    409
4656 2014    10  27     1042     1416      VX  N642VA    187
4657 2014    10  29     1507     1808      DL  N321NB   1923
4658 2014    10  31     1500     1751      DL  N338NB   1685
4659 2014    10  31     1323     1502      AA  N3KNAA    329
     origin dest carrier_delay weather_delay nas_delay
4655    JFK  LAX             5            11         0
4656    EWR  SFO            12             9         0
4657    LGA  MIA             0            81         0
4658    LGA  MCO             0            28         0
4659    LGA  ORD             0           113         4
     aircraft_delay
4655              0
4656              0
4657              0
4658              0
4659              0
>
> # ex2.10
```

```
> score <- sample(1:100, 50, replace = TRUE)
> if (any(score > 95)) {
+         print("老師請同學吃飯")
+ }else{
+         print("老師很生氣")
+ }
[1] "老師請同學吃飯"
>
> # ex2.21(a)
> myscore02 <- read.csv("data/score02.csv", header = TRUE)
> head(myscore02, 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)
> myscore02 <- read.csv("data/score02.csv", header = TRUE)
> names(myscore02) <- c("id", "mid", "final")
> head(myscore02, 7)
         id mid final
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(c)
> id <- myscore02$id
> id2 <- id[myscore02$final > myscore02$mid]
> id2
 [1] 410073023 410079121 410172016 410172027 410173072
```

```
  [6] 410173136 410174210 410273014 410273016 410273042
[11] 410273048 410273062 410273067 410273073 410273076
[16] 410273108 410273116 410275016 410275029 410275051
[21] 410279018 410279049 410279054 410279063 410279075
[26]    49981011
>
> # ex2.21(d)
> length(id[myscore02$mid >= 60 & myscore02$final >= 60])
[1] 38
> length(id[myscore02$mid < 60 & myscore02$final >= 60])
[1] 9
> length(id[myscore02$mid >= 60 & myscore02$final < 60])
[1] 32
> length(id[myscore02$mid < 60 & myscore02$final < 60])
[1] 15
>
> # ex2.21(e)
> myscore02$"學期成績 2" <- sort((myscore02$"mid" + myscore02$"final")/2,
decreasing = TRUE)
> myscore02$"學期成績 2"
  [1] 100.0 100.0  96.5  92.5  92.0  91.0  88.5  88.0  88.0
[10]  87.0  86.0  86.0  85.0  85.0  84.0  83.0  82.5  81.5
[19]  81.0  79.0  79.0  78.5  78.0  77.5  77.5  77.5  77.5
[28]  77.0  77.0  76.5  75.5  75.0  75.0  75.0  74.0  73.5
[37]  73.0  70.0  69.5  69.0  68.5  68.5  68.5  68.5  68.5
[46]  68.0  65.5  65.5  65.0  64.0  64.0  63.5  63.5  63.0
[55]  62.5  62.5  62.5  61.5  61.5  61.0  60.5  59.0  58.5
[64]  58.0  57.5  57.5  57.0  56.5  56.0  56.0  56.0  55.0
[73]  54.0  53.5  52.0  51.0  51.0  51.0  50.0  49.5  49.0
[82]  48.5  47.5  45.5  45.0  44.5  43.0  42.5  40.0  37.0
[91]  35.0  26.5  26.5  23.0
>
```