Chapter 6

BASIC DATA ANALYSIS (1)

資料處理

在資料處理的實作時

一般我們都是輸入一組或多組資料，再經過程式處理之後

輸出成檔案

目錄查詢

getwd(), setwd() 使用方式

getwd() // 抓到工作目錄位置

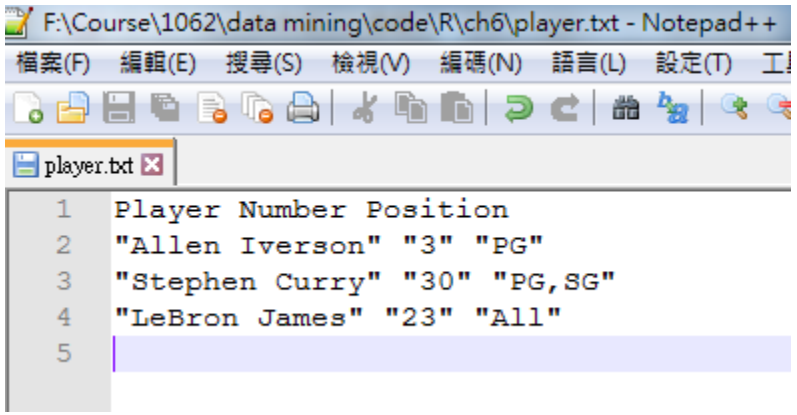
setwd(path) // 設定工作目錄位置

```
1  setwd("C:/")
2  getwd()
3
4  setwd("F:/Course/1062/data mining/code/R/ch6")
5  getwd()
```

資料輸入

read.table (txt) 使用方式

read.table(資料路徑 ,
header = T/F,
stringsAsFactors = T/F)




```
1  fp <- "player.txt"
2
3  np <- read.table(fp, header=TRUE,
4                   stringsAsFactors = FALSE)
5
6  View(np)
```

1.R × np ×

Filter

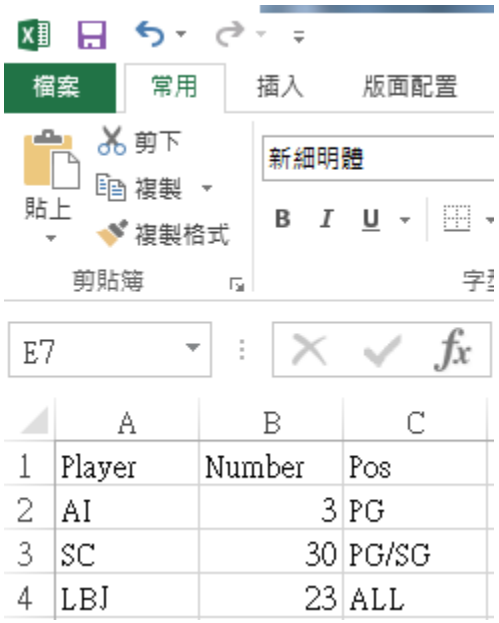
	Player	Number	Position
1	Allen Iverson	3	PG
2	Stephen Curry	30	PG,SG
3	LeBron James	23	All

資料輸入

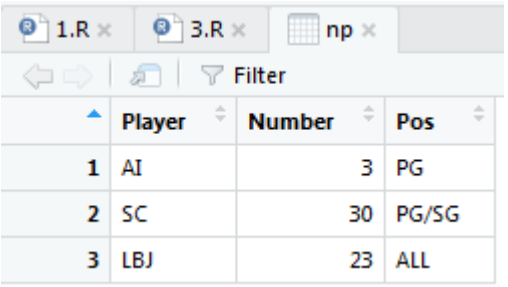
read.table (csv) 使用方式

read.table(資料路徑 ,
header = T/F,
stringsAsFactors = T/F
sep =“,”)

```
1  fp <- "player.csv"
2
3  np <- read.table(fp, header=TRUE,
4                   stringsAsFactors = FALSE,
5                   sep=",")
6
7  View(np)
```



	A	B	C
1	Player	Number	Pos
2	AI	3	PG
3	SC	30	PG/SG
4	LBJ	23	ALL



	Player	Number	Pos
1	AI	3	PG
2	SC	30	PG/SG
3	LBJ	23	ALL

資料輸入

read.excel (xlxs) 使用方式

我們需要先安裝套件才能打開 Excel 檔案

install.packages(“readxl”)
library(readxl)

```
1  install.packages("readxl")
2  library(readxl)
```

Console Terminal

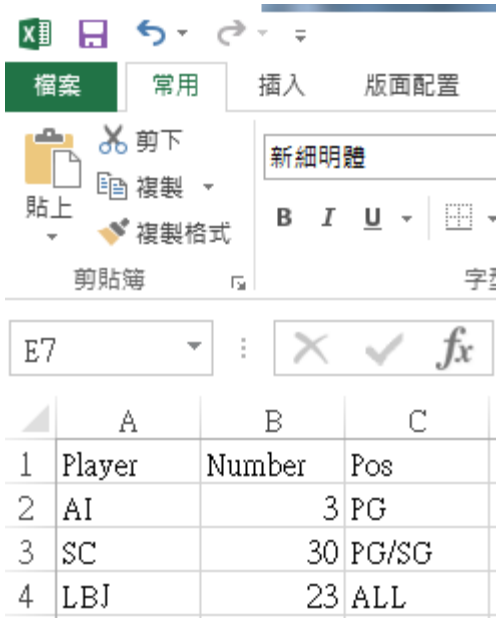
F:/Course/1062/data mining/code/R/ch6/

```
> install.packages("readxl")
Installing package into ‘C:/Users/user/Documents/R/win-library/3.4’
(as ‘lib’ is unspecified)
also installing the dependencies ‘rematch’, ‘cellranger’

trying URL 'https://ftp.yzu.edu.tw/CRAN/bin/windows/contrib/3.4/rematch_1.0.1.zip'
Content type 'application/zip' length 14612 bytes (14 KB)
downloaded 14 KB

trying URL 'https://ftp.yzu.edu.tw/CRAN/bin/windows/contrib/3.4/cellranger_1.1.0.zip'
Content type 'application/zip' length 75387 bytes (73 KB)
downloaded 73 KB

trying URL 'https://ftp.yzu.edu.tw/CRAN/bin/windows/contrib/3.4/readxl_1.0.0.zip'
Content type 'application/zip' length 1457757 bytes (1.4 MB)
downloaded 1.4 MB

package ‘rematch’ successfully unpacked and MD5 sums checked
package ‘cellranger’ successfully unpacked and MD5 sums checked
package ‘readxl’ successfully unpacked and MD5 sums checked

The downloaded binary packages are in
        C:\Users\user\AppData\Local\Temp\RtmpiUDNlH\downloaded_packages
> library(readxl)
```

資料輸入

read.excel (xlxs) 使用方式

read.excel(資料路徑)



	A	B	C
1	Player	Number	Pos
2	AI	3	PG
3	SC	30	PG/SG
4	LBJ	23	ALL

```
1  #install.packages("readxl")
2  #library(readxl)
3
4  fp <- "player.xlsx"
5  np <- read_excel(fp)
6
7  print(np)
```

Console Terminal

F:/Course/1062/data mining/code/R/ch6/

```
> #install.packages("readxl")
> #library(readxl)
>
> fp <- "player.xlsx"
> np <- read_excel(fp)
>
> print(np)
# A tibble: 3 x 3
  Player Number Pos
  <chr>   <dbl> <chr>
1 AI       3.00 PG
2 SC      30.0  PG/SG
3 LBJ     23.0  ALL
>
```

資料輸入

fromJSON 使用方式

我們需要先安裝套件才能打開JSON(javascript object notation)

install.packages(“jsonlite”)
library(jsonlite)

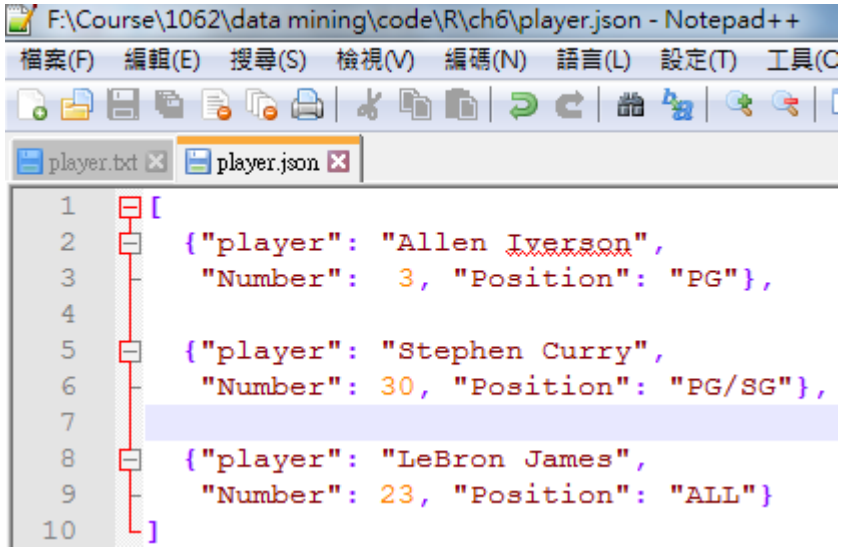
```
1  install.packages("jsonlite")
2  library(jsonlite)
3
```

```
Console  Terminal ×
F:/Course/1062/data mining/code/R/ch6/
> install.packages("jsonlite")
Installing package into ‘C:/Users/user/Documents/R/win-library/3.4’
(as ‘lib’ is unspecified)
trying URL 'https://ftp.yzu.edu.tw/CRAN/bin/windows/contrib/3.4/jsonlite_1.5.zip'
Content type 'application/zip' length 1159934 bytes (1.1 MB)
downloaded 1.1 MB

package ‘jsonlite’ successfully unpacked and MD5 sums checked

The downloaded binary packages are in
        C:\Users\user\AppData\Local\Temp\RtmpiUDNlH\downloaded_packages
> library(jsonlite)
>
```

資料輸入

fromJSON 使用方式

fromJSON(資料路徑)




```r
#install.packages("jsonlite")
#library(jsonlite)

fp <- "player.json"
jp <- fromJSON(fp)
print(jp)
```

Console Terminal

F:/Course/1062/data mining/code/R/ch6/

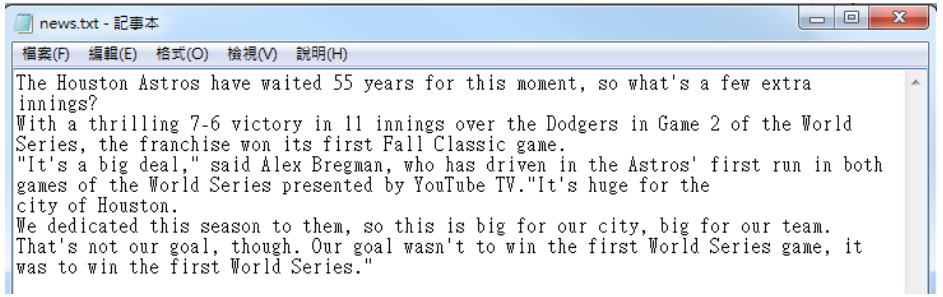
```
> #install.packages("jsonlite")
> #library(jsonlite)
>
> fp <- "player.json"
> jp <- fromJSON(fp)
> print(jp)
         player Number Position
1 Allen Iverson      3       PG
2 Stephen Curry     30    PG/SG
3  LeBron James     23      ALL
>
```

資料輸入

readLines 使用方式

不是所有檔案都是有經過整理的
所以我們使用 readLines 來一行一行讀取

readLines(資料路徑)




```
1  fp <- "news.txt"
2
3  np <- readLines(fp)
4
5  print(np)
```

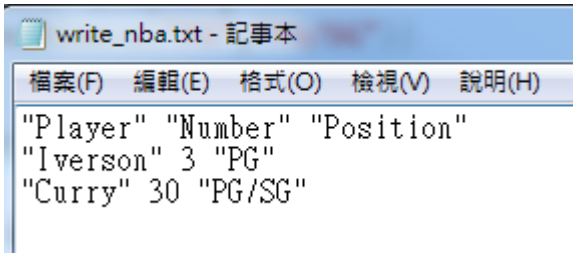
```
> fp <- "news.txt"
>
> np <- readLines(fp)
>
> print(np)
[1] "The Houston Astros have waited 55 years for

[2] "With a thrilling 7-6 victory in 11 innings
first Fall Classic game."
[3] "\"It's a big deal,\" said Alex Bregman, whc
 presented by YouTube TV.\"It's huge for the cit
[4] "We dedicated this season to them, so this i

[5] "That's not our goal, though. Our goal wasn'
ries.\""
>
```

資料輸出

```r
player <- data.frame(Player=c("Iverson","Curry"),
                     Number=c(3,30),
                     Position=c("PG","PG/SG"))
fp <- "write_nba.txt"

write.table(player,fp,row.name=FALSE)
```

write.table (txt) 使用方式

write.table(變數 ,
資料路徑 ,
rows.name = T/F)



資料輸出

toJSON (JSON) 使用方式

toJSON(變數)

writeLine(變數 ,con= 路徑)

```
1  player <- data.frame(Player=c("Iverson","Curry"),
2                       Number=c(3,30),
3                       Position=c("PG","PG/SG"))
4  fp <- "write_nba.json"
5
6  a<-toJSON(player)
7  writeLines(a, con=fp)
```

player.txt | player.json | write_nba.JSON

```
1  [{"Player":"Iverson","Number":3,"Position":"PG"},{"Player":"Curry","Number":30,"Position":"PG/SG"}]
2
```

隨堂練習 1-1

1. 讀取 UCI IRIS data

(https://archive.ics.uci.edu/ml/machine-learning-databases/iris/iris.data)

2. 轉成 data.frame

quiz.R* × iris_data ×

Filter

	X5.1	X3.5	X1.4	X0.2	Iris.setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
5	5.4	3.9	1.7	0.4	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa
7	5.0	3.4	1.5	0.2	Iris-setosa
8	4.4	2.9	1.4	0.2	Iris-setosa
9	4.9	3.1	1.5	0.1	Iris-setosa
10	5.4	3.7	1.5	0.2	Iris-setosa
11	4.8	3.4	1.6	0.2	Iris-setosa
12	4.8	3.0	1.4	0.1	Iris-setosa

Showing 1 to 12 of 149 entries

隨堂練習 1-2

1. 將四個欄位名稱 (X5.1, X3.5, X1.4, X0.2) 換成如下

   sepal length, sepal width, petal length, and petal width

2. 將最後一個欄位設成 class

Filter

	sepal l	sepal w	petal l	petal w	class
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
5	5.4	3.9	1.7	0.4	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa
7	5.0	3.4	1.5	0.2	Iris-setosa
8	4.4	2.9	1.4	0.2	Iris-setosa
9	4.9	3.1	1.5	0.1	Iris-setosa
10	5.4	3.7	1.5	0.2	Iris-setosa
11	4.8	3.4	1.6	0.2	Iris-setosa

Showing 1 to 12 of 149 entries

Any Questions !?