

```

> #2020/11/06 (五), 109 學年第一學期 資料科學應用 R 作業(2)
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> #ex1.13(a)
> lm.obj <- lm(airquality$Wind ~ airquality$Temp)
> lm.anova <- anova(lm.obj)
> lm.summary <- summary(lm.obj)
>
> class(lm.anova)
[1] "anova"          "data.frame"
> str(lm.anova)
Classes 'anova' and 'data.frame': 2 obs. of 5 variables:
 $ Df      : int  1 151
 $ Sum Sq : num  396 1491
 $ Mean Sq: num  395.71 9.87
 $ F value: num  40.1 NA
 $ Pr(>F) : num  2.64e-09 NA
 - attr(*, "heading")= chr [1:2] "Analysis of Variance Table\n" "Response:
airquality$Wind"
> #ex1.13(b)
> attributes(lm.summary)
$names
 [1] "call"          "terms"          "residuals"      "coefficients"   "aliased"
 [6] "sigma"         "df"             "r.squared"       "adj.r.squared"
"fstatistic"
[11] "cov.unscaled"

$class
[1] "summary.lm"

> lm.summary$r.squared
[1] 0.2097529
> #ex1.20
> "statlog_vehicle_846x18.txt"
[1] "statlog_vehicle_846x18.txt"
> x <- read.table("statlog_vehicle_846x18.txt", header = T, sep = "\t")

```

```
> dim(x)
```

```
[1] 846 20
```

```
> head(x, 5)
```

```
no class compactness circularity distance radiusratio pr.axis max.length scatterratio
1 1 0 96 55 103 201 65
9 204
2 2 0 101 56 100 215 69
10 208
3 3 0 93 35 66 154 59
6 142
4 4 0 101 48 107 222 68
10 208
5 5 0 87 38 85 177 61
8 164
```

```
elongatedness pr.axis.1 max.length.1 scaledvmi scaledvma scaledradius skewness
skewness.1
```

```
1 32 23 166 227 624
246 74 6
2 32 24 169 227 651
223 74 6
3 46 18 128 162 304
120 64 5
4 32 24 154 232 641
204 70 5
5 40 20 129 186 402
130 63 1
```

```
kurtosis kurtosis.1 hollows
```

```
1 2 186 194
2 5 186 193
3 13 197 202
4 38 190 202
5 25 198 205
```

```
> tail(x, 5)
```

```
no class compactness circularity distance radiusratio pr.axis max.length
scatterratio
```

842 842	3	87	45	66	139	58
8	140					
843 843	3	95	43	76	142	57
10	151					
844 844	3	90	44	72	157	64
8	137					
845 845	3	89	46	84	163	66
11	159					
846 846	3	85	36	66	123	55
5	120					

elongatedness pr.axis.1 max.length.1 scaledvmi scaledvma scaledradius  
skewness skewness.1

842	47	18	148	168	294
175	73	3			
843	44	19	149	173	339
159	71	2			
844	48	18	144	159	283
171	65	9			
845	43	20	159	173	368
176	72	1			
846	56	17	128	140	212
131	73	1			

kurtosis kurtosis.1 hollows

842	12	188	196
843	23	187	200
844	4	196	203
845	20	186	197
846	18	186	190

> object.size(x)

70816 bytes

> print(object.size(x), units = "Kb")

69.2 Kb

> #ex1.28

> "stock-data.txt"

[1] "stock-data.txt"

```
> y <- read.table("stock-data.txt", header = T, sep = "\t", skip = 1)
```

```
> dim(y)
```

```
[1] 60 10
```

```
> head(y, 5)
```

	半導體公司	年度	月份	最高價	最低價	加權平均價	成交筆數	成交金額	成交股數
1	台積電	100	1	78.3	69.6	74.30	263,999	100,578,274,926	1,353,616,348
2	台積電	100	2	77.0	69.9	72.54	235,159	74,985,055,548	1,033,654,452
3	台積電	100	3	72.2	65.7	69.74	276,434	88,459,924,495	1,268,289,393
4	台積電	100	4	73.9	68.0	71.37	211,611	70,177,023,098	983,177,475
5	台積電	100	5	76.9	73.0	74.96	213,185	74,005,599,560	987,256,484

週轉率百分比

1	5.22
2	3.98
3	4.89
4	3.79
5	3.80

```
> tail(y, 5)
```

	半導體公司	年度	月份	最高價	最低價	加權平均價	成交筆數	成交金額	成交股數
56	旺宏	100	8	14.50	10.25	11.84	152,177	8,137,500,167	687,167,610
57	旺宏	100	9	12.65	10.40	11.55	108,879	5,542,998,380	479,779,350
58	旺宏	100	10	12.00	10.25	11.31	68,571	3,041,525,834	268,710,697
59	旺宏	100	11	13.65	10.85	12.54	167,018	9,538,526,797	760,264,306
60	旺宏	100	12	12.85	11.15	12.17	115,192	5,070,210,532	416,455,073

## 週轉率百分比

56	20.31
57	14.18
58	7.94
59	22.47
60	12.31

>

```
> #ex1.33(a)
```

```
> Dates <- c("180924", "181112", "181231", "181105", "180604", "180219",  
"180416", "180611", "180813", "181029")
```

```
> Time <- c("01:00", "04:00", "16:00", "23:00", "08:00", "09:00", "07:00", "17:00",  
"03:00", "14:00")
```

```
> Volume <- c(7951, 159, 1958, 6848, 3762, 3678, 8696, 9045, 6208, 1425)
```

```
> j <- paste(Dates, Time)
```

```
> DateTime <- as.POSIXlt(strptime(j, format = "%Y%m%d %H:%M", tz = "UTC" ))
```

```
> Items <- as.factor(c("shirt", "shirt", "pants", "jacket", "jacket", "shirt", "jacket",  
"jacket", "shoes", "shirt"))
```

```
> mySale <- data.frame(DateTime, Items, Volume)
```

```
> class(Volume)
```

```
[1] "numeric"
```

```
> class(Items)
```

```
[1] "factor"
```

```
> class(DateTime)
```

```
[1] "POSIXlt" "POSIXt"
```

```
> class(mySale)
```

```
[1] "data.frame"
```

```
> print(mySale)
```

	DateTime	Items	Volume
1	2018-09-24 01:00:00	shirt	7951
2	2018-11-12 04:00:00	shirt	159
3	2018-12-31 16:00:00	pants	1958
4	2018-11-05 23:00:00	jacket	6848
5	2018-06-04 08:00:00	jacket	3762
6	2018-02-19 09:00:00	shirt	3678
7	2018-04-16 07:00:00	jacket	8696

```
8 2018-06-11 17:00:00 jacket 9045
9 2018-08-13 03:00:00 shoes 6208
10 2018-10-29 14:00:00 shirt 1425
> #ex1.33(b)
> Items[Dates >= "180700"]
[1] shirt shirt pants jacket shoes shirt
Levels: jacket pants shirt shoes
> sum(Volume[Dates >= "180700"], na.rm=T)
[1] 24549
>
```