

> #2020/12/25(五), 109 學年第一學期 資料科學應用 R 作業(7)

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>

> # ex2.30(a)

> answer <- read.table("data/answer.txt", header=TRUE, sep="\t")

> first5.records <- head(answer, 5)

> first5.records

	Student	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
1	s1	C	D	D	A	D	A	B	C	C	B
2	s2	B	D	B	D	D	A	C	D	B	B
3	s3	B	A	A	B	D	A	C	B	C	B
4	s4	B	D	B	A	B	C	C	D	C	B
5	s5	B	D	D	D	A	C	C	D	A	B

>

> # ex2.30(b)

> right.answer <- as.factor(c("B", "D", "B", "D", "D", "A", "C", "D", "C", "B"))

> student <- as.factor(c("A", "D", "B", "D", "B", "A", "B", "D", "C", "B"))

> correct.item <- which(right.answer == student)

> correct.item

[1] 2 3 4 6 8 9 10

> n.correct <- as.integer(length(correct.item)*10)

> n.correct

[1] 70

>

> # ex2.30(c)

> options(max.print=999999)

> ans <- t(answer)

> fun <- function(x){

+ n <- which(right.answer == x)

+ length(n)*10

+ }

> a <- as.integer(apply(ans[2:11], 2, fun))

> score.table <- table(sapply(a, paste))

> score.table

0	10	100	20	30	40	50	60	70	80	90
3	10	7	9	11	19	23	28	40	30	12

>

```

> # ex2.30(d)
> ta <- order(a, decreasing=TRUE)
> topID <- which(a > 80)
> lowID <- which(a <= 40)
> n.topID <- length(topID)
> n.lowID <- length(lowID)
> rownames(answer)[topID]
[1] "2"   "12"  "19"  "20"  "25"  "31"  "41"  "43"  "47"
[10] "52"  "73"  "123" "128" "139" "143" "171" "187" "189"
[19] "192"
> rownames(answer)[lowID]
[1] "8"   "11"  "14"  "17"  "18"  "28"  "29"  "32"  "39"
[10] "40"  "51"  "53"  "57"  "64"  "65"  "71"  "74"  "76"
[19] "82"  "83"  "87"  "89"  "90"  "91"  "93"  "97"  "101"
[28] "104" "105" "107" "120" "132" "137" "140" "142" "148"
[37] "150" "156" "160" "161" "163" "168" "169" "172" "174"
[46] "176" "177" "178" "182" "184" "185" "188"
> n.topID
[1] 19
> n.lowID
[1] 52
> # ex2.30(e)
>
> # ex2.30(f)
>
> # ex2.51(a)
> gregexpr("A", "AAABBBCCCC")
[[1]]
[1] 1 2 3
attr(,"match.length")
[1] 1 1 1
attr(,"index.type")
[1] "chars"
attr(,"useBytes")
[1] TRUE

>
> cat(A[[1]])

```

Error in cat(A[[1]]) : 找不到物件 'A'

>

> # ex2.51(b)

>

> # ex2.52

>

> # ex5.2(a)

> bag <- c(rep("white", 6), rep("red", 4))

> set.seed(123456)

> ball <- sample(bag, 3)

> table(ball)

ball

red white

1 2

>

> # ex5.2(b)

> n <- 10

> Re <- data.frame(white=rep(0, n), red=rep(0,n))

> for(i in 1:n){

+ Exp <- sample(bag, 3)

+ Re[i, 1] <- length(which(Exp == "white"))

+ Re[i, 2] <- length(which(Exp == "red"))

+ }

> Re

white red

1 2 1

2 2 1

3 1 2

4 2 1

5 2 1

6 1 2

7 2 1

8 2 1

9 1 2

10 2 1

>

> # ex5.2(c)

> n <- 100

```

> Re <- data.frame(white=rep(0, n), red=rep(0, n))
> for(i in 1:n){
+   Exp <- sample(bag, 3)
+   w <- Re[i, 1] <- length(which(Exp == "white"))
+   r <- Re[i, 2] <- length(which(Exp == "red"))
+ }
> Re

```

	white	red
1	1	2
2	3	0
3	1	2
4	1	2
5	2	1
6	2	1
7	3	0
8	1	2
9	1	2
10	1	2
11	1	2
12	2	1
13	2	1
14	2	1
15	2	1
16	3	0
17	2	1
18	1	2
19	1	2
20	2	1
21	2	1
22	1	2
23	3	0
24	2	1
25	3	0
26	1	2
27	1	2
28	2	1
29	2	1
30	2	1

31	2	1
32	2	1
33	3	0
34	2	1
35	2	1
36	3	0
37	1	2
38	1	2
39	2	1
40	3	0
41	2	1
42	1	2
43	2	1
44	2	1
45	2	1
46	1	2
47	1	2
48	2	1
49	3	0
50	2	1
51	3	0
52	1	2
53	1	2
54	1	2
55	1	2
56	2	1
57	1	2
58	2	1
59	2	1
60	2	1
61	2	1
62	2	1
63	2	1
64	1	2
65	1	2
66	2	1
67	1	2
68	2	1

69	2	1
70	1	2
71	2	1
72	2	1
73	1	2
74	2	1
75	1	2
76	2	1
77	2	1
78	1	2
79	2	1
80	2	1
81	3	0
82	2	1
83	0	3
84	0	3
85	1	2
86	2	1
87	3	0
88	3	0
89	3	0
90	1	2
91	1	2
92	2	1
93	2	1
94	2	1
95	2	1
96	1	2
97	2	1
98	2	1
99	1	2
100	2	1

```
> z <- Re$white == 2 & Re$red == 1
```

```
> length(which(z == Re))
```

```
[1] 66
```

```
> pro <- length(which(z == Re))/n
```

```
> pro
```

```
[1] 0.66
```

