

109-1 資料科學應用 HW1

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#第 1.7 題

> #ex1.7(a) 用 rep 指令造出以下數列:

> # "A" "A" "A" "A" "A" "B" "B" "B" "B" "C" "C" "C" "D" "D" "E"

> a1 <- rep("A",5)

> a2 <- rep("B",4)

> a3 <- rep("C",3)

> a4 <- rep("D",2)

> a5 <- rep("E",1)

> cat(a1,a2,a3,a4,a5)

A A A A A B B B B C C C D D E>

>

> #ex1.7(b) 用 seq, c 指令造出以下數列:

> # "b" "d" "f" "h" "j" "l" "n" "p" "r" "t" "v" "x" "z" "a" "c" "e"  
"g" "i" "k" "m" "o" "q" "s" "u" "w" "y"

> b1 <- c(letters)

> b2 <- seq(2,26,2)

> b3 <- seq(1,25,2)

> b4 <- b1[b2]

> b5 <- b1[b3]

> cat(b4,b5)

b d f h j l n p r t v x z a c e g i k m o q s u w y>

>

> #ex1.7(c) 產生以下數列:

> c1 <- rep(1,100)

> c2 <- seq(-1,1,2)

> c3 <- rep(-1,100)

> c4 <- c1\*c2\*c3/1:100

> cat(c4)

1 -0.5 0.3333333 -0.25 0.2 -0.1666667 0.1428571 -0.125 0.1111111 -0.1  
0.09090909 -0.08333333 0.07692308 -0.07142857 0.06666667 -0.0625  
0.05882353 -0.05555556 0.05263158 -0.05 0.04761905 -0.04545455  
0.04347826 -0.04166667 0.04 -0.03846154 0.03703704 -0.03571429  
0.03448276 -0.03333333 0.03225806 -0.03125 0.03030303 -0.02941176

```

0.02857143 -0.02777778 0.02702703 -0.02631579 0.02564103 -0.025
0.02439024 -0.02380952 0.02325581 -0.02272727 0.02222222 -0.02173913
0.0212766 -0.02083333 0.02040816 -0.02 0.01960784 -0.01923077
0.01886792 -0.01851852 0.01818182 -0.01785714 0.01754386 -0.01724138
0.01694915 -0.01666667 0.01639344 -0.01612903 0.01587302 -0.015625
0.01538462 -0.01515152 0.01492537 -0.01470588 0.01449275 -0.01428571
0.01408451 -0.01388889 0.01369863 -0.01351351 0.01333333 -0.01315789
0.01298701 -0.01282051 0.01265823 -0.0125 0.01234568 -0.01219512
0.01204819 -0.01190476 0.01176471 -0.01162791 0.01149425 -0.01136364
0.01123596 -0.01111111 0.01098901 -0.01086957 0.01075269 -0.0106383
0.01052632 -0.01041667 0.01030928 -0.01020408 0.01010101 -0.01>

```

```
>
```

```
> #ex1.7(d) 產生以下文字數列 (提示: month.abb, seq):
```

```
> # "Jan" "Mar" "May" "Jul" "Sep" "Nov" "Feb" "Apr" "Jun" "Aug" "Oct"
"Dec"
```

```
> d1 <- c(month.abb)
```

```
> cat(d1)
```

```
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec>
```

```
>
```

```
> #####
```

```
> #第 1.23 題
```

```
> #有一班級學生之數學成績如下 (成績已依座號順序排列):
```

```
> # 43 94 20 8 46 72 93 8 28 33 79 60 93 52 8
```

```
> #ex1.23(a) 將資料輸入 R, 並存至一向量物件, 命名為 math.score。
```

```
> math.score <- c(43,94,20,8,46,72,93,8,28,33,79,60,93,52,8)
```

```
>
```

```
>
```

```
> #ex1.23(b) 此成績紀錄, 共有多少位同學?
```

```
> length(math.score)
```

```
[1] 15
```

```
> math.id <- c(1,2,3,4,5,6,7,8,9,10,11,12,13,14,15)
```

```
>
```

```
>
```

```
> #ex1.23(c) 列印出偶數座號同學之成績, 並計算其平均數。
```

```
> math.id2 <- seq(2,15,2)
```

```
> math.score2 <- math.score[math.id2]
```

```
>
```

```
> math.score2.avg <- sum(math.score2)/7
```

```

> cat(math.score2)
94 8 72 8 33 60 52> cat(math.score2.avg)
46.71429>
>
> #ex1.23(d) 成績及格（大於或等於 60 分）之同學座號為何？共有多少人及格？
> pass.id <- math.id[which(math.score >=60)]
> cat(pass.id)
2 6 7 11 12 13>
> length(pass.id)
[1] 6
>
>
> #####
> #第 1.37 題
> #某社區之 10 位住戶，接受體能量測之指數及滿意度調查資料如下（NA 表示未接受量測
或調查）：
> #年紀(age): 54 64 75 21 66 49 25 72 50 72
> #性別(gender): "女" "男" "男" "女" "女" "男" "男" "女" "男" "女"
> #指數(index): 86 30 NA 43 35 42 31 7 29 80
> #滿意度(sat): "滿意" "非常滿意" "非常不滿意" "非常滿意" "普通" "非常不滿意"
"普通" "滿意" "普通" "非常滿意"
> #ex1.37(a) 將此資料輸入 R 中，共計 4 個變數: age, gender, index, 及 sat。
將「滿意度 (sat)」設置成一個具有順序的因子類別之物件。
> # (大至小的順序為「非常滿意」至「非常不滿意」)
> age <- c(54,64,75,21,66,49,25,72,50,72)
> gender <- c("女","男","男","女","女","男","男","女","男","女")
> index <- c(86,30,NA,43,35,42,31,7,29,80)
> sat <- c("滿意","非常滿意","非常不滿意","非常滿意","普通","非常不滿意","普
通","滿意","普通","非常滿意")
> sat1 <- ordered(sat,levels=c("非常不滿意","普通","滿意","非常滿意"))
> sat1
[1] 滿意      非常滿意   非常不滿意 非常滿意   普通      非常不滿意 普通
滿意      普通
[10] 非常滿意
Levels: 非常不滿意 < 普通 < 滿意 < 非常滿意
>
>
> #ex1.37(b) 滿意度為「滿意」(含) 以上程度的人數共多少人。

```

```

> sat2 <- sat[which(sat1 >= "滿意")]
> length(sat2)
[1] 5
>
>
> #ex1.37(c) 請計算年紀大於 40 歲男性之平均體能指數。
> library(tidyverse)
> age.1 <- c(54,64,21,66,49,25,72,50,72)#去掉 NA 後
> gender.1 <- c("女","男","女","女","男","男","女","男","女")#去掉 NA 後
> index.1 <- c(86,30,43,35,42,31,7,29,80)#去掉 NA 後
> man <- data.frame(age.1,gender.1,index.1,stringsAsFactors = FALSE)
> man40 <- filter(man,gender.1 == "男"&age.1>=40)
> summarise(man40,mean(index.1))
  mean(index.1)
1      33.66667
>

```