2020/10/23(五), 109 學年第一學期 資料科學應用 R 作業(1)

學號: A107260028 姓名: 張雅筑

(請依照規定)貼上執行程式碼及執行結果。
詳見: R 程式作業繳交方式
http://www.hmwu.idv.tw/web/teaching/doc/R-how-homework.pdf

```
> # 2020/10/23
>
> #ex1.7(a)
> rep(LETTERS[1:5], seq(5, 1, -1))
 [1] "A" "A" "A" "A" "A" "B" "B" "B" "B" "C" "C" "C" "D" "D" "E"
>
> #ex1.7(b)
> a <- letters[1:26]
> c(a[seq(from = 2, to = 26, by = 2)], a[seq(from = 1, to = 26, by = 2)])
 [1] "b" "d" "f" "h" "j" "l" "n" "p" "r" "t" "v" "x" "z" "a" "c" "e" "g" "i" "k" "m"
[21] "o" "q" "s" "u" "w" "y"
>
> #ex1.7(c)
> #install.packages("MASS")
> #require(MASS)
> n <- (1:100)
> A <- (-1)^(n+1)*1/n
> fractions (A)
  [1]    1  -1/2   1/3  -1/4   1/5  -1/6   1/7  -1/8   1/9  -1/10  1/11
 [12] -1/12  1/13 -1/14  1/15 -1/16  1/17 -1/18  1/19 -1/20  1/21 -1/22
 [23]  1/23 -1/24  1/25 -1/26  1/27 -1/28  1/29 -1/30  1/31 -1/32  1/33
 [34] -1/34  1/35 -1/36  1/37 -1/38  1/39 -1/40  1/41 -1/42  1/43 -1/44
 [45]  1/45 -1/46  1/47 -1/48  1/49 -1/50  1/51 -1/52  1/53 -1/54  1/55
 [56] -1/56  1/57 -1/58  1/59 -1/60  1/61 -1/62  1/63 -1/64
```

```
1/65    -1/66
 [67]     1/67    -1/68     1/69    -1/70     1/71    -1/72     1/73    -1/74     1/75    -
1/76     1/77
 [78]    -1/78     1/79    -1/80     1/81    -1/82     1/83    -1/84     1/85    -1/86
1/87    -1/88
 [89]     1/89    -1/90     1/91    -1/92     1/93    -1/94     1/95    -1/96     1/97    -
1/98     1/99
[100] -1/100
>
> #ex1.7(d)
> c1 <- month.abb
> length(c1)
[1] 12
> c(c1[seq(from = 2, to = 12, by = 2)], c1[seq(from = 1, to = 12, by = 2)])
 [1] "Feb" "Apr" "Jun" "Aug" "Oct" "Dec" "Jan" "Mar" "May" "Jul" "Sep" "Nov"
>
> #ex1.23(a)
> math.score <- c(43, 94, 20, 8, 46, 72, 93, 8, 28, 33, 79, 60, 93, 52, 8)
>
> #ex1.23(b)
> length(math.score)
[1] 15
>
> #ex1.23(c)
> y <- seq(from = 2, to = 12, by = 2)
> math.score[y]
[1] 94  8 72  8 33 60
> mean(math.score[y])
[1] 45.83333
>
> #ex1.23(d)
> id <- 1:length(math.score)
> id[math.score > 60]
[1]  2  6  7 11 13
> mean(math.score[y])
[1] 45.83333
>
> #ex1.37(a)
```

```
> age <- c(54, 64, 75, 21, 66, 49, 25, 72, 50, 72)
> gender <- c( "f", "m", "m", "f", "f", "m", "m", "f", "m", "f")
> index <- c(86, 30, NA, 43, 35, 42, 31, 7, 29, 80)
> sat <- c("b", "a", "d", "a", "c", "d", "c", "b", "c", "a")
> levels(sat)
NULL
> sat.f <- factor(sat)
> levels(sat.f)
[1] "a" "b" "c" "d"
> levels(sat.f) <- c("非常滿意", "滿意", "普通", "非常不滿意")
> sat.f
 [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
 [8] 滿意       普通       非常滿意
Levels: 非常滿意 滿意 普通 非常不滿意
>
> #ex1.37(b)
> id1 <- 1:length(sat)
> id1[sat <= "b"]
[1]  1  2  4  8 10
> length(id1[sat <= "b"])
[1] 5
>
> #ex1.37(c)
> id2 <- 1:length(age)
> id3 <- 1:length(gender)
> id2[age > 40]
[1]  1  2  3  5  6  8  9 10
> id3[gender == "m"]
[1] 2 3 6 7 9
> intersect(id2[A], id3[B])#兩個數值向量取交集
Error in as.vector(y) : 找不到物件 'B'
> mean(index[intersect(id2[A], id3[B])])
Error in as.vector(y) : 找不到物件 'B'
>
>
> #加分題
> #1
```

```
> rep(1:5, seq(1, 5, 1))
 [1] 1 2 2 3 3 3 4 4 4 4 5 5 5 5 5
>
> #2
> rep(5:1, seq(1, 5, 1))
 [1] 5 4 4 3 3 3 2 2 2 2 1 1 1 1 1
>
> #3
> rep(1:3, times=3)
[1] 1 2 3 1 2 3 1 2 3
>
> #4
> Fibonacci <- numeric(11)
> Fibonacci[0] <- Fibonacci[2] <- 1
> for (i in 3:11) Fibonacci[i] <- Fibonacci[i - 2] + Fibonacci[i - 1]
> Fibonacci
 [1]  0  1  1  2  3  5  8 13 21 34 55
>
> #5
> c(rep(1:5, times=1), rep(2:5, times=1), rep(3:5, times=1), rep(4:5, times=1), rep(5:5,
times=1))
 [1] 1 2 3 4 5 2 3 4 5 3 4 5 4 5 5
>
> #6
> seq(from = 1, by = 4:9, len = 6)
[1]  1  6 13 22 33 46
>
> #7
> c(rep(2^0, times=1), rep((2:3)^1, times=1),rep((2:3)^2, times=1),rep((2:3)^3,
times=1))
[1]  1  2  3  4  9  8 27
```