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#2020/10/23(五), 109 學年第一學期 資料科學應用 R 作業(1)
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>
> # 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)
> c(letters[1:26][seq(2, 26, by = 2)], letters[1:25][seq(1, 25, by = 2)])
 [1] "b" "d" "f" "h" "j" "l" "n" "p" "r" "t" "v" "x" "z" "a" "c" "e" "g" "i" "k"
[20] "m" "o" "q" "s" "u" "w" "y"
>
> # ex1.7(c)
> b <- rep(c(1,-1),50)
> c <- 1:100
> require(MASS)
> fractions(b/c)
  [1]     1   -1/2    1/3   -1/4    1/5   -1/6    1/7   -1/8    1/9
-1/10
 [11]  1/11  -1/12   1/13  -1/14   1/15  -1/16   1/17  -1/18   1/19
-1/20
 [21]  1/21  -1/22   1/23  -1/24   1/25  -1/26   1/27  -1/28   1/29
-1/30
 [31]  1/31  -1/32   1/33  -1/34   1/35  -1/36   1/37  -1/38   1/39
-1/40
 [41]  1/41  -1/42   1/43  -1/44   1/45  -1/46   1/47  -1/48   1/49
-1/50
 [51]  1/51  -1/52   1/53  -1/54   1/55  -1/56   1/57  -1/58   1/59
-1/60
 [61]  1/61  -1/62   1/63  -1/64   1/65  -1/66   1/67  -1/68   1/69
-1/70
 [71]  1/71  -1/72   1/73  -1/74   1/75  -1/76   1/77  -1/78   1/79
-1/80
 [81]  1/81  -1/82   1/83  -1/84   1/85  -1/86   1/87  -1/88   1/89
-1/90
 [91]  1/91  -1/92   1/93  -1/94   1/95  -1/96   1/97  -1/98   1/99
-1/100
>
```

```
> # ex1.7(d)
> c(month.abb[seq(1, 12, by = 2)], month.abb[seq(2, 12, by = 2)])
 [1] "Jan" "Mar" "May" "Jul" "Sep" "Nov" "Feb" "Apr" "Jun" "Aug" "Oct" "Dec"
>
> # 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)
> math.score[1:15][seq(2, 15, by = 2)]
[1] 94  8 72  8 33 60 52
> mean(math.score[1:15][seq(2, 15, by = 2)])
[1] 46.71429
>
> # ex1.23(d)
> id <- 1:length(math.score)
> pass.id <- id[math.score >=60]
> pass.id
[1]  2  6  7 11 12 13
> length(pass.id)
[1] 6
>
> # ex1.37(a)
> 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")
> sat.ordered <- factor(sat, levels = c("非常不滿意", "普通", "滿意", "非常滿意"),
ordered = TRUE)
> sat.ordered
 [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: 非常不滿意 < 普通 < 滿意 < 非常滿意
```

```
>
> # ex1.37(b)
> id2 <- 1:length(sat.ordered)
> sat.id <- id2[sat.ordered >="滿意"]
> length(sat.id)
[1] 5
>
> # ex1.37(c)
> i <- index[age >= 40 & gender == "男"]
> mean(i, na.rm = TRUE)
[1] 33.66667
>
> #  加分(1)
> rep(1:5,seq(1,5, 1))
 [1] 1 2 2 3 3 3 4 4 4 4 5 5 5 5 5
>
> #  加分(2)
> rep(5:1,seq(1,5, 1))
 [1] 5 4 4 3 3 3 2 2 2 2 1 1 1 1 1
>
> #  加分(3)
> rep((1:3), 3)
[1] 1 2 3 1 2 3 1 2 3
>
> #  加分(4)
> Fibonacci <- numeric(10)
> Fibonacci[1] <- 0
> Fibonacci[2] <- 1
> for (i in 3:11) Fibonacci[i] <- Fibonacci[i - 2] + Fibonacci[i - 1]
> print("First 10 Fibonacci numbers:")
[1] "First 10 Fibonacci numbers:"
> print(Fibonacci)
 [1]  0  1  1  2  3  5  8 13 21 34 55
>
> #  加分(5)
> x <- c(1:5)
> for (j in 1:5) {cat(x[j:5],"")}
1 2 3 4 5 2 3 4 5 3 4 5 4 5 5 >
```

```
> #  加分(6)
> y <- c()
> z <- 5
> for (k in 1:10)
+         {if(k==1)
+                 y[k] <- 1
+         else {y[k] <- y[k-1]+z
+         z <- z+2}}
> cat(y)
1 6 13 22 33 46 61 78 97 118>
> #  加分(7)
> a <- c()
> for (l in 1:10)
+ {if(l==1) a[l] <- 1
+ else if (l==2) a[2] <- 2
+ else if (l%%2==1) a[l] <- a[l-2]*3
+ else a[l] <- a[l-2]*2}
> cat(a)
1 2 3 4 9 8 27 16 81 32
>
```