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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)
> #學號: A107260036  姓名: 顏郁芹
> # ex1.7(a)
> rep(LETTERS[1:5], 5:1)
 [1] "A" "A" "A" "A" "A" "B" "B" "B" "B" "C" "C" "C" "D" "D" "E"
> # ex1.7(b)
> c(letters[seq(2, 26, 2)], letters[seq(1, 25, 2)])
 [1] "b" "d" "f" "h" "j" "l" "n" "p" "r" "t" "v" "x" "z" "a" "c" "e"
[17] "g" "i" "k" "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
 [10] -1/10  1/11 -1/12  1/13 -1/14  1/15 -1/16  1/17 -1/18
 [19]  1/19 -1/20  1/21 -1/22  1/23 -1/24  1/25 -1/26  1/27
 [28] -1/28  1/29 -1/30  1/31 -1/32  1/33 -1/34  1/35 -1/36
 [37]  1/37 -1/38  1/39 -1/40  1/41 -1/42  1/43 -1/44  1/45
 [46] -1/46  1/47 -1/48  1/49 -1/50  1/51 -1/52  1/53 -1/54
 [55]  1/55 -1/56  1/57 -1/58  1/59 -1/60  1/61 -1/62  1/63
 [64] -1/64  1/65 -1/66  1/67 -1/68  1/69 -1/70  1/71 -1/72
 [73]  1/73 -1/74  1/75 -1/76  1/77 -1/78  1/79 -1/80  1/81
 [82] -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
[100] -1/100
> # ex1.7(d)
> c(month.abb[seq(1,11,2)], month.abb[seq(2,12,2)])
 [1] "Jan" "Mar" "May" "Jul" "Sep" "Nov" "Feb" "Apr" "Jun" "Aug"
[11] "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
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> # ex1.23(c)
> math.score[seq(1,15,2)]
[1] 43 20 46 93 28 79 93  8
> mean(math.score)
[1] 49.13333
> mean(math.score[seq(1,15,2)]
+         )
[1] 51.25
> # 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=T)
> sat.ordered
 [1] 滿意       非常滿意   非常不滿意 非常滿意   普通
 [6] 非常不滿意 普通       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)
> sat.id <- (1: length(sat.ordered))[sat.ordered >= "滿意" ]
> length(sat.id)
[1] 5
> # ex.1.37(c)
> a <- index[age > 40 & gender == "男"]
> mean(a, na.rm = T)
```

```
[1] 33.66667
> #加分
> #1
> rep(1:5, 1:5)
 [1] 1 2 2 3 3 3 4 4 4 4 5 5 5 5 5
> #2
> rep(5:1, 1:5 )
 [1] 5 4 4 3 3 3 2 2 2 2 1 1 1 1 1
> #3
> rep(1:3, 3)
[1] 1 2 3 1 2 3 1 2 3
> #4
> x <- c()
> for(i in 1:10)
+       {if(i == 1)
+               x[i] <- 0
+       else if(i == 2)
+               x[i] <- 1
+       else
+               x[i] <-c(x[i-2]+x[i-1])
+ }
> cat(x)
0 1 1 2 3 5 8 13 21 34
> #5
> x <- c(1:5)
> for(i in 1:5)
+       {cat(x[i:5], "")
+ }
1 2 3 4 5 2 3 4 5 3 4 5 4 5 5
> #6
> x <- c()
> y <- 5
> for(i in 1:10)
+       {if(i == 1)
+               x[i] <- 1
```

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+         else
+             {x[i] <- x[i-1]+y
+             y <- y+2}
+ }
> cat(x)
1 6 13 22 33 46 61 78 97 118
> #7
> x <- c()
> for(i in 1:10){
+         if(i == 1)
+             x[i] <- 1
+         else if(i == 2)
+             x[i] <- 2
+         else if (i %% 2 == 0)
+             x[i] <- x[i-2]*2
+         else
+             x[i]<- x[i-2]*3
+
+ }
> cat(x)
1 2 3 4 9 8 27 16 81 32
```