Worksheet-2 in R

Worksheet for R Programming

Instructions:

- Use RStudio or the RStudio Cloud accomplish this worksheet. + Save the R script as *RWorksheet_lastname#2.R*.
- Create your own *GitHub repository* and push the R script as well as this pdf worksheet to your own repo.

Accomplish this worksheet by answering the questions being asked and writing the code manually.

Using Vectors

1. Create a vector using : operator
   a. Sequence from -5 to 5. Write the R code and its output. Describe its output.
      Rcode:
      > **#seq <- c(-5:5)**
      > **#seq**
      Output:
      > **# [1] -5 -4 -3 -2 -1 0 1 2 3 4 5**
      > **# It first displays the negative numbers, then it displays the 0 then it displays the positive numbers.**
   b. x <- 1:7. What will be the value of x?
      Rcode:
      > **#x <- 1:7**
      > **#x**
      Output:
      > **# [1] 1 2 3 4 5 6 7**

2.* Create a vector using seq() function
      a. seq(1, 3, by=0.2) # specify step size
      Write the R code and its output. Describe the output.
      Rcode:
      > **# Creating a Sequence of Numeric Values with the seq Function**
      > **#(1,3)**
      > **#seq(1,3)**
      > **#seq(1, 3, 0.2)**

 # The by argument
#seq(1, 3, by = 0.2) #sequence from 1 to 3 by 0.2

Output:
 # [1] 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0
#the output is

3. A factory has a census of its workers. There are 50 workers in total. The following list shows their ages: 34, 28, 22, 36, 27, 18, 52, 39, 42, 29, 35, 31, 27, 22, 37, 34, 19, 20, 57, 49, 50, 37, 46, 25, 17, 37, 43, 53, 41, 51, 35, 24,33, 41, 53, 40, 18, 44, 38, 41, 48, 27, 39, 19, 30, 61, 54, 58, 26, 18.

   a. Access 3rd element, what is the value?
      [1] 22
   b. Access 2nd and 4th element, what are the values?
      [1] 28
      [1] 36
   c. Access all but the 1st element is not included. Write the R code and its output.
   R Code:
   #wokers_age = c(34, 28, 22, 36, 27, 18, 52, 39, 42, 29, 35, 31, 27, 22, 37, 34, 19, 20, 57, 49, 50, 37, 46, 25, 17, 37, 43, 53, 41, 51, 35, 24,33, 41, 53, 40, 18, 44, 38, 41, 48, 27, 39, 19, 30, 61, 54, 58, 26,18)
   #print(workers_age[3])
   #print(workers_age[2])
   #print(workers_age[4])
   #print(workers_age[-1])
   Output:
   #[1] 34 28 22 36 27 18 52 39 42 29 35 31 27 22 37
   [16] 34 19 20 57 49 50 37 46 25 17 37 43 53 41 51
   [31] 35 24 33 41 53 40 18 44 38 41 48 27 39 19 30
   [46] 61 54 58 26 18
   #[1] 22
   #[1] 28
   #[1] 36
   #[1] 28 22 36 27 18 52 39 42 29 35 31 27
   [13] 22 37 34 19 20 57 49 50 37 46 25 17
   [25] 37 43 53 41 51 35 24 33 41 53 40 18
   [37] 44 38 41 48 27 39 19 30 61 54 58 26
   [49] 18

4. *Create a vector x <- c("first"=3, "second"=0, "third"=9). Then named the vector, names(x).
    a. Print the results. Then access x[c("first", "third")]. Describe the output.
        Results:
        #the output of the vector displays the names as first, second, third and when I access the first and third it displays its corresponding number value as 3 and 9.
    b. Write the code and its output.
        Rcode:
        #x <- c("first"=3, "second"=0, "third"=9)
        #names(x)
        #x[c("first", "third")]
        Output:
        #[1] "first" "second" "third"
          first third
            3   9

5. Create a sequence x from -3:2.
    a. Modify 2nd element and change it to 0;x[2] <- 0 x
        Describe the output.
        #the ouput displays the negavite numbers from -3 to -1, next it displays the 0 and then displays the only 2 positive numbers.
    b. Write the code and its output.
        Rcode:
        #x <- -3:2
        #x[2] <- 0 x
        #x
        Output:
        [1] -3 -2 -1 0 1 2

6. *The following data shows the diesel fuel purchased by Mr. Cruz.

Month	Jan	Feb	March	Apr	May	June
Price per liter (PhP)	52.50	57.25	60.00	65.00	74.25	54.00
Purchase–quantity(Liters)	25	30	40	50	10	45

    a. Create a data frame for month, price per liter (php) and purchase-quantity (liter).Write the codes.
        Rcode:
        #Month <- c("Jan", "Feb", "March", "Apr", "May", "June")
        #Price_per_liter_php <- c(52.50, 57.25, 60.00, 65.00, 74.25, 54.00)
        #Purchase_quantity_liter <- c(25, 30, 40, 50, 10, 45)

        #data_frame <- data.frame(Month, Price_per_liter_php, Purchase_quantity_liter)
        #data_frame

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b. What is the average fuel expenditure of Mr. Cruz from Jan to June? Note: Use weighted.mean(liter, purchase)
   # [1] 59.2625

7. R has actually lots of built-in datasets. For example, the rivers data "gives the lengths (in miles) of 141 "major" rivers in North America, as compiled by the US Geological Survey".

   a. Type "rivers" in your R console. Create a vector data with 7elements, containing the number of elements (length) in rivers, their sum (sum), mean (mean), median (median), variance (var) standard deviation (sd), minimum (min) and maximum (max).

   data <- c(length(rivers), sum(rivers), mean(rivers), median(rivers), var(rivers), sd(rivers), min(rivers), max(rivers))

   b. What are the results?
      #When I typed the word rivers without quotation mark it displays random numbers but when I typed the word "rivers" with quotation marks it will also display the same word I typed as "rivers".

   c. Write the code and its outputs.
      Rcode:
      #data <- c(length(rivers), sum(rivers), mean(rivers), median(rivers), var(rivers), sd(rivers), min(rivers), max(rivers))
      #data
      Output:
      # [1]   141.0000 83357.0000   591.1844   425.0000 243908.4086   493.8708   135.0000
      # [8]   3710.0000

8. The table below gives the 25 most powerful celebrities and their annual pay as ranked by the editions of Forbes magazine and as listed on the Forbes.com website.

Power Ranking	Celebrity Name	Pay	Power Ranking	Celebrity Name	Pay
1	Tom Cruise	67	14	Paul McCartney	40
2	Rolling Stones	90	15	George Lucas	233
3	Oprah Winfrey	225	16	Elton John	34
4	U2	110	17	David Letterman	40
5	Tiger Woods	90	18	Phil Mickelson	47
6	Steven Spielberg	332	19	J.K Rowling	75
7	Howard Stern	302	20	Bradd Pitt	25
8	50 Cent	41	21	Peter Jackson	39
9	Cast of the Sopranos	52	22	Dr. Phil McGraw	45
10	Dan Brown	88	23	Jay Lenon	32
11	Bruce Springsteen	55	24	Celine Dion	40
12	Donald Trump	44	25	Kobe Bryant	31
13	Muhammad Ali	55			

Figure 1: Forbes Ranking

a. Create vectors according to the above table. Write the codes.

RCode:

```
# PowerRanking <- 1:25
#CelebrityName <- c("Tom Cruise", "Rolling Stones", "Oprah Winfrey", "U2",
            "Tiger Woods", "Steven Spielberg", "Howard Stern", "50 Cent", "Cast of the
sopranos",
            "Dan Brown", "Bruce Springsteen", "Donald Trump", "Muhammad Ali",
"Paul McCartney",
            "George Lucas", "Elton John", "David Letterman", "Phil Mickelson", "J.K
Rowling",
            "Bradd Pitt", "Peter Jackson", "Dr. Phil McGraw", "Jay Lenon", "Celine Dion",
"Kobe Bryant")
#Pay <- c(67, 90, 225, 110, 90, 332, 302, 41, 52, 88, 55, 44, 55, 40,
    233, 34, 40, 47, 75, 25, 39, 45, 32, 40, 31)

#Data_Ranking <- data.frame(PowerRanking, CelebrityName, Pay)
#Data_Ranking
```

b. Modify the power ranking and pay of J.K. Rowling. Change power ranking to 15 and pay to 90. Write the codes and its output.

RCode:

```
# PowerRanking [19] <- 15
#PowerRanking
#Pay [19] <- 90
#Pay
```

Output:

```
#PowerRanking
# [1] 1 2  3  4  5  6  7  8  9 10 11 12 13 14
#[15] 15 16 17 18 15 20 21 22 23 24 25
#Pay [19] ← 90
#Pay
# [1] 67 90 225 110 90 332 302 41 52 88 55 44 55 40 233 34 40 47 90 25 39 45 32
#[24]  40  31
#forbes_Ranking
#PowerRanking     CelebrityName Pay
1        1       Tom Cruise 67
2        2     Rolling Stones 90
3        3      Oprah Winfrey 225
4        4            U2 110
5        5       Tiger Woods 90
```

6	6	Steven Spielberg	332
7	7	Howard Stern	302
8	8	50 Cent	41
9	9	Cast of the sopranos	52
10	10	Dan Brown	88
11	11	Bruce Springsteen	55
12	12	Donald Trump	44
13	13	Muhammad Ali	55
14	14	Paul McCartney	40
15	15	George Lucas	233
16	16	Elton John	34
17	17	David Letterman	40
18	18	Phil Mickelson	47
19	15	J.K Rowling	90
20	20	Bradd Pitt	25
21	21	Peter Jackson	39
22	22	Dr. Phil McGraw	45
23	23	Jay Lenon	32
24	24	Celine Dion	40
25	25	Kobe Bryant	31

c. Interpret the data.

#The position of rank and pay of J.K Rowling has changed in 15 and 90.