Worksheet-2 in R

Worksheet for R Programming

Instructions:

- Use RStudio or the RStudio Cloud to accomplish this worksheet.
- Save the R script as *RWorksheet_lastname#2.R.*
- Commit and push the R script and your Rmarkdown file in html to your own repo. Do not forget to comment your Git 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.

Answer: Sequence <- -5:5
print(Sequence)
: The sequence has made. It came from the -5 first and adding it by 1 until it reach number 5.

b. `x <- 1:7`. What will be the value of `x`?

Answer: The value of x will be 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 script and its output. Describe the output.

Answer: seq_function <-seq(1,3, by=0.2)
print(seq_function)

Answer: It made a sequence from 1 to 3, however it only adds by 0.2 until it reaches to 3.

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?
Answer: 22

b. Access 2nd and 4th element, what are the values?
Answer: 28, 36

c. Access all but the 4th and 12th element is not included. Write the R script and its output.
Answer: access_all <- workers_age[-c(4,12)]
print(access_all)

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.
Answer: It only displays the value of first which is 3 and third which is 9

b. Write the code and its output.
Answer: access_all <- workers_age[-c(4,12)]
print(access_all)

5. Create a sequence x from -3:2.

a. Modify 2nd element and change it to 0;

```
x[2] <- 0
x
```

Describe the output.
Answer: The -2 (which is the value of the x[2]) is changed to 0.

b. Write the code and its output.
Answer: x <- -3:2
x[2] <- 0
x

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 R scripts and its output.

Answer: months <- c("Jan", "Feb", "March", "Apr", "May", "June")
price_per_liter <- c(52.50,57.25,60.00,65.00,74.25, 54.00)
purchase_quantity_Liters<- c(25,30,40,50,10,45)
data_frame_diesel <-data.frame(Month=months,
Price_per_Liter=price_per_liter,
Purchase_Quantity_Liters= purchase_quantity_Liters)
print(data_frame_diesel)

b. What is the average fuel expenditure of Mr. Cruz from Jan to June? Note: Use ‘weighted.mean(liter, purchase)‘. Write the R scripts and its output.

Answer: weighted.mean(purchase_quantity_Liters)

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 7 elements, 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))
```

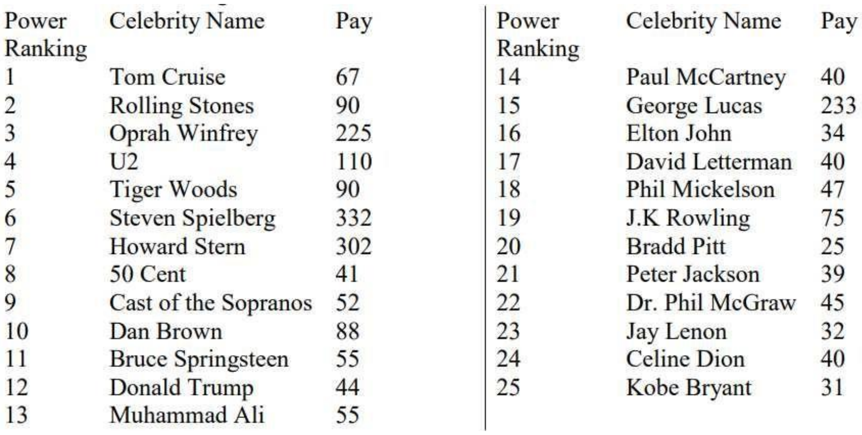
b. What are the results?

Answer: [1]   141.0000 83357.0000   591.1844   425.0000 243908.4086   493.8708
[7]   135.0000   3710.0000

c. Write the R scripts and its outputs.

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

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

Figure 1: Forbes Ranking

a. Create vectors according to the above table.
Write the R scripts and its output.

Answers:
```
celebrity_ranking<-data.frame(Power_Ranking=
c(1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25),
 Celebrity_Name= 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))
celebrity_ranking
```

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

Answers:
```
celebrity_ranking[celebrity_ranking$Celebrity_Name == "J.K Rowling",
c("Power_Ranking", "Pay")] <- c(15, 90)
print(celebrity_ranking)
```

c. Create an excel file from the table above and save it as csv file(PowerRanking). Import the csv file into the RStudio. What is the R script?

Answers:
```
ranked_data <- read.csv("PowerRanking.csv")
print(ranked_data)
```

d. Access the rows 10 to 20 and save it as Ranks.RData.
Write the R script and its output.
Answers: rows <- ranked_data[10:20,]
save(rows, file = "Ranks.RData")
print(rows)

e. Describe its output.
Answers: The output shows a data frame of different celebrity names, their power rankings and their pay. It also shows how the value changed every time where there is an instruction or command that needed to change.

9. Download the Hotels-Vienna https://tinyurl.com/Hotels-Vienna

a. Import the excel file into your RStudio.
What is the R script?
Answer: library(openxlsx)
hotels_data <- read.xlsx("hotels-vienna.xlsx")
hotels_data

b. How many dimensions does the dataset have?
What is the R script? WHat is its output?
Answers: dim(hotels_data)

```
[1] 428  24
```

c. Select columns **country**, **neighbourhood**,
price, **stars**, **accomodation_type**, and
ratings. Write the R script.
Answer: selected_dataset <- hotels_data[,c("country", "neighbourhood", "price", "stars", "accommodation_type", "rating")]
selected_dataset

d. Save the data as **new.RData to your RStudio. Write the R
script.
Answer: save(selected_dataset, file = "new.RData")
load("new.RData")

e. Display the first six rows and last six rows of the
new.RData. What is the R script?
Answer: head(selected_dataset)
tail(selected_dataset)

10. Create a list of ten (10) vegetables you ate during your lifetime. If none, just list down.

a. Write the R scripts and its output.

Answer: vegetables <- c("Carrot", "Onion", "Garlic", "Eggplant", "Potato", "Lettuce", "Squash", "Cabbage", "Ampalaya", "Pumpkin")

b. Add 2 additional vegetables after the last vegetables in the list. What is the R script and its output?

Answer: vegetables <- c(vegetables, "Okra", "Spinach")
vegetables
length(vegetables)

c. Add 4 additional vegetables after index 5. How many datapoints does your vegetable list have? What is the R script and its output?

Answer: added_veg <- append(vegetables, c("Peas", "Bamboo Shoots", "Seaweed", "Cucumber") , after=5)
added_veg
length(added_veg)

d. Remove the vegetables in index 5, 10, and 15. How many vegetables were left? Write the codes and its output.

Answer: remove_veg <- added_veg[-c(5,10,15)]
remove_veg
length(remove_veg)

Note: Do not forget to push into your GitHub repo.

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Without ethical considerations, AI becomes a tool of chaos and harm.