

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. `seq_vector <- -5:5`
Describe its output.

This creates a sequence from -5 to 5, including all the integers in that range. `seq_vector`

```
[1] -5 -4 -3 -2 -1 0 1 2 3 4
```

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

```
[11] 5
```

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.

`seq_vector`

The `seq()` function creates a sequence from 1 to 3 with a step size of 0.2.

```
[1] 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4
```

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? 22

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

c. Access all but the 4th and 12th element is not included. Write the R script and its output.

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.

The result is a subset of the vector with the values 3 for "first" and 9 for "third".

b. Write the code and its output.

```
x <- c("first"=3, "second"=0, "third"=9)
```

```
names(x)
```

```
[1] "first" "second" "third"
```

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

```
# a. Access x[c("first", "third")]
```

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

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

```
x
```

Describe the output.

The vector `x` starts as `[-3, -2, -1, 0, 1, 2]`. After changing the second element to 0, the final output is `[-3, 0, -1, 0, 1, 2]`.

b. Write the code and its output.

```
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.

```
month <- c("Jan", "Feb", "March", "Apr", "May", "June")
price_per_liter <- c(52.5, 57.25, 60.00, 65.00, 74.25, 54.00)
purchase_quantity <- c(25, 30, 40, 50, 10, 45)

fuel_data <- data.frame(month, price_per_liter, purchase_quantity)

fuel_data
#>   month price_per_liter purchase_quantity
#> 1  Jan         52.50             25
#> 2  Feb         57.25             30
#> 3 March         60.00             40
#> 4  Apr         65.00             50
#> 5  May         74.25             10
#> 6 June         54.00             45
```

- 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.

```
weighted.mean(price_per_liter, purchase_quantity)
#> [1] 59.2625
```

```
1 Jan      52.50
2 Feb      57.25
3 March    60.00
4 Apr      65.00
```

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?

```
output summarize key statistics of the rivers dataset.
```

- c. Write the R scripts and its outputs.

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

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

```
write.csv(data.frame(power_ranking, pay), "PowerRanking.csv")
```

```
power_data <- read.csv("PowerRanking.csv")
```

- d. Access the rows 10 to 20 and save it as Ranks.RData.
Write the R script and its output.
 - e. Describe its output.
9. Download the Hotels-Vienna <https://tinyurl.com/Hotels-Vienna>
- a. Import the excel file into your RStudio.
What is the R script?
 - b. How many dimensions does the dataset have?
What is the R script? What is its output?
 - c. Select columns **country**, **neighbourhood**, **price**, **stars**, **accomodation_type**, and **ratings**. Write the R script.
 - d. Save the data as ****new.RData** to your RStudio. Write the R script.
 - e. Display the first six rows and last six rows of the new.RData. What is the R script?
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.

- b. Add 2 additional vegetables after the last vegetables in the list. What is the R script and its output?
- c. Add 4 additional vegetables after index 5. How many datapoints does your vegetable list have? What is the R script and its output?
- d. Remove the vegetables in index 5, 10, and 15. How many vegetables were left? Write the codes and its output.

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.