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Worksheet-2 in R

Worksheet 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.

Code:

Seq <- -5:5

Output:

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

It will display negative and positive numbers and have a 0 at the center of it.

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

Code:

x <- 1:7

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.

Code: `seq(1,3,by= 0.2)`

Output: 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0

It increases its value by .2 until it reaches its maximum value at 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?

[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.

Code:

workers_age[2:50]

Output:

**[1] 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**

[33] 41 53 40 18 44 38 41 48 27 39 19 30 61 54 58 26 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.

Code:

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

`names(x)`

Output:

"first" "second" "third"

It was only the characters that were displayed from the vector.

1. Create a sequence x from -3:2.
 - a. Modify 2nd element and change it to 0;
Describe the output.

Code:

```
x <- c(-3:2)
```

```
x
```

Output:

```
-3 -2 -1 0 1 2
```

It displays a sequence of negative and positive numbers.

1. *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

```
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)
```

- a. Create a data frame for month, price per liter (php) and purchase-quantity (liter). Write the codes.

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

- b. What is the average fuel expenditure of Mr. Cruz from Jan to June? Note: Use `weighted.mean(liter, purchase)`

```
weighted.mean(Price_per_liter_php, Purchase_quantity_liter)
```

2. 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?

```
141.0000 83357.0000 591.1844 425.0000 243908.4086 493.8708 135.0000  
3710.0000
```

- c. Write the code and its outputs.

Code:

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

Output:

```
141.0000 83357.0000 591.1844 425.0000 243908.4086 493.8708 135.0000  
3710.0000
```

5. 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.

```
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")
```

- 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.

Code:

```
PowerRanking [19] <- 15
```

```
PowerRanking
```

```
Pay [19] <- 90
```

```
Pay
```

Output:

```
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 15 20 21 22 23 24 25
```

```
67 90 225 110 90 332 302 41 52 88 55 44 55 40 233 34 40 47 90 25 39 45 32  
40 31
```