

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.

Answer:

- a. Sequence from -5 to 5. Write the R code and its output. Describe its output.

```
M <- seq(-5:5)
```

```
M
```

```
output: [1] 1 2 3 4 5 6 7 8 9 10 11
```

- **The output of sequence from -5 to 5 are numbers from 1 to 11.**

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

Answer:

```
x <- 1:7
```

```
x
```

```
output: [1] 1 2 3 4 5 6 7
```

- **The value of x are numbers from 1 to 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.

Answer:

```
BB <- seq(1, 3, by = 0.2)
```

```
BB
```

```
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 displays the numbers from 1 to 3 by 0.2 .**

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?

```
workers_age[3]
```

```
output: [1] 22
```

Answer: **The value of 3rd element is 22.**

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

```
workers_age[2]
```

```
output: [1] 28
```

```
workers_age[4]
```

```
output: [1] 36
```

Answer: **The value of 2nd and 4th elements are 28 and 36.**

- c. Access all but the 1st element is not included. Write the R code and its output.

Answer:

```
workers_age[2:49]
```

```
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 41 53
```

```
[35] 40 18 44 38 41 48 27 39 19 30 61 54 58 26
```

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:

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

```
names(x)
```

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

- The output are “first”, “second”, “third” as we command the user to display the names stored in variable x.

b. Write the code and its output.

Answer:

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

```
names(x)
```

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

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 output of sequence x from -3:2 showed 3 and 2 when it change to `x[2] <- 0` the output become -3 0 -1 0 1 2.

b. Write the code and its output.

Answer:

```
x <- -3:2
```

```
x
```

Output:

x

[1] -3 -2 -1 0 1 2 then change to;

x[2] <- 0

x

Output:

[1] -3 0 -1 0 1 2

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

```
month <- c("Jan", "Feb", "Mar", "Apr", "May", "June") price_per_liter
<- c(52.50, 57.25, 60.00, 65.00, 74.25, 54.00) purchase_quantity <-
c(25, 30, 40, 50, 10, 45)
```

• **frame <- data.frame(month, price_per_liter, purchase_quantity) frame**

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

Answer: The average fuel expenditure of Mr. Cruz from Jan to June is 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 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))

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

b. What are the results?

Answer:

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

c. Write the code and its outputs.

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

data

output:

data

```
[1] 141.0000 83357.0000 591.1844 425.0000 243908.4086 493.8708
135.0000 3710.0000
```

8. A. Create vectors according to the above table. Write the codes.

Answer:

```
power_ranking <- c(1:25)
```

```
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", "Donal Trump", "Muhammad Ali", "Paul McCartney",
"George Lucas", "Elton John", "David Letterman", "Phil Mickelson", "J.K Rowling", "Bradd
Pitt", "Peter Jackson", "Dr. Phil McGrow", "J 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(power_ranking, celebrity_name, pay)
```

data_ranking

c. 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.

Answer:

```
power_ranking[19] <- 15
```

power_ranking

output:

```
[1] 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
```

The output shows
numbers 1 to 25.

```
pay [19] <- 90
```

```
pay
```

```
output:
```

```
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  
40 31
```

D . Interpret the data.

Answer:

The data shows the power ranking of each celebrity and their pay. Making a data frame that includes the results of each celebrity and theirs corresponding rank and pay. When we modified the 19th celebrity in the ranking, it was changed into rank number 15 and got the 90 pay.