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Year and Section: BSIT 2A

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.

= -5:5

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

= The output is a sequence from -5 to 5.

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

= x

= [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.

= seq(1, 3, by = 0.2)

= [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 a sequence from 1 to 3 that increases 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[3]

= [1] 22

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

= Workers[2]

= [1] 28

= Workers[4]

= [1] 36

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

= Workers[2:49]

= [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

= [27] 53 41 51 35 24 33 41 53 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.

= names(x)

= [1] "first" "second" "third"

= The output is the named vector's values.

b. Write the code and its output.

= x[c("first", "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.

= -2 was replaced by 0.

b. Write the code and its output.

```
=     x <- -3:2
=     x[2] <- 0
=     x
=     [1] -3  0 -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.

```
=     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 )
```

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

```
=     data_frame
  Month Price_per_liter_php Purchase_quantity_liter
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
=     weighted.mean(Price_per_liter_php, Purchase_quantity_liter)
=     [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))

a. What are the results?

= [1] 141.0000 83357.0000 591.1844 425.0000 243908.4086 493.8708

= [7] 135.0000 3710.0000

b. Write the code and its outputs.

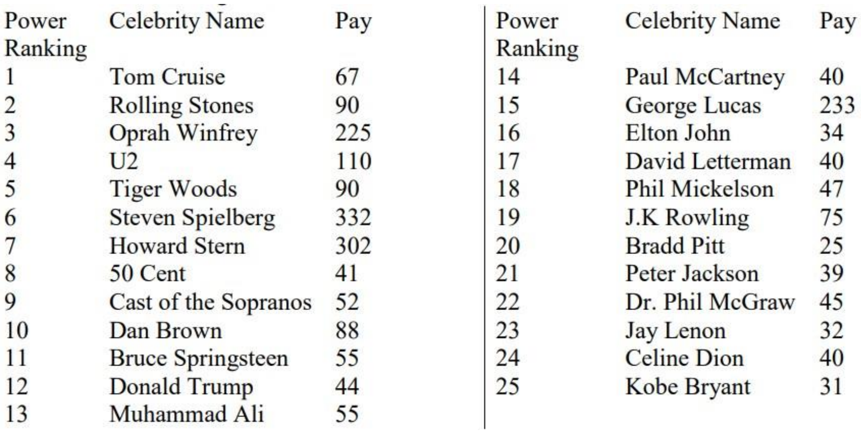
= = data <- c(length(rivers), sum(rivers), mean(rivers), median(rivers), var(rivers), sd(rivers), min(rivers), max(rivers))

= data

= [1] 141.0000 83357.0000 591.1844 425.0000 243908.4086 493.8708

= [7] 135.0000 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
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 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")

= 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)

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.

= PowerRanking [19] <- 15

= PowerRanking

= [1] 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

= Pay [19] <- 90

= Pay

= [1] 67 90 225 110 90 332 302 41 52 88 55 44 55 40 233 34 40 47 90

= [20] 25 39 45 32 40 31

c. Interpret the data.

= The specific data has been replaced by new data using the code.