

Worksheet 2

Wendy Nalaza

2022-10-07

Worksheet for 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.

```
x <- seq(-5,5)
x
```

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

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

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

- 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.

```
Workers <- c(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
```

6.* The following data shows the diesel fuel purchased by Mr. Cruz.

```
##   Months   Php 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
```

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

```
deisel$Php
```

```
## [1] 52.50 57.25 60.00 65.00 74.25 54.00
```

```
deisel$Liter
```

```
## [1] 25 30 40 50 10 45
```

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

```
Php = c(52.50, 57.25, 60.00, 65.00, 74.25, 54.00)
Liter = c(25, 30, 40, 50, 10, 45)
```

```
weighted.mean(Liter, Php)
```

```
## [1] 32.65152
```

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))`

```
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
```

- b. What are the results?

```
data
```

```
## [1] 141.0000 83357.0000 591.1844 425.0000 243908.4086 493.8708
## [7] 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
```

```
## [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. Figure 1: Forbes Ranking

##	PowerRanking	Celebrities	Pay
## 1	1	Tom Cruise	67
## 2	2	Rolling Stones	90
## 3	3	Oprah Winfrey	225
## 4	4	U2	110
## 5	5	Tiger Woods	90
## 6	6	Steven Spielberg	332
## 7	7	Howard Stern	302
## 8	8	50 Cent	41
## 9	9	Cast of the Sopranos	52
## 10	10	Dan Brown	88
## 11	11	Bruce Springsteen	55
## 12	12	Donald Trump	44
## 13	13	Muhammad Ali	55
## 14	14	Paul McCartney	40

## 15	15	George Lucas	233
## 16	16	Elton John	34
## 17	17	David Letterman	40
## 18	18	Phil Mickelson	47
## 19	19	J.K Rowling	75
## 20	20	Bradd Pitt	25
## 21	21	Peter Jackson	39
## 22	22	Dr. Phil McGraw	45
## 23	23	Jay Lenon	32
## 24	24	Celine Dion	40
## 25	25	Kobe Bryant	31

a. Create vectors according to the above table. Write the codes.

```
PowerRanking <- 1:25
Celebrities <- 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)

Ranking <- data.frame(PowerRanking, Celebrities, Pay)
Ranking
```

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

```
ArtistRanking <- data.frame(PowerRanking, Celebrities, Pay)
ArtistRanking
```

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

- c. Interpret the data.

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

(Interpret: The first data declares the power ranking at the data ranking of set variables, and the index 19 declares the power ranking of the row, which then changes from 19 to 15.)

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

(Interpret: The second data declares the pay at the data ranking, same as the process at the first data but as the Pay row and declares 19 of the column to change from 75 to 90.)

ArtistRanking <- data.frame(PowerRanking, Celebrities, Pay) ArtistRanking

(Interpret: The last data declares another new data as “Artist Ranking” to process the changes inside the data of power ranking, celebrities, and pay.)(Interpret: The second data declares the pay at the data ranking, same as the process at the first data but as the Pay row and declares 19 of the column to change from 75 to 90.)