RWorksheet_gabales#2

Ann Erika D. Gabales

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Worksheet-2 in R

Using Vectors
1. Create a vector using : operator
a. Sequence from -5 to 5. Write the R code and its output. Describe its output.

```
> vecSeq <- seq(-5,5)
> vecSeq
[1] -5 -4 -3 -2 -1 0 1 2 3 4 5
```
The output has a sequence from -5 to 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.

```
> workersAge <- 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)
> workersAge
 [1] 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
[26] 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?

> workersAge[3]
[1] 22

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

> workersAge[2]
[1] 28
> workersAge[4]
[1] 36

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

> workersAge[-1]
[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
[26] 43 53 41 51 35 24 33 41 53 40 18 44 38 41 48 27 39 19 30 61 54 58 26 18

4. *Create avector x <- c(“first”=3, “second”=0, “third”=9). Then namedthevector, names(x).

a. Print the results. Then access x[c(“first”,“third”)]. Describe the output.

Because I have named the vector to “names(x)”, the output of the statement, x <- c(“first”=3, “second”=0, “third”=9), is the element inside a quotation marks. And then I have access the first and third, its output is 3 and 9.

b. Write the code and its output.

> x <- c(“first”=3, “second”=0, “third”=9)
> names(x)
[1] “first” “second” “third”

> x[c(“first”,“third”)]
first third
3 9

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

> x <- seq(-3,2)
> x
[1] -3 -2 -1 0 1 2

a. Modify 2nd element and change it to 0; x[2] <- 0 x Describe the output.

The second element was modified and changed to 0.

b. Write the code and its output.

> x[2] <- 0
> x
[1] -3 0 -1 0 1 2

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

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")
> month
[1] "Jan" "Feb" "March" "Apr" "May" "June"

> Php <- c(52.50, 57.25, 60.00, 65.00, 74.25, 54.00)
> Php
[1] 52.50 57.25 60.00 65.00 74.25 54.00

> Liters <- c(25, 30, 40, 50, 10, 45)
> Liters
[1] 25 30 40 50 10 45

```
> data.frame(month,Php,Liters)
  month   Php Liters
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)

> aveFuel <- weighted.mean(Php, Liter)
> aveFuel
[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 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?

[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

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

```
> powerRanking <- 1:25
> powerRanking
 [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

> CelebName <- 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",
+                "Elthon John", "David Letterman", "Phil Mickelson", "J.K Rowling", "Bradd Pitt",
+                "Peter Jackson", "Dr. phil McGraw", "Jay Lenon", "Celine Dion", "Kobe Bryant")
> CelebName
 [1] "Tom Cruise"           "Rolling Stones"       "Oprah Winfrey"
 [4] "U2"                   "Tiger Woods"          "Steven Spielberg"
 [7] "Howard Stern"         "50 Cent"              "Cast of the Sopranos"
[10] "Dan Brown"            "Bruce Springsteen"    " Donald Trump"
[13] "Muhammad Ali"         "Paul McCartney"       "George Lucas"
[16] "Elthon John"          "David Letterman"      "Phil Mickelson"
[19] "J.K Rowling"          "Bradd Pitt"           "Peter Jackson"
[22] "Dr. phil McGraw"      "Jay Lenon"            "Celine Dion"
[25] "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)
> pay
 [1]  67  90 225 110  90 332 302  41  52  88  55  44  55  40 233  34  40  47  75
[20]  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

```
> data.frame(powerRanking, CelebName, pay)
   powerRanking            CelebName 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          Elthon 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
```