RWorksheet_gabales#2

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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
```