

R Worksheet 2

Diana Marie Aguas

2022-10-07

#Using Vectors

1. Create a vector using : operator

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

```
seqA <- 5:5  
seqA
```

```
## [1] 5
```

Describe its output. - The output displays the sequence from -5 to 5.

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

- The value of x is the sequence from 1 to 7

```
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.

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

```
## [1] 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0
```

Describe its output. - The output displays the sequence 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.

```
factoryW <- 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.)  
factoryW
```

```
## [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?

```
thirdE <- factoryW[3]  
thirdE
```

```
## [1] 22
```

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

```
secondE <- factoryW[2]
secondE
```

```
## [1] 28
```

```
fourthE <- factoryW[4]
fourthE
```

```
## [1] 36
```

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

```
all_Elem <- factoryW [c(2:50)]
all_Elem
```

```
## [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 a vector `x <- c("first"=3, "second"=0, "third"=9)`. Then named the vector, `names(x)`.

```
names(x) <- c("first"=3, "second"=0, "third"=9)
names(x)
```

```
## [1] "3" "0" "9" NA NA NA NA
```

a. Print the results. Then access `x[c("first", "third")]`.

```
x[c("first", "third")]
```

```
## <NA> <NA>
## NA NA
```

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

```
x <- c(-3:2)
x
```

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

a. Modify 2nd element and change it to 0;

```
x[2] <- 0
x
```

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

Describe the output. - The 2nd index is changed to 0 instead of -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", "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)
```

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

```
ave_fuel <- data.frame(month, price_per_liter, purchase_quantity)
```

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).

b. What are the results?

```
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.

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

```
power_ranking <- 1:25

celeb_names <- c("Tom Cruise", "Rolling Stones", "Oprah Winfrey", "U2",
                 "Tiger Woods", "Steven Spielberg", "Howard Stein", "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)

d_ranking <- data.frame(power_ranking,celeb_names,pay)
```

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.

```
power_ranking[19]<- 15
power_ranking

## [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. -In a, I created a vector and ranked them according to what is asked in the question. I ranked the celebrity names in their respective order as well as their pay, then made a data frame to check/view if the input is correct. In b, I modified the power ranking and pay of J.K Rowling to rank 15 with 90 as pay.