

# RWorksheet\_PORRAS#2

PORRAS, DORLYNE FATE

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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 <- -5:5
x

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

Describe the output.

The output is counting what is within negative 5 and positive 5 and the their value is 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
```

The value of x are numbers from 1 to 7 in sequence, that is 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.

```
num <- seq(1,3,0.2)
num

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

Describe the output.

The output is numbers from 1 to 3 sequently with a decimal 0.2 in between, that is 1.0,1.2,1.4,1.6,1.8.

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,

4.

```
ages <-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)
ages
```

```
## [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?

```
ages[3]
```

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

The value in 3rd element is 22.

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

```
ages[2]
```

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

```
ages[4]
```

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

The value in 2nd element is 28 and the value of 4th element is 36.

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

```
ages[2:50]
```

```
## [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)`.

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

```
x
```

```
## first second third
##      3      0      9
```

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

```
## first third
##      3      9
```

```
x
```

```
## first second third
##      3      0      9
```

The program output assigned integer value in the string named “first” and “third” using square bracket.

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

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

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

```
x[2]
```

```
## [1] 2
```

```
x
```

```
## [1] 1 2 3 4 5 6
```

Describe the output.

The second element is 2. we changed the second element to zero by creating a sequence.

b. Write the code and its output.

```
x <- seq(-3:2)
x[2] <- 0
x
```

```
## [1] 1 0 3 4 5 6
```

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.

```
liter_frame <- data.frame (Month =c("price_per_liter_php", "purchase_quantity_liter"),
Jan = c("52.50","25"),Feb = c("57.25","30"),March = c("60.00","40"),April = c("65.00","50"),
May = c("74.25","10"),June = c("54.00","45"))
liter_frame
```

```
##           Month   Jan   Feb March April   May   June
## 1 price_per_liter_php 52.50 57.25 60.00 65.00 74.25 54.00
## 2 purchase_quantity_liter    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)

```
price_per_liter_php <- c(52.50, 57.25, 60.00, 65.00, 74.25, 54.00)
price_per_liter_php
```

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

```
purchase_quantity_liter <- c(25, 30, 40, 50, 10, 45)
purchase_quantity_liter
```

```
## [1] 25 30 40 50 10 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 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).

```
R <- c(length(rivers), sum(rivers), mean(rivers), median(rivers), var(rivers),
sd(rivers), min(rivers), max(rivers))
R
```

```
## [1] 141.0000 83357.0000 591.1844 425.0000 243908.4086 493.8708
## [7] 135.0000 3710.0000
```

b. What are the results?

The results displayed a number answers needed with the function length, sum, mean, median, var, sd, min, and max used with the elements of rivers.

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 <- 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(Power, Celebrities, Pay)
ranking
```

| ##    | Power | 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.

```
Power [19]<-15
Power
```

```
## [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
```

```
Magazine_Rank <- data.frame(Power, Celebrities, Pay)
Magazine_Rank
```

| ##   | Power | 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.

The data was changed by: (1) declaring the object name of the data frame, (2) using brackets`[]`. Accessing the rank number,(3) by the vector name, where the values need to change, and lastly by declaring the object name again to access the modified data. JK Rowling's rank was changed from 19 to 15 and her annual pay was changed from 75 to 90.