RWorksheet_#2

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1.Create a vector using : operator

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

```
numseq <- -5:5
numseq
```

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

#The output of the object numseq are numbers from negative 5 until positive 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 object x are numbers from 1 to 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.

```
num <- seq(1, 3, by=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
```

#The value of the object num are sequence number 1 to 3 that has a gap which is 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.

```
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?

```
third_elem <- c(ages[3])
third_elem
```

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

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

```
sec_fourth_elem <- ages[c(2,4)]
sec_fourth_elem
```

```
## [1] 28 36
```

#The values are 28 and 36

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

```
all_elem <- ages[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).

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

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

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

```r
names <- x[c("first", "third")]
names
```

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

#The output are 3 and 9 because we set the value of the character “first” into 3 and “third” into 9.

b. Write the code and its output.

```r
names <- x[c("first", "third")]
names
```

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

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

```r
x <- -3:2
x
```

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

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

Describe the output.

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

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

#The value of the index 2 in array named x is changed into 0.

b. Write the code and its output.

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

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

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

```
diesel_fuel <- data.frame (
Month = c("Price per liter(Php)", "Purchase-quantity(Liters)"),
Jan = c(52.50, 25),
Feb = c(57.25, 30),
March = c(60.00, 40),
Apr = c(65.00, 50),
May = c(74.25, 10),
June = c(54.00, 45)
)

diesel_fuel
```

```
##                       Month  Jan   Feb March Apr   May June
## 1      Price per liter(Php) 52.5 57.25    60  65 74.25   54
## 2 Purchase-quantity(Liters) 25.0 30.00    40  50 10.00   45
```

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

```
Jan = c(52.50, 25)
Feb = c(57.25, 30)
March = c(60.00, 40)
Apr = c(65.00, 50)
May = c(74.25, 10)
June = c(54.00, 45)

Ave_fuel <- weighted.mean(Jan, Feb, March, Apr, May, June)

Ave_fuel
```

```
## [1] 43.04441
```

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 # The results are the built-in datasets of major rivers in North America.

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.

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

```
PowerRanking <- 1:25
CelebrityName <- 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

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)

Forbes_Data <- data.frame(PowerRanking, CelebrityName, Pay)
Forbes_Data
```

```
##    PowerRanking        CelebrityName 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
```

```
Updated_Ranking <- data.frame(PowerRanking, CelebrityName, Pay)
Updated_Ranking
```

```
##    PowerRanking        CelebrityName 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 is all about the ranking of the most powerful celebrities and their annual pay. We rank them and make a table in order for us to easily identify who is the most and less annual pay based on oue table created.