Worksheet#2

ANGELO A. GARRIDO

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```
##Worksheet #2
##1. Create a vector using : operator
##a. Sequence from -5 to 5. Write the R code and its output.
Describe its output.


``` r
seq1 <- c(-5:5)
seq1
```

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

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

```
seq2 <- c(1:7)
seq2
```

```
## [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
```

##output: 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

```
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)

##a. Access 3rd element, what is the value?

ages[3]
```

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

```
## 3rd element is 22
##b. Access 2nd and 4th element, what are the values?
ages[2]
```

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

```
## 2nd element is 28
ages[4]
```
```

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

```
## 4th element is 36
##c. Access all but the 1st element is not included. Write the R code and its
#output.
ages[-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 a vector x <- c("first"=3, "second"=0, "third"=9). Then named the vector,names(x).

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

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

## Print the names of the vector

names(x)
```

```
## [1] "first"  "second" "third"
```

#results: "first" "second" "third"

#Access "first" and "third" x[c("first", "third")]

##Describe the output:The output shows only the elements named "first" and "third

#b. Write the code and its output.

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

x
```

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

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

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

```
##5. Create a sequence x from -3:2
x <- -3:2
## Modify 2nd element and change it to 0
x[2] <- 0
x
```

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

```
##output:-3  0 -1  0  1  2
```

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

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

```
##Describe the output.

##-3  0 -1  0  1  2


##b. Write the code and its output.
# Original sequence
```

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

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

```r
# Modify 2nd element
x[2] <- 0
x
```

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

```r
#Output: -3 -2 -1  0  1  2
#Outout: -3  0 -1  0  1  2
```

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

```r
#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")
Liter <- c(52.50, 57.25, 60.00, 65.00, 74.25, 54.00)
Purchase <- c(25, 30, 40, 50, 10, 45)

diesel_fuel_purchased <- data.frame(Month,Liter,Purchase)

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

```
## [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".

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

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

```r
rivers_stats
```

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

```r
##b. What are the results?
##c. Write the code and its outputs.

## length(rivers) = 141.0000
```

```
## sum(rivers) = 83357.0000
## mean(rivers) = 591.1844
## median(rivers) = 425.0000
## var(rivers) = 243908.4086
## sd(rivers) = 493.8708
## min(rivers) = 135.0000
## max(rivers) = 3710.0000


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


##Power Ranking
rank <- c(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)

##Celebrity Name
name <- 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", "Brad Pitt","Peter Jackson", "Dr. Phil McGraw",
          "Jay Lenon", "Celine Dion", "Kobe Bryant")

##Annual Pay
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)

## Create the data frame
forbes <- data.frame(rank, name, pay)

## Show first few rows
head(forbes)
```

```
##   rank             name 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
```

##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.

```
forbes[forbes$name == "J.K. Rowling", ]
```

```
##    rank         name pay
## 19   19 J.K. Rowling  75
```

```
## Output:
##   rank        name    pay
## 19   19 J.K. Rowling   75

forbes[forbes$name == "J.K. Rowling", "rank"] <- 15
forbes[forbes$name == "J.K. Rowling", "pay"] <- 90
forbes[forbes$name == "J.K. Rowling", ]
```

```
##    rank         name pay
## 19   15 J.K. Rowling  90
```

```
## Output:
##   rank        name    pay
## 19   15 J.K. Rowling   90

##c. Interpret the data

##J.K. Rowling's rank changed from 19 to 15.
##Her pay also increased from 75 to 90.
##This means she became higher in ranking and earned more.
```