Work Sheet #2

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Exercise 1 – Create a vector using : operator

a. Sequence from -5 to 5

```r
y <- -5:5
y
```

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

b. x <- 1:7

```r
x <- 1:7
x
```

```
## [1] 1 2 3 4 5 6 7
```

Exercise 2 – Create a vector using seq()

a. seq(1, 3, by=0.2)

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

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

Exercise 3 – Worker Ages

```r
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

```
ages[3]
```

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

b. Access 2nd and 4th

```
ages[c(2,4)]
```

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

c. Access all except the 1st

```
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
```

Exercise 4 – Named Vector

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

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

Access "first" and "third"

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

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

Exercise 5 – Modify a Vector

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

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

Replace 2nd element with 0

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

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

Exercise 6 – Fuel Data

a. Create data frame

```
month <- c("Jan", "Feb", "March", "Apr", "May", "June")
price <- c(52.50, 57.25, 60.00, 65.00, 74.25, 54.00)
quantity <- c(25, 30, 40, 50, 10, 45)

fuel_data <- data.frame(Month = month, Price = price, Quantity = quantity)
fuel_data
```

```
##    Month Price Quantity
## 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. Average expenditure (weighted mean)

```
avg_expenditure <- weighted.mean(price, quantity)
avg_expenditure
```

```
## [1] 59.2625
```

Exercise 7 – Rivers Dataset Analysis

a. Build vector of statistics

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

names(data) <- c("Length", "Sum", "Mean", "Median", "Variance", "SD", "Min", "Max")
data
```

```
##      Length        Sum       Mean     Median   Variance         SD
##    141.0000 83357.0000   591.1844   425.0000 243908.4086   493.8708
##         Min        Max
##    135.0000  3710.0000
```

Exercise 8 – Forbes Celebrity Data

a. Create vectors

```
power_rank <- 1:25

celeb_names <- c("Tom Cruise", "Rolling Stones", "Oprah Winfrey", "U2",
"Tiger Woods", "Steven Spielberg", "Howard Stern", "50 Cent",
"Cast of Sopranos", "Dan Brown", "Bruce Springsteen", "Donald Trump",
"Muhammad Ali", "Phaul 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")

pay <- c(65, 90, 225, 110, 90, 332, 302, 41, 52, 88, 55, 44, 55, 40,
         233, 44, 40, 47, 75, 25, 39, 45, 32, 40, 31)

forbes <- data.frame(
  Power_Rank = power_rank,
  Celebrity_Name = celeb_names,
  Pay = pay
)

forbes
```

```
##   Power_Rank    Celebrity_Name Pay
## 1          1        Tom Cruise  65
## 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 Sopranos  52
## 10          10         Dan Brown  88
## 11          11 Bruce Springsteen  55
## 12          12      Donald Trump  44
## 13          13      Muhammad Ali  55
## 14          14    Phaul McCartney  40
## 15          15       George Lucas 233
## 16          16         Elton John  44
## 17          17    David Letterman  40
## 18          18      Phil Mickelson  47
## 19          19        J.K Rowling  75
## 20          20          Brad 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 J.K. Rowling's ranking + pay

```r
idx <- which(forbes$Celebrity_Name == "J.K Rowling")
forbes$Power_Rank[idx] <- 15
forbes$Pay[idx] <- 90

forbes[idx, ]
```

```
##    Power_Rank Celebrity_Name Pay
## 19         15    J.K Rowling  90
```

c. Interpretation

J.K. Rowling's updated rank of **15** and higher pay reflect her strong cultural and financial influence.