Lab Exercise #1

Michael T. Simpron

2025-09-29

```
#1
#a)
vector <- -5:5
vector
```

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

```
#b
x <- 1:7
x
```

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

```
#2
#a)
vector <- seq(1, 3, by = 0.2)
vector
```

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

```
#3
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
ages[3]
```

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

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

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

```
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
```

```r
#4
x <- c("first"=3, "second"=0, "third"=9)
names(x)
```

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

```r
x
```

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

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

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

```r
#5
x <- -3:2
x[2] <- 0
x
```

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

```r
#6

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

#a)
fuel_purchase <- data.frame(
Month = month,
Price_per_Liter_PHP = price_per_liter_php,
Purchase_Quantity_Liters = purchase_quantity_liters
)

fuel_purchase
```

```
##   Month Price_per_Liter_PHP Purchase_Quantity_Liters
## 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
```

```r
#b)
average <- weighted.mean(price_per_liter_php, purchase_quantity_liters)
average
```

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

```r
#7
rivers
```

```
##   [1]  735  320  325  392  524  450 1459  135  465  600  330  336  280  315  870
##  [16]  906  202  329  290 1000  600  505 1450  840 1243  890  350  407  286  280
##  [31]  525  720  390  250  327  230  265  850  210  630  260  230  360  730  600
##  [46]  306  390  420  291  710  340  217  281  352  259  250  470  680  570  350
##  [61]  300  560  900  625  332 2348 1171 3710 2315 2533  780  280  410  460  260
##  [76]  255  431  350  760  618  338  981 1306  500  696  605  250  411 1054  735
##  [91]  233  435  490  310  460  383  375 1270  545  445 1885  380  300  380  377
## [106]  425  276  210  800  420  350  360  538 1100 1205  314  237  610  360  540
## [121] 1038  424  310  300  444  301  268  620  215  652  900  525  246  360  529
## [136]  500  720  270  430  671 1770
```

```r
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
```

```r
#8
#a)
Power <- 1:25
Celebrity <- c("Tom Cruise", "Rolling Stones", "Oprah Winfrey", "U2", "Tiger Woods", "Steven Spielberg"
Pay <- c(67, 90, 225, 110, 90, 332, 302, 41, 52, 88, 55, 44, 55, 40, 233, 34, 40, 47, 75, 25, 39, 45, 3
jk <- which(Celebrity == "J.K Rowling")
Power[jk] <- 15
Pay[jk] <- 90
celebrity_df <- data.frame(Power, Celebrity, Pay)
celebrity_df[jk, ]
```

```
##    Power   Celebrity Pay
## 19    15 J.K Rowling  90
```