

Worksheet 2

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

```
seq(-5, 5)
```

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

It is a numeric vector containing 11 elements 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` ranges from 1 to 7

2. Create a vector using `seq()` function a. `seq(1, 3, by=0.2)` # specify step size Write the R script and its output. Describe the output.

```
vector <- seq(1, 3, by=0.2)
print(vector)
```

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

It is a numeric vector containing a sequence of numbers that starts at 1 and ends at 3, with each successive number incrementing by 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.

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

```
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[3]
```

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

The value is 22.

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

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

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

The Values are 28 and 36 respectively.

c. Access all but the 4th and 12th element is not included. Write the R script and its output.

```
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[-c(4, 12)]
```

```
## [1] 34 28 22 27 18 52 39 42 29 35 27 22 37 34 19 20 57 49 50 37 46 25 17 37 43
## [26] 53 41 51 35 24 33 41 53 40 18 44 38 41 48 27 39 19 30 61 54 58 26 18
```

The output is a vector containing all the ages except for the 4th element (36) and the 12th element (31).

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(names(x))
```

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

b. Write the code and its output.

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

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

The first output line shows the names of the vector. The second output line displays the values of the vector elements accessed by their names.

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

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

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

b. Write the code and its output.

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

The output shows the modified vector `x` which are -3, 0, -1, 0, 1, 2.

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

a. Create a data frame for month, price per liter (php) and purchase-quantity (liter). Write the R scripts and its output.

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

fuel_purchases <- data.frame(
  Month = month,
  Price_per_liter = price_per_liter,
```

```
Purchase_quantity = purchase_quantity
)
print(fuel_purchases)
```

```
##   Month Price_per_liter Purchase_quantity
## 1   Jan           52.50              25
## 2   Feb           57.25              30
## 3   Mar           60.00              40
## 4   Apr           65.00              50
## 5   May           74.25              10
## 6   June          54.00              45
```

- b. What is the average fuel expenditure of Mr. Cruz from Jan to June? Note: Use 'weighted.mean(liter, purchase)'. Write the R scripts and its output.

```
fuel_data <- data.frame(
  Month = c("Jan", "Feb", "Mar", "Apr", "May", "June"),
  Price_per_liter <- c(52.50, 57.25, 60.00, 65.00, 74.25, 54.00),
  Purchase_quantity <- c(25, 30, 40, 50, 10, 45)
)
print(fuel_data)
```

```
##   Month Price_per_liter....c.52.5..57.25..60..65..74.25..54.
## 1   Jan                                52.50
## 2   Feb                                57.25
## 3   Mar                                60.00
## 4   Apr                                65.00
## 5   May                                74.25
## 6   June                               54.00
##   Purchase_quantity....c.25..30..40..50..10..45.
## 1                                25
## 2                                30
## 3                                40
## 4                                50
## 5                                10
## 6                                45
```

```
average_expenditure <- weighted.mean(fuel_data$Price_per_liter, fuel_data$Purchase_quantity)
cat("The average fuel expenditure from January to June is:", average_expenditure, "Php\n")
```

```
## The average fuel expenditure from January to June is: 59.2625 Php
```