

Practical Intro-1

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Exercise 1:

Data on heights, weights and gender were collected for 10 individuals in early-adulthood. The data were reported in the table below (heights measured in cm, weights in Kg and m refers to a male gender):

id	ht	wt	gender
1	155	80	m
2	152	85	m
3	164	72	f
4	175	69	m
5	193	86	f
6	203	110	f
7	190	106	f
8	183	96	m
9	155	90	f
10	169	89	m

- a) Create vectors for height, weight and gender and assigned them to the names: `ht`; `wt`; `gender` respectively.

```
ht = c(155, 152, 164, 175, 193, 203, 190, 183, 155, 169)
wt = c(80, 85, 72, 69, 86, 110, 106, 96, 90, 89)
gender = c("m", "m", "f", "m", "f", "f", "f", "m", "f", "m")
```

- b) Using `ht` and `wt` vectors, create a new variable for the BMI (Hint: BMI is calculated by dividing weight measured in Kg by the squared height measured in **meters**)

```
# convert 'ht' into meters
ht_meters = ht / 100
# BMI calculations
(BMI = wt/(ht_meters^2))

## [1] 33.29865 36.79017 26.76978 22.53061 23.08787 26.69320 29.36288
## [8] 28.66613 37.46098 31.16137
```

- c) Show the length of the `ht` vector.

```
length(ht)

## [1] 10
```

- d) Show a frequency table for the `gender` variable (Hint: search the help for the `table` function by typing `in ?table`)

```
?table
table(gender)

## gender
## f m
## 5 5
```

e) Round the calculated BMI values to 2 decimal digits only.

```
(BMI = round(BMI, digits = 2))
```

```
## [1] 33.30 36.79 26.77 22.53 23.09 26.69 29.36 28.67 37.46 31.16
```

f) Create a new `data.frame` with the name `DT` that includes height, in meters, weight, in Kg, BMI, and gender.

```
(DT = data.frame(ht_meters = ht/100, wt = wt, BMI = BMI, gender = gender))
```

```
##   ht_meters wt  BMI gender
## 1     1.55  80 33.30      m
## 2     1.52  85 36.79      m
## 3     1.64  72 26.77      f
## 4     1.75  69 22.53      m
## 5     1.93  86 23.09      f
## 6     2.03 110 26.69      f
## 7     1.90 106 29.36      f
## 8     1.83  96 28.67      m
## 9     1.55  90 37.46      f
## 10    1.69  89 31.16      m
```

g) Add a logical variable to the `DT`, with a name of `obese` whose values are `TRUE` for subjects with weights over 95 Kg.

```
(DT$obese = DT$wt > 95)
```

```
## [1] FALSE FALSE FALSE FALSE FALSE  TRUE  TRUE  TRUE FALSE FALSE
```

h) Find out how many subjects with weights over 95 Kg.

```
sum(DT$wt > 95)
```

```
## [1] 3
```

```
# or alternatively
```

```
sum(DT$obese)
```

```
## [1] 3
```

i) Extract the BMI for the 3rd and 5th individuals.

```
DT$BMI[c(3,5)]
```

```
## [1] 26.77 23.09
```