

lab_1_exercises_faris_abuain.R

farisabuain

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```
# Exercise 2 - For Lab 1, MATH 3MB3
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# Date: 09/09/2025

log(12.43)
## [1] 2.520113

log10(12.43)
## [1] 1.094471

sqrt(12.43)
## [1] 3.525621

exp(12.43)
## [1] 250196

diam <- 20

area_circle <- pi*(diam/2)**2

(14*0.51)**(1/3) # cube root
## [1] 1.9256

weight <- c(69, 62, 57, 59, 59, 64, 56, 66, 67, 66)

mean_weight <- mean(weight)
mean_weight

## [1] 62.5

variance_weight <- var(weight)
variance_weight

## [1] 20.72222

std_weight <- sd(weight)
std_weight

## [1] 4.552167
```

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range_weight <- range(weight)
range_weight

## [1] 56 69

number_of_kids <- length(weight)
number_of_kids

## [1] 10

first_five <- weight[1:5]
first_five

## [1] 69 62 57 59 59

height <- c(112, 102, 83, 84, 99, 90, 77, 112, 133, 112)

summary(height)

##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      77.0   85.5   100.5   100.4   112.0   133.0

some_child <- height[c(2,3,9,10)]
some_child

## [1] 102  83 133 112

shorter_child <- height[height <= 99]
shorter_child

## [1] 83 84 99 90 77

bmi <- weight / ((height/100)**2) ## convert height from cm to m
bmi

## [1] 55.00638 59.59246 82.74060 83.61678 60.19794 79.01235 94.45100
## [9] 52.61480 37.87665 52.61480

seq1 <- seq(from = 0, to = 1, by = 0.1)
seq1

## [1] 0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

seq2 <- rev(seq(from = 1, to = 10, by = 0.5))
seq2

## [1] 10.0  9.5  9.0  8.5  8.0  7.5  7.0  6.5  6.0  5.5  5.0  4.5  4.0  3.5
## [16]  2.5  2.0  1.5  1.0

seq3 <- rep(1:3, times = 3)
seq3

```

```
## [1] 1 2 3 1 2 3 1 2 3

seq4 <- rep(c("a", "c", "e", "g"), each=3)
seq4

## [1] "a" "a" "a" "c" "c" "c" "e" "e" "e" "g" "g" "g"

seq5 <- rep(c("a", "c", "e", "g"), times=3)
seq5

## [1] "a" "c" "e" "g" "a" "c" "e" "g" "a" "c" "e" "g"

seq6 <- rep(1:3, each=3, times=2)
seq6

## [1] 1 1 1 2 2 2 3 3 3 1 1 1 2 2 2 3 3 3

seq7 <- rep(1:5, times=c(rev(1:5)))
seq7

## [1] 1 1 1 1 1 2 2 2 2 3 3 3 4 4 5

seq8 <- rep(c(7,2,8,1), times=c(4,3,1,5))
seq8

## [1] 7 7 7 7 2 2 2 8 1 1 1 1 1

height_sorted <- sort(height)
height_sorted

## [1] 77 83 84 90 99 102 112 112 112 133

child_name <- c("Alfred", "Barbara", "James", "Jane", "John", "Judy",
               "Louise", "Mary", "Ronald", "William")

names_sort <- child_name[order(height)]
names_sort

## [1] "Louise" "James" "Jane" "Judy" "John" "Barbara" "Alfred"
## [8] "Mary" "William" "Ronald"

# The shortest child is Louise, the tallest child is Ronald

weight_rev <- rev(child_name[order(weight)])
weight_rev

## [1] "Alfred" "Ronald" "William" "Mary" "Judy" "Barbara" "John"
## [8] "Jane" "James" "Louise"

# The heaviest child is Alfred, the lightest child is Louise

mydata <- c(2, 4, 1, 6, 8, 5, NA, 4, 7)
mean(mydata) # RETURNS MEAN OF 'NA'
```

```
## [1] NA
```

```
# How can we fix this? --> Check help page. [ Enter > help("mean") in console ]
```

```
mean(mydata, na.rm = TRUE) # returns true mean of 4.625
```

```
## [1] 4.625
```

```
ls() # Lists all variables
```

```
## [1] "area_circle"      "bmi"              "child_name"       "diam"
## [5] "first_five"       "height"           "height_sorted"    "mean_weight"
## [9] "mydata"           "names_sort"       "number_of_kids"   "range_weight"
## [13] "seq1"             "seq2"             "seq3"             "seq4"
## [17] "seq5"             "seq6"             "seq7"             "seq8"
## [21] "shorter_child"    "some_child"       "std_weight"
"variance_weight"
## [25] "weight"           "weight_rev"
```

```
rm(seq1)
```