R code for Data Science for Beginners Day 3: Individual Exercises

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Exercise 3

1. Vectors

1.1 Create a vector

vec.a <- c(1,3,5,7) # combined digits into a vector

1.2 Create a second vector

vec.b <- c(2,4,6,8) # created a second vector

1.3 subtract the vectors

(vec.a - vec.b) # subtracted vec.b from vec.a

1.4 create a new vector by multiplying vec.a and vec.b

vec.c <- (vec.a * vec.b) # created vector.c

1.5 create a new vector by taking the square root of each element in vec.c

vec.d <- sqrt(vec.c) # created vector.d

1.6 find the third element of vector.d

third_element <- vec.d[3] third_element # identified third element in vec.d as 5.477226

1.7 create a vector 1-100 using seq

vec.e <- seq(1, 100) # created vec.e

1.8 use the mean fucntion on vec.e

vec_e_mean <- mean(vec.e) # calculated the mean for vec.e

1.9 use the sum function

vec_e_sum <- sum(vec.e) print(vec_e_sum) # vec_e_sum = 5050

1.10 use the length function

vec_e_length <- length(vec.e) print(vec_e_length) # length equals 100

1.11 divide sum by length

vec_e_sumandlength <- sum(vec.e) / length(vec.e) print(vec_e_sumandlength) # sum divided by length = 50.5 the same as the mean function

1.12 create an object that shows the olympic sequence

olympics <- seq(from = 1896, to = 2012, by = 4) print(olympics) # sequence successfully completed

1.13 number of elements in the olympics sequence

length(olympics) #length = 30

1.14 display the years of the olympics

paste(olympics)

1.15 find the number of olympics to 2040

future_olympics <- seq(from = 1896, to = 2040, by = 4) total_olympics_2040 <- length(future_olympics) print(total_olympics_2040) # there will be 37 olympics since 1896 in 2040

2. Matrices

v1 <- c(1,3,5,7,9,11) # created a vector

2.2 length of the vector

length(v1) # v1 length = 6

2.3 how many columns?

answer is 3 columns with 2 elements each

2.4 create a matrix

mat.v1 <- matrix(data = v1, nrow = 2) print(mat.v1) # there are 3 columns

2.4 create a second matrix using byrow

mat.w <- matrix(data = v1, nrow = 2, byrow = TRUE) print(mat.w) # created matw

2.5 find a number inside the matrix

element <- mat.w[2, 2] print(element) # answer is 9 element2 <- mat.v1[2, 2] print(element2) # answer is 7

3 Lists

months_totaldays <- list(January = 31, February = 28, March = 31, April = 30, May = 31, June = 30, July = 31, August = 31, September = 30, October = 31, November = 30, December = 31) print(months_totaldays) # list created

3.2 days in August

days_in_August <- months_totaldays$August print(days_in_August) # 31 days in August

3.3 convert the list to a vector

vector_months_days <- unlist(months_totaldays) print(vector_months_days) # unlisted

4. Apply functions

4.1 loa data mtcars

data(mtcars) # loaded data set mtcars

4.2 calculate the min values for mtcars

min_values <- apply(mtcars, 2, min) print(min_values) # printed the minimum values for each column

4.3 checking for zeros

zero_check <- function(column) { any(column == 0) } # set up function to detect for zeros zero_indicator <- apply(mtcars, 2, zero_check) # created an object to indicate if there are zeros in columns print (zero_indicator) # detected one column with zeros