612303050 Deshmukh Mehmood Rehan’s Assignment 1

Q1.Install packages namely ’plyr’, ’MASS’, ’ggplot2’, ’dplyr’ etc.

#we can use vector to install multiple packages simultaneously  
install.packages(c('plyr', 'MASS', 'ggplot2', 'dplyr'), repos = "http://cran.us.r-project.org")

## Installing packages into 'C:/Users/deshm/AppData/Local/R/win-library/4.3'  
## (as 'lib' is unspecified)

## package 'plyr' successfully unpacked and MD5 sums checked  
## package 'MASS' successfully unpacked and MD5 sums checked  
## package 'ggplot2' successfully unpacked and MD5 sums checked  
## package 'dplyr' successfully unpacked and MD5 sums checked  
##   
## The downloaded binary packages are in  
## C:\Users\deshm\AppData\Local\Temp\RtmpUHftca\downloaded\_packages

Q2.Find answers to log2(2∧5) and log(exp(1)\*exp(1))

answer1 <- log2(2^5)  
answer1

## [1] 5

answer2 <- log(exp(1)\*exp(1))  
answer2

## [1] 2

Q3.Using built-in dataset iris, implement the functions like: Summary, class, type of, head,tail, str, Merge.

#loading dataset  
data(iris)  
  
#summary  
iris\_summary <- summary(iris)  
iris\_summary

## Sepal.Length Sepal.Width Petal.Length Petal.Width   
## Min. :4.300 Min. :2.000 Min. :1.000 Min. :0.100   
## 1st Qu.:5.100 1st Qu.:2.800 1st Qu.:1.600 1st Qu.:0.300   
## Median :5.800 Median :3.000 Median :4.350 Median :1.300   
## Mean :5.843 Mean :3.057 Mean :3.758 Mean :1.199   
## 3rd Qu.:6.400 3rd Qu.:3.300 3rd Qu.:5.100 3rd Qu.:1.800   
## Max. :7.900 Max. :4.400 Max. :6.900 Max. :2.500   
## Species   
## setosa :50   
## versicolor:50   
## virginica :50   
##   
##   
##

#class  
iris\_class <- class(iris)  
iris\_class

## [1] "data.frame"

#typeof  
iris\_typeof <- typeof(iris)  
iris\_typeof

## [1] "list"

#head  
iris\_head <- head(iris)  
iris\_head

## Sepal.Length Sepal.Width Petal.Length Petal.Width Species  
## 1 5.1 3.5 1.4 0.2 setosa  
## 2 4.9 3.0 1.4 0.2 setosa  
## 3 4.7 3.2 1.3 0.2 setosa  
## 4 4.6 3.1 1.5 0.2 setosa  
## 5 5.0 3.6 1.4 0.2 setosa  
## 6 5.4 3.9 1.7 0.4 setosa

#tail  
iris\_tail <- tail(iris)  
iris\_tail

## Sepal.Length Sepal.Width Petal.Length Petal.Width Species  
## 145 6.7 3.3 5.7 2.5 virginica  
## 146 6.7 3.0 5.2 2.3 virginica  
## 147 6.3 2.5 5.0 1.9 virginica  
## 148 6.5 3.0 5.2 2.0 virginica  
## 149 6.2 3.4 5.4 2.3 virginica  
## 150 5.9 3.0 5.1 1.8 virginica

#str  
iris\_str <- str(iris)

## 'data.frame': 150 obs. of 5 variables:  
## $ Sepal.Length: num 5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...  
## $ Sepal.Width : num 3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...  
## $ Petal.Length: num 1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...  
## $ Petal.Width : num 0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...  
## $ Species : Factor w/ 3 levels "setosa","versicolor",..: 1 1 1 1 1 1 1 1 1 1 ...

#merge  
iris\_merge <- merge(iris, iris, by = "Petal.Length")  
head(iris\_merge)

## Petal.Length Sepal.Length.x Sepal.Width.x Petal.Width.x Species.x  
## 1 1.0 4.6 3.6 0.2 setosa  
## 2 1.1 4.3 3.0 0.1 setosa  
## 3 1.2 5.8 4.0 0.2 setosa  
## 4 1.2 5.8 4.0 0.2 setosa  
## 5 1.2 5.0 3.2 0.2 setosa  
## 6 1.2 5.0 3.2 0.2 setosa  
## Sepal.Length.y Sepal.Width.y Petal.Width.y Species.y  
## 1 4.6 3.6 0.2 setosa  
## 2 4.3 3.0 0.1 setosa  
## 3 5.8 4.0 0.2 setosa  
## 4 5.0 3.2 0.2 setosa  
## 5 5.8 4.0 0.2 setosa  
## 6 5.0 3.2 0.2 setosa

Q4.Write a R program to create a two-dimensional 5×3 array of sequence of even integers greater than

answer4 <- array(seq(from = 52, by = 2, length.out = 5\*3), dim = c(5, 3))  
answer4

## [,1] [,2] [,3]  
## [1,] 52 62 72  
## [2,] 54 64 74  
## [3,] 56 66 76  
## [4,] 58 68 78  
## [5,] 60 70 80

Q5. Write a R program to create a vector which contains 10 integer values between -50 and +50

answer5 <- seq(-50,50, 10)  
answer5

## [1] -50 -40 -30 -20 -10 0 10 20 30 40 50

Q6.Suppose the age is a vector containing ages of 10 persons as 22,27,31,41,30,25,19,20,23,35

age <- c(22, 27, 31, 41, 30, 25, 19, 20, 23, 35)  
  
#a).Access the age of fourth person  
answer6a <- age[4]  
answer6a

## [1] 41

#b).Create a vector of 'age 30' with a person >30  
answer6b <- age[age > 30]  
answer6b

## [1] 31 41 35

#c).Access the age of last 3 person  
answer6c <- tail(age, 3)  
answer6c

## [1] 20 23 35

#d).Find the number of elements in vector age  
answer6d <- length(age)  
answer6d

## [1] 10

#e).Access the age of person except 5th and 7th  
answer6e <- age[-c(5, 7)]  
answer6e

## [1] 22 27 31 41 25 20 23 35

#f).Create a vector 'age 2' with a persons between 20 and 25.  
answer6f <- age[(age >= 20) & (age <= 25)]  
answer6f

## [1] 22 25 20 23

Q7.Create a factor from the following vector <data:(1,2,3,2,3,1,4,2,3,NA,5,3,2>) and also find levels

answer7\_factors <- factor(c(1, 2, 3, 2, 3, 1, 4, 2, 3, NA, 5, 3, 2))  
answer7 <- levels(answer7\_factors)  
answer7

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

Q8.Write a R program to create a list containing strings, numbers, vectors and a logical values.

answer8 <- list("abcd", 123, c(1, 2, 3), TRUE)  
answer8

## [[1]]  
## [1] "abcd"  
##   
## [[2]]  
## [1] 123  
##   
## [[3]]  
## [1] 1 2 3  
## [[4]]  
## [1] TRUE

Q9.Using built-in dataset iris, find out the categorical variables.

answer9 <- sapply(iris, is.factor)  
answer9

## Sepal.Length Sepal.Width Petal.Length Petal.Width Species   
## FALSE FALSE FALSE FALSE TRUE

Q10.Create a numeric vector c(1:5) and a 5 by 3 matrix with elements from 1 to 15.

answer10\_vector <- c(1:5)  
answer10\_matrix <- matrix(1:15, nrow = 5, ncol = 3)  
answer10\_vector

## [1] 1 2 3 4 5

answer10\_matrix

## [,1] [,2] [,3]  
## [1,] 1 6 11  
## [2,] 2 7 12  
## [3,] 3 8 13  
## [4,] 4 9 14  
## [5,] 5 10 15

Q11. Create a dataframe of the following dataset height:140,137,150,147,139,140,150,132,138,140 Weight:55,57,59,62,61,60,60,58,59,57

answer11\_dataframe <- data.frame(  
 height = c(140, 137, 150, 147, 139, 140, 150, 132, 138, 140),  
 weight = c(55, 57, 59, 62, 61, 60, 60, 58, 59, 57)  
)  
  
#a).Create a vector h1 with height>145cms  
h1 <- answer11\_dataframe$height[answer11\_dataframe$height > 145]

## [1] 150 147 150

#b).Create a vector h2 with weight>55kgs  
h2 <- answer11\_dataframe$weight[answer11\_dataframe$weight > 55]  
h2

## [1] 57 59 62 61 60 60 58 59 57

#c).Create a vector h3 with height>140 and weight >60  
h3 <- answer11\_dataframe$height[answer11\_dataframe$height > 140 & answer11\_dataframe$weight > 60]  
h3

## [1] 147