RWorksheet#4_Defensor

2023-11-08

1

shoe_Size <- c(6.5, 9.0, 8.5, 8.5, 10.5, 7.0, 9.5, 9.0, 13.0, 7.5, 10.5, 8.5, 12.0, 10.5, 13.0, 11.5, 8.5,5.0,10.0,6.5,7.5,8.5,10.5,8.5,10.5,11.0,9.0,13.0)

height <- c(66.0, 68.0, 64.5, 65.0, 70.0,64.0,70.0,71.0,72.0,64.0,74.5,67.0,71.0,71.0,77.0,72.0,59.0,62.0,72.0,66.0,64.0,67.0,73.0,69.0,

gender <- c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F", "M" , "F", "M", "M", "M", "M", "F", "F", "M", "F", "F", "M", "M", "F", "M", "M", "M", "M")

df <- data.frame(ShoeSize = shoe_Size, Height = height, Gender = gender)

df

1.a

1.b

males <- df[df$Gender == "M",] females <- df[df$Gender == "F",] males females

1.c

meanOfShoeSize <- mean(df$Shoe_Size) meanOfHeight <- mean(df$Height) meanOfHeight meanOfShoeSize

1.d

The relationship between the two variables is that shoe size and height are positively correlated. In other words, if a person has a smaller height, they are likely to have a smaller shoe size.

#————————-

2

monthsVector <- c("March","April","January","November","January","September","October","September","November","Aug
monthsVector factormonthsVector <- factor(monthsVector) factormonthsVector

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3

summary(monthsVector) summary(factormonthsVector)

4

factorData <- c(“East”, “West”, “North”) factorFrequency <- c(1,4,3)

neworderData <- factor(factorData,levels = c(“East”,“West”,“North”))

neworderData

5

imported_table <- read.csv(file = file_path , header = TRUE, sep = “,”) imported_table

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6

randomNum <- readline(prompt = “Enter number from 1 to 50:”)

#error cannot knit if there is as.numeric #randomNum <- as.numeric(randomNum)

paste(“The number you have chosen is”, randomNum)

if (randomNum > 50) { paste(“The number selected is beyond the range of 1 to 50”) } else if (randomNum == 20) { paste(“TRUE”) } else { paste(randomNum) }

7

minimumBills <- function(price) {

min_bills <- price %/% 50 paste(“The minimum no. of bills:”, min_bills) }

minimumBills(900)

8.a

names <- c(“Annie”, “Thea”, “Steve”, “Hanna”) grade1 <- c(85,65,75,95) grade2 <- c(65,75,55,75) grade3 <- c(85,90,80,100) grade4 <- c(100,90,85,90)

grade <- data.frame(Name = names, Grade1 = grade1, Grade2 = grade2, Grade3 = grade3, Grade4 = grade4)

8.b

grade$Average <- -(grade$Grade1 + grade$Grade2 + grade$Grade3 + grade$Grade4) / 4

highScorers <- grade[grade$Average > 90,] highScorers

if (nrow(highScorers) > 0) { paste(highScorers$Name, "'s average grade this semester is", highScorers$Average) } else { paste(“No students have an average math score over 90.”) }

8.c

firstTest <- sum(grade$Grade1) / nrow(grade) firstTest

secondTest <- sum(grade$Grade2) / nrow(grade) secondTest

thirdTest <- sum(grade$Grade3) / nrow(grade) thirdTest

fourthTest <- sum(grade$Grade4) / nrow(grade) fourthTest

if (firstTest < 80) { paste("The 1st test was difficult.") } else if(secondTest < 80) { paste("The 2nd test was difficult.") } else if(thirdTest < 80) { paste("The 3rd test was difficult.") } else if(fourthTest < 80) { paste("The 4th test was difficult.") } else { paste("No test had an average score less than 80.") }

8.d

Annie scores

if (grade[1,2] > grade[1,3] && grade[1,2] > grade[1,4] && grade[1,2] > grade[1,5]) { annieHighest <- grade[1,2] } else if (grade[1,3] > grade[1,4] && grade[1,3] > grade[1,5]) { annieHighest <- grade[1,3] } else if (grade[1,4] > grade[1,5] && grade[1,2] > grade[1,5]) { annieHighest <- grade[1,4] } else { annieHighest <- grade[1,5] }

Thea scores

if (grade[2,2] > grade[2,3] && grade[2,2] > grade[2,4] && grade[2,2] > grade[2,5]) { theaHighest <- grade[2,2] } else if (grade[2,3] > grade[2,4] && grade[2,3] > grade[2,5]) { theaHighest <- grade[2,3] } else if (grade[2,4] > grade[2,5] && grade[2,2] > grade[2,5]) { theaHighest <- grade[2,4] } else { theaHighest <- grade[2,5] } # Steve scores if (grade[3,2] > grade[3,3] && grade[3,2] >grade[3,4] && grade[3,2] > grade[3,5]) { steveHighest <- grade[3,2] } else if (grade[3,3] > grade[3,4] && grade[3,3] >grade[3,5]) { steveHighest <- grade[2,3] } else if (grade[3,4] > grade[3,5] && grade[3,2] > grade[3,5]) { steveHighest <- grade[3,4] } else { steveHighest <- grade[3,5] }

Hanna scores

if (grade[4,2] > grade[4,3] && grade[4,2] > grade[4,4] && grade[4,2] > grade[4,5]) { hannaHighest <- grade[4,2] } else if (grade[4,3] > grade[4,4] && grade[4,3] > grade[4,5]) { hannaHighest <- grade[2,3] } else if (grade[4,4] > grade[4,5] && grade[4,2] > grade[4,5]) { hannaHighest <- grade[4,4] } else { hannaHighest <- grade[4,5] }

grade$HighestGrades <- c(annieHighest, theaHighest, steveHighest, hannaHighest)

above90 <- grade[grade$HighestGrades > 90,] above90

if (nrow(above90) > 0) { paste(above90$Name, "'s highest grade this semester is", above90HighestGrade) } else { paste("No students have an average math score over 90.") }