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| **Btech. Cyber Security Sem-4** | **Batch: K1** |
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Lab 7

#Introduction

head(mtcars)

data = mtcars

#ggplot() + aes(x=a,y=b) [ggplot lib]

ggplot(mtcars) + aes(x=hp,y=mpg) + geom\_point(color = "red")+theme\_dark()

#to find correlation [ggally lib]

cor(mtcars$hp,mtcars$mpg,method = "pearson")

#ranked data

cor(mtcars$hp,mtcars$mpg,method = "spearman")

matrix = cor(mtcars)

matrix

corrplot(matrix)

ggpairs(mtcars) #to see all the correlation plots

#to see specific correlations (the numbers indicate the col no.)

pairs(mtcars[,c(1,4,6)])

#Q1) Jal- K005

judgeA = c(8,7,6,3,2,1,5,4)

judgeB = c(7,5,4,1,3,2,6,8)

cor(judgeA, judgeB, method = "spearman")

#Q2) Jal - K005

X<-c( 62, 64, 65, 69, 70, 71, 72, 74)

Y <- c(126, 125, 139, 145, 165, 152, 180, 208)

cor(X, Y, method = "pearson")

#Q3) Jal - K005

# Compute correlation matrices

#A

data = airquality

matrix2 = cor(airquality)

cor(matrix2)

corrplot(matrix2)

#B

data1 = faithful

matrix3 = cor(faithful)

cor(matrix3)

corrplot(matrix3)

#C

data2 =trees

matrix4 = cor(trees)

cor(matrix4)

corrplot(matrix4)

#D

data3 = longley

matrix5 = cor(longley)

cor(matrix5)

corrplot(matrix5)

#Q4) Jal - K005

# Retrieve stock data

getSymbols(c("TSLA", "F"), src = "yahoo", from = "2023-01-01", to = "2023-12-31")

# Calculate daily returns

tsla\_returns <- dailyReturn(Cl(TSLA))

ford\_returns <- dailyReturn(Cl(F))

# Combine into a single dataframe

stock\_data <- merge(tsla\_returns, ford\_returns, all = FALSE)

colnames(stock\_data) <- c("TSLA\_Returns", "F\_Returns")

# Compute correlation

correlation\_stocks <- cor(stock\_data$TSLA\_Returns, stock\_data$F\_Returns)

# Print result

print(paste("Correlation between Tesla and Ford stock returns: ", correlation\_stocks))

# Plot the relationship

library(ggplot2)

ggplot(stock\_data, aes(x = TSLA\_Returns, y = F\_Returns)) +

geom\_point() +

geom\_smooth(method = "lm") +

theme\_minimal() +

ggtitle("Tesla vs Ford Daily Returns Correlation")















