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#Matrix Creation

matrix\_A <- matrix(c(1, 2, 3, 4, 5, 6, 7, 8, 9), nrow = 3)

matrix\_B <- matrix(c(9, 8, 7, 6, 5, 4, 3, 2, 1), nrow = 3)

print(matrix\_A)

print(matrix\_B)

#Matrix Manipulation

sum\_matrix <- matrix\_A + matrix\_B

scaled\_matrix <- matrix\_A \* 2

#Matrix Operations

transposed\_A <- t(matrix\_A)

product\_matrix <- matrix\_A \* matrix\_B

print(product\_matrix)

#Matrix Statistics

sum\_matrix\_A <- sum(matrix\_A)

mean\_matrix\_B <- mean(matrix\_B)

sd\_matrix\_B <- sd(matrix\_B)

#Visualization

library(ggplot2)

#Create a heatmap of matrix\_A

library(ggplot2)

library(reshape2)

heatvalue <- melt(matrix\_A)

# Create the heatmap

ggplot(heatvalue, aes(x = Var2, y = Var1, fill = value)) +

geom\_tile()

# Calculate row sums

row\_sums\_B <- rowSums(matrix\_B)

# Create a data frame for plotting

df\_B <- data.frame(Row = factor(1:3), Sum = row\_sums\_B)

# Create the bar plot

ggplot(df\_B, aes(x = Row, y = Sum)) +

geom\_bar(stat = "identity")

#Display the visualizations

print(heatmap\_plot)

print(barplot\_plot)