12.Covariance and correlation  Children of three ages are asked to indicate their preference for three photographs of adults. Do the data suggest that there is a significant relationship between age and photograph preference? What is wrong with this study?                                                    Photograph:                          Age of child               A                      B                      C             5-6 years:      18                     22                     20                          7-8 years:         2                    28                     40                          9-10 years:     20                     10                     40 Use cov() to calculate the sample covariance between B  and  C. Use another call to cov() to calculate the sample covariance matrix for the preferences. Use cor() to calculate the sample correlation between B and C. Use another call to cor() to calculate the sample correlation matrix for the preferences.

PROGRAM:

preference <- data.frame(

A = c(18, 2, 20), # Preferences for Photograph A

B = c(22, 28, 10), # Preferences for Photograph B

C = c(20, 40, 40) # Preferences for Photograph C

)

cov\_BC <- cov(preference$B, preference$C)

cat("Sample Covariance between B and C:", cov\_BC, "\n")

cov\_matrix <- cov(preference)

cat("Sample Covariance Matrix:\n")

print(cov\_matrix)

cor\_BC <- cor(preference$B, preference$C)

cat("Sample Correlation between B and C:", cor\_BC, "\n")

cor\_matrix <- cor(preference)

cat("Sample Correlation Matrix:\n")

print(cor\_matrix)

OUTPUT:

