Home Assignment - 1

Source Code -

```
# First, install rpy2 if not already installed
# !pip install rpy2

import rpy2.robjects as ro

# Load R code into Python environment
ro.r('''
# Create the dataset
df <- data.frame(
  individual = c("A", "B", "C", "D", "E"),
  sex = c("M", "F", "M", "F", "M"),
  age = c(25, 30, 22, 35, 28),
  IQ = c(110, 115, 105, 120, 112),
  depression = c(3, 5, 2, 7, 4),
  health = c(8, 6, 9, 5, 7),
  weight = c(70, 65, 75, 60, 68)
)

# Select only numeric columns
numeric_data <- df[, c("age", "IQ", "depression", "health", "weight")]

# Calculate the correlation matrix
correlation_matrix <- cor(numeric_data, use = "complete.obs")
print("Correlation Matrix:")
print(correlation_matrix)

# Calculate the covariance matrix
covariance_matrix <- cov(numeric_data, use = "complete.obs")
print("Covariance Matrix:")
print(covariance_matrix)
''')
```

Output -

```
[1] "Correlation Matrix:"
                 age         IQ depression     health     weight
age        1.0000000  0.9930646  0.9977913 -0.9902587 -0.9930646
IQ         0.9930646  1.0000000  0.9896385 -0.9891585 -1.0000000
depression 0.9977913  0.9896385  1.0000000 -0.9863939 -0.9896385
health    -0.9902587 -0.9891585 -0.9863939  1.0000000  0.9891585
weight    -0.9930646 -1.0000000 -0.9896385  0.9891585  1.0000000
[1] "Covariance Matrix:"
              age     IQ depression health weight
age         24.50  27.50       9.50  -7.75 -27.50
IQ          27.50  31.30      10.65  -8.75 -31.30
depression   9.50  10.65       3.70  -3.00 -10.65
health      -7.75  -8.75      -3.00   2.50   8.75
weight     -27.50 -31.30     -10.65   8.75  31.30
FloatMatrix with 25 elements.
 24.500000 27.500000 9.500000 ... -10.650000 8.750000 31.300000
```