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**Probability and Statistics Lab 1**

**Labwork:**

friends =c("farhan", "yash", "perseus", "yashvardhan")

length(friends)

friends[1:2]

friends[2:3]

sorted\_friends\_1 = sort(friends)

sorted\_friends\_2 = friends[order(friends)]

sorted\_friends\_1

sorted\_friends\_2

year\_started =2010

year\_born =1990

percentage\_life\_at\_university =((2014 - year\_started) / (2014 - year\_born)) \* 100

percentage\_life\_at\_university

numbers = c(4, 5, 8, 11)

sum\_numbers=sum(numbers)

sum\_numbers

x =c(1, 2, 3)

y =c(4, 5, 6)

z=c(7, 8, 9)

A =cbind(x, y, z)

rownames(A) =c("a", "b", "c")

A

# Create a vector A with elements 5, 2, -2, 6, 7, 10, 12, 14, 15

A =c(5, 2, -2, 6, 7, 10, 12, 14, 15)

A

# Create a vector A

A =c(5, 2, -2, 6, 7, 10, 12, 14, 15)

Y =A[A > 6]

Y

# Create a vector with mixed elements

mixed\_vector =c(1, 'a', 2, 'b')

# Find the class of the vector

class(mixed\_vector)

#q7

# Create vectors

numeric\_vector =c(1, 2, 3, 4, 5)

char\_vector =c("apple", "banana", "cherry")

logical\_vector =c(TRUE, FALSE, TRUE)

# Display content and types

print(numeric\_vector)

print(class(numeric\_vector))

print(char\_vector)

print(class(char\_vector))

print(logical\_vector)

print(class(logical\_vector))

#q8

# Create a 4x5 matrix, filled by rows

matrix\_4x5 =matrix(1:20, nrow = 4, byrow = TRUE)

print(matrix\_4x5)

# Create a 3x2 matrix with labels

matrix\_3x2= matrix(1:6, nrow = 3, ncol = 2)

rownames(matrix\_3x2) =c("A", "B", "C")

colnames(matrix\_3x2) =c("X", "Y")

print(matrix\_3x2)

# Create a 2x2 matrix, filled by columns

matrix\_2x2 =matrix(1:4, nrow = 2, byrow = FALSE)

rownames(matrix\_2x2) =c("Row1", "Row2")

colnames(matrix\_2x2) =c("Col1", "Col2")

print(matrix\_2x2)

# Vector

vec =c(1, 2, 3, 4)

# Compute sum, mean, and product

sum\_val =sum(vec)

mean\_val =mean(vec)

prod\_val =prod(vec)

# Display results

print(sum\_val)

print(mean\_val)

print(prod\_val)

# Load dataset

library(datasets)

# Display the airmiles dataset

print(airmiles)

# Create two 4x4 matrices

A =matrix(1:16, nrow = 4)

B =matrix(16:1, nrow = 4)

# Perform operations

sum\_matrix =A + B

diff\_matrix= A - B

prod\_matrix =A \*B

# Display results

print(sum\_matrix)

print(diff\_matrix)

print(prod\_matrix)

# Name the elements of the list

names(main\_list) = c("MyVector", "MyMatrix", "MySublist")

# Display the named list

print(main\_list)

# Access the second element (matrix)

second\_element = main\_list[["MyMatrix"]]

# Print the second element (matrix)

print(second\_element)

**Output:**





