matrix.R

Laptop

2025-02-19

# 1. Consider A=matrix(c(2,0,1,3), ncol=2) and B=matrix(c(5,2,4,-1), ncol=2).  
A <- matrix(c(2, 0, 1, 3), ncol = 2)  
B <- matrix(c(5, 2, 4, -1), ncol = 2)  
  
# Print matrices  
A

## [,1] [,2]  
## [1,] 2 1  
## [2,] 0 3

B

## [,1] [,2]  
## [1,] 5 4  
## [2,] 2 -1

# a) Find A + B  
A + B

## [,1] [,2]  
## [1,] 7 5  
## [2,] 2 2

# b) Find A - B  
A - B

## [,1] [,2]  
## [1,] -3 -3  
## [2,] -2 4

# 2. Using the diag() function to build a matrix of size 4 with the following  
# values in the diagonal 4,1,2,3.  
C <- diag(c(4, 1, 2, 3))  
  
# Print matrix  
C

## [,1] [,2] [,3] [,4]  
## [1,] 4 0 0 0  
## [2,] 0 1 0 0  
## [3,] 0 0 2 0  
## [4,] 0 0 0 3

#3. Generate the following matrix:  
   
 ## [,1] [,2] [,3] [,4] [,5]  
 ## [1,] 3 1 1 1 1  
 ## [2,] 2 3 0 0 0  
 ## [3,] 2 0 3 0 0  
 ## [4,] 2 0 0 3 0  
 ## [5,] 2 0 0 0 3  
 ## Hint: You can use the command diag() to build it.  
  
# Create a 5x5 matrix filled with 0s  
D <- matrix(0, nrow = 5, ncol = 5)  
  
# Fill the diagonal values with 3s  
diag(D) <- 3  
  
# Fill rows 2-5, column 1 with 2s  
D[2:5, 1] <- 2  
  
# Fill columns 2-5 row 1 with 1s  
D[1, 2:5] <- 1  
  
# Print matrix  
D

## [,1] [,2] [,3] [,4] [,5]  
## [1,] 3 1 1 1 1  
## [2,] 2 3 0 0 0  
## [3,] 2 0 3 0 0  
## [4,] 2 0 0 3 0  
## [5,] 2 0 0 0 3