**ADITYA AMIN**

**ASSIGN : 08**

1. Write a Python Program to Add Two Matrices?

def add\_matrices(mat1, mat2):

"""

Adds two matrices and returns the result as a new matrix.

Assumes that the matrices are of the same size.

"""

rows = len(mat1)

cols = len(mat1[0])

result = [[0 for \_ in range(cols)] for \_ in range(rows)]

for i in range(rows):

for j in range(cols):

result[i][j] = mat1[i][j] + mat2[i][j]

return result

# Example matrices to add

matrix1 = [[1, 2, 3],

[4, 5, 6],

[7, 8, 9]]

matrix2 = [[9, 8, 7],

[6, 5, 4],

[3, 2, 1]]

# Call the function to add matrices

result\_matrix = add\_matrices(matrix1, matrix2)

# Print the result

print("Matrix 1:")

for row in matrix1:

print(row)

print("Matrix 2:")

for row in matrix2:

print(row)

print("Result Matrix:")

for row in result\_matrix:

print(row)

1. Write a Python Program to Multiply Two Matrices?

def multiply\_matrices(mat1, mat2):

"""

Multiplies two matrices and returns the result as a new matrix.

Assumes that the number of columns in the first matrix is equal

to the number of rows in the second matrix.

"""

rows1 = len(mat1)

cols1 = len(mat1[0])

rows2 = len(mat2)

cols2 = len(mat2[0])

# Check if the matrices can be multiplied

if cols1 != rows2:

raise ValueError("Number of columns in the first matrix must be equal to the number of rows in the second matrix")

# Initialize the result matrix with zeros

result = [[0 for \_ in range(cols2)] for \_ in range(rows1)]

# Perform matrix multiplication

for i in range(rows1):

for j in range(cols2):

for k in range(cols1):

result[i][j] += mat1[i][k] \* mat2[k][j]

return result

# Example matrices to multiply

matrix1 = [[1, 2, 3],

[4, 5, 6],

[7, 8, 9]]

matrix2 = [[9, 8, 7, 6],

[6, 5, 4, 3],

[3, 2, 1, 0]]

# Call the function to multiply matrices

result\_matrix = multiply\_matrices(matrix1, matrix2)

# Print the result

print("Matrix 1:")

for row in matrix1:

print(row)

print("Matrix 2:")

for row in matrix2:

print(row)

print("Result Matrix:")

for row in result\_matrix:

print(row)

1. Write a Python Program to Transpose a Matrix?

def transpose\_matrix(matrix):

"""

Transposes a matrix and returns the result as a new matrix.

"""

rows = len(matrix)

cols = len(matrix[0])

# Initialize the transposed matrix with zeros

result = [[0 for \_ in range(rows)] for \_ in range(cols)]

for i in range(rows):

for j in range(cols):

result[j][i] = matrix[i][j]

return result

# Example matrix to transpose

matrix = [[1, 2, 3],

[4, 5, 6],

[7, 8, 9]]

# Call the function to transpose the matrix

result\_matrix = transpose\_matrix(matrix)

# Print the original matrix

print("Original Matrix:")

for row in matrix:

print(row)

# Print the transposed matrix

print("Transposed Matrix:")

for row in result\_matrix:

print(row)

1. Write a Python Program to Sort Words in Alphabetic Order?

def sort\_words(words):

"""

Sorts a list of words in alphabetical order and returns the sorted list.

"""

return sorted(words)

# Example list of words to sort

word\_list = ["apple", "banana", "cherry", "date", "fig", "grape"]

# Call the function to sort the words

sorted\_words = sort\_words(word\_list)

# Print the original word list

print("Original Word List:")

print(word\_list)

# Print the sorted words

print("Sorted Words:")

print(sorted\_words)

1. Write a Python Program to Remove Punctuation From a String?

import string

def remove\_punctuation(text):

"""

Removes punctuation from a given text and returns the text without punctuation.

"""

# Use string.punctuation to get the list of punctuation characters

# and join them into a single string

punctuations = ''.join(string.punctuation)

# Use str.translate() to remove the punctuation characters from the text

# by mapping them to None

text = text.translate(str.maketrans('', '', punctuations))

return text

# Example string with punctuation

text = "Hello, World! How are you today? I'm doing well."

# Call the function to remove punctuation from the string

text\_without\_punctuation = remove\_punctuation(text)

# Print the original text

print("Original Text:")

print(text)