1. Write a Python Program to Add Two Matrices?

Ans: To add two matrices can be used as nested loops to traverse each element of the matrices and add the corresponding elements together while making sure that both matrices have the same dimensions (i.e., the same number of rows and columns). Here's a Python program to add two matrices:

def add\_matrices(matrix1, matrix2):

if len(matrix1) != len(matrix2) or len(matrix1[0]) != len(matrix2[0]):

raise ValueError("Matrices should have the same dimensions for addition.")

rows = len(matrix1)

columns = len(matrix1[0])

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

for i in range(rows):

for j in range(columns):

result\_matrix[i][j] = matrix1[i][j] + matrix2[i][j]

return result\_matrix

def main():

matrix1 = [

[1, 2, 3],

[4, 5, 6],

[7, 8, 9]

]

matrix2 = [

[9, 8, 7],

[6, 5, 4],

[3, 2, 1]

]

try:

result = add\_matrices(matrix1, matrix2)

for row in result:

print(row)

except ValueError as e:

print(e)

if \_\_name\_\_ == "\_\_main\_\_":

main()

This program defines a function `add\_matrices` that takes two matrices as input and returns the result of their addition as a new matrix. The `main()` function demonstrates how to use the `add\_matrices` function with two example matrices and prints the resulting matrix.

1. Write a Python Program to Multiply Two Matrices?

ANS: To multiply two matrices can be used as nested loops to perform the matrix multiplication operation while making sure that the number of columns in the first matrix is equal to the number of rows in the second matrix. Here's a program to multiply two matrices:

def multiply\_matrices(matrix1, matrix2):

if len(matrix1[0]) != len(matrix2):

raise ValueError("Number of columns in matrix1 should be equal to the number of rows in matrix2 for multiplication.")

rows = len(matrix1)

columns = len(matrix2[0])

common\_dim = len(matrix1[0])

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

for i in range(rows):

for j in range(columns):

for k in range(common\_dim):

result\_matrix[i][j] += matrix1[i][k] \* matrix2[k][j]

return result\_matrix

def main():

matrix1 = [

[1, 2],

[3, 4]

]

matrix2 = [

[5, 6],

[7, 8]

]

try:

result = multiply\_matrices(matrix1, matrix2)

for row in result:

print(row)

except ValueError as e:

print(e)

if \_\_name\_\_ == "\_\_main\_\_":

main()

This program defines a function `multiply\_matrices` that takes two matrices as input and returns the result of their multiplication as a new matrix. The `main()` function demonstrates how to use the `multiply\_matrices` function with two example matrices and prints the resulting matrix.

1. Write a Python Program to Transpose a Matrix?

ANS: def transpose\_matrix(matrix):

rows = len(matrix)

columns = len(matrix[0])

# Create a new matrix with rows and columns interchanged

transposed\_matrix = [[matrix[j][i] for j in range(rows)] for i in range(columns)]

return transposed\_matrix

def main():

matrix = [

[1, 2, 3],

[4, 5, 6],

[7, 8, 9]

]

transposed = transpose\_matrix(matrix)

print("Original Matrix:")

for row in matrix:

print(row)

print("\nTransposed Matrix:")

for row in transposed:

print(row)

if \_\_name\_\_ == "\_\_main\_\_":

main()

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

ANS: To sort words in alphabetical order in Python, you can use the `sorted()` function or the `sort()` method of lists. Here's a Python program to sort words in alphabetical order:

Using the `sorted()` function:

def sort\_words\_alphabetically(sentence):

words = sentence.split()

sorted\_words = sorted(words)

return ' '.join(sorted\_words)

def main():

sentence = input("Enter a sentence: ")

sorted\_sentence = sort\_words\_alphabetically(sentence)

print("Sorted words in alphabetical order:")

print(sorted\_sentence)

if \_\_name\_\_ == "\_\_main\_\_":

main()

```

Using the `sort()` method:

```python

def sort\_words\_alphabetically(sentence):

words = sentence.split()

words.sort()

return ' '.join(words)

def main():

sentence = input("Enter a sentence: ")

sorted\_sentence = sort\_words\_alphabetically(sentence)

print("Sorted words in alphabetical order:")

print(sorted\_sentence)

if \_\_name\_\_ == "\_\_main\_\_":

main()

In both versions of the program, the `sort\_words\_alphabetically()` function takes a sentence as input, splits it into words, and then sorts the words in alphabetical order using either `sorted()` or `sort()`. The words are then joined back together into a sentence and printed.

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

ANS: import string

def remove\_punctuation(input\_string):

translator = str.maketrans('', '', string.punctuation)

cleaned\_string = input\_string.translate(translator)

return cleaned\_string

def main():

input\_string = input("Enter a string with punctuation: ")

cleaned\_string = remove\_punctuation(input\_string)

print("String without punctuation:")

print(cleaned\_string)

if \_\_name\_\_ == "\_\_main\_\_":

main()