

Python Basic Programming Assignment 8

1. Write a Python Program to Add Two Matrices?

```
In [1]: def add_matrices(matrix1, matrix2):
# Check if the matrices are compatible for addition
if len(matrix1) != len(matrix2) or len(matrix1[0]) != len(matrix2[0]):
    return "Error: matrices are not compatible for addition"
# Create a new matrix to store the result
result = []
# Add the corresponding elements of the matrices
for i in range(len(matrix1)):
    row = []
    for j in range(len(matrix1[0])):
        row.append(matrix1[i][j] + matrix2[i][j])
    result.append(row)
return result
# Test the function
matrix1 = [[1, 2, 3], [4, 5, 6]]
matrix2 = [[7, 8, 9], [10, 11, 12]]
print(add_matrices(matrix1, matrix2)) # [[8, 10, 12], [14, 16, 18]]
matrix1 = [[1, 2], [3, 4]]
matrix2 = [[5, 6, 7], [8, 9, 10]]
print(add_matrices(matrix1, matrix2)) # "Error: matrices are not compatible for addition"

[[8, 10, 12], [14, 16, 18]]
Error: matrices are not compatible for addition
```

2. Write a Python Program to Multiply Two Matrices?

```
In [2]: def add_matrices(matrix1, matrix2):
# Check if the matrices are compatible for addition
if len(matrix1) != len(matrix2) or len(matrix1[0]) != len(matrix2[0]):
    return "Error: matrices are not compatible for addition"
# Create a new matrix to store the result
result = []
# Add the corresponding elements of the matrices
for i in range(len(matrix1)):
    row = []
    for j in range(len(matrix1[0])):
        row.append(matrix1[i][j] * matrix2[i][j])
    result.append(row)
return result
# Test the function
matrix1 = [[1, 2, 3], [4, 5, 6]]
matrix2 = [[7, 8, 9], [10, 11, 12]]
print(add_matrices(matrix1, matrix2)) # [[8, 10, 12], [14, 16, 18]]
matrix1 = [[1, 2], [3, 4]]
matrix2 = [[5, 6, 7], [8, 9, 10]]
print(add_matrices(matrix1, matrix2)) # "Error: matrices are not compatible for addition"

[[7, 16, 27], [40, 55, 72]]
Error: matrices are not compatible for addition
```

3. Write a Python Program to Transpose a Matrix?

```
In [3]: def transpose(matrix):
# Create a new matrix to store the result
result = []
# Transpose the matrix
for i in range(len(matrix[0])):
    row = []
    for j in range(len(matrix)):
        row.append(matrix[j][i])
    result.append(row)
return result
# Test the function
matrix = [[1, 2, 3], [4, 5, 6]]
print(transpose(matrix)) # [[1, 4], [2, 5], [3, 6]]
matrix = [[1, 2], [3, 4], [5, 6]]
print(transpose(matrix)) # [[1, 3, 5], [2, 4, 6]]

[[1, 4], [1, 4], [2, 5], [2, 5], [3, 6], [3, 6]]
[[1, 3, 5], [1, 3, 5], [1, 3, 5], [2, 4, 6], [2, 4, 6], [2, 4, 6]]
```

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

```
In [4]: def sort_words(words):
# Sort the list of words
words.sort()
return words
# Test the function
print(sort_words(["apple", "banana", "cherry"])) # ['apple', 'banana', 'cherry']
print(sort_words(["dog", "cat", "bird", "fish"])) # ['bird', 'cat', 'dog', 'fish']

['apple', 'banana', 'cherry']
['bird', 'cat', 'dog', 'fish']
```

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

```
In [5]: import string
def remove_punctuation(text):
# Create a translation table to remove punctuation
translator = text.maketrans('', '', string.punctuation)
# Use the translation table to remove all punctuation from the text
no_punct = text.translate(translator)
return no_punct
# Test the function
print(remove_punctuation("Hello, World!")) # "Hello World"
print(remove_punctuation("I am a sentence with punctuation.")) # "I am a sentence with"

Hello World
I am a sentence with punctuation
```

In []: