Python Basic Programming Assignment 8

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1. Write a Python Program to Add Two Matrices?

```python
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?

```python
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?

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

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

```
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?

```
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 punctuation"
```

```
    Hello World
    I am a sentence with punctuation
```

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