MACHINE LEARNING (22AIE213) ASSIGMENT-1

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Question1: Write a program to count the number of vowels and consonants present in an input string.

Pseudo Code:

function count_vowels_consonants(input_str):

  vowels = "aeiouAEIOU"

  count_vowels = 0

  count_consonants = 0

  for each character in input_str:

    if character is an alphabet:

      if character is in vowels:

        increment count_vowels

      else:

        increment count_consonants

  print("Number of vowels:", count_vowels)

  print("Number of consonants:", count_consonants)

Explanation:

This program counts the number of vowels and consonants in an input string. It iterates through each character in the input string, checking if it is an alphabet character. If it is, it then checks whether the character is a vowel or a consonant. The counts are incremented accordingly. Finally, it prints the total count of vowels and consonants.

Question2. Write a program that accepts two matrices A and Bas input and returns their product AB.Check if A & B aremultipliable; if not, return error message.

Pseudo Code:

```
function matrix_multiply(A, B):

  if number of columns in A is not equal to number of rows in B:

    print("Matrices are not multipliable. Please provide valid matrices.")

    return


  result = initialize a matrix of size (number of rows in A) x (number of columns in B) with all elements as 0


  for i from 0 to (number of rows in A):

    for j from 0 to (number of columns in B):

      for k from 0 to (number of rows in B):

        result[i][j] += A[i][k] * B[k][j]


  return result
```

Explanation:

This program multiplies two matrices, A and B, if they are multipliable. It first checks if the number of columns in matrix A is equal to the number of rows in matrix B. If not, it prints an error message and returns. If the matrices are multipliable, it initializes a result matrix and uses three nested loops to perform the matrix multiplication. The result is a new matrix representing the product of A and B.

Question 3: Write a program to find the number of common elements between two lists. The lists contains intergers.

Pseudo Code:

```
function common_elements(list1, list2):

  common_elements_set = set intersection of list1 and list2

  return list(common_elements_set)
```

Explanation:

This program finds the common elements between two lists of integers. It uses the set data structure to find the intersection of the two lists, which results in a set containing the common elements. The set is then converted back to a list, and that list is returned as the final result.

Question 4: Write a program that accepts a matrix as input and returns its transpose.

Pseudo Code:

function transpose_matrix(matrix):

    return a new matrix where each element at position (i, j) is the element at position (j, i) in the original matrix

Explanation:

This program transposes a given matrix, swapping its rows and columns. It creates a new matrix where each element at position (i, j) in the original matrix is moved to position (j, i) in the transposed matrix. The result is a matrix where the rows of the original matrix become columns in the transposed matrix and vice versa.

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