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T.E. I.T.

Batch B

Roll No. 2018140021

Experiment 0

Task 1:

1) Different categories of datasets available domain wise.
   a. Healthcare
   b. Education
   c. Finance
   d. Entertainment (Spotify dataset, YouTube videos)
   e. Political (US Elections)
   f. E-commerce
   g. HR Analytics
   h. Energy Consumption
2) Different types of data in the features.
   a. Date time
   b. Boolean
   c. Numbers
   d. Text
   e. Arrays, List
   f. JSON formats
   g. Images
   h. Videos
   i. Geographic coordinates
3) Choose any one dataset, download it and write a brief description of it.
   a. Dataset Chosen: Chest X-Ray Images (Pneumonia)
   b. Data Description: The dataset is organized into 3 folders (train, test, val) and contains subfolders for each image category (Pneumonia/Normal). There are 5,863 X-Ray images (JPEG) and 2 categories (Pneumonia/Normal).
   c. This dataset will help in designing automated methods to detect and classify human diseases from medical images.

Task 2:

1) Create 2 matrices of integers of dimension mxn by reading both the dimensions and values from the user and saving them in a list of lists and perform the operations addition, multiplication, transpose of the matrices.

```python
def matrix_addition(matrix_1, matrix_2, m, n):
  result_matrix = []
  for i in range(0,m):
    new_row = []
    for j in range(0,n):
      k = matrix_1[i][j] + matrix_2[i][j]
      new_row.append(k)
    result_matrix.append(new_row)
  return result_matrix

def matrix_multiplication(matrix_1, matrix_2, m, n):
  result_matrix = []
  for i in range(0,m):
    new_row = []
    for j in range(0,n):
      z = 0
      for k in range(0,n):
        z += matrix_1[i][k] * matrix_2[k][j]
      new_row.append(z)
    result_matrix.append(new_row)
  return result_matrix

def matrix_transpose(matrix, m, n):
  transposed_matrix = []
  for i in range(0,m):
    new_row = []
    for j in range(0,n):
      k = matrix[j][i]
      new_row.append(k)
    transposed_matrix.append(new_row)
  return transposed_matrix

m = int(input(print("Enter Dimension(m rows):")))
n = int(input(print("Enter Dimension(n columns):")))
matrix_1 = []
matrix_2 = []
print("Start Adding Values for 1st Matrix")
for i in range(0,m):
  new_row = []
  print("Row", (i+1), "Values:")
  for j in range(0,n):
    k = int(input())
    new_row.append(k)
```

```
    matrix_1.append(new_row)
print("Start Adding Values for 2nd Matrix")
for i in range(0,m):
  new_row = []
  print("Row", (i+1), "Values:")
  for j in range(0,n):
    k = int(input())
    new_row.append(k)
  matrix_2.append(new_row)
print("Matrix 1:", matrix_1, "Matrix 2:", matrix_2)
print("Addition is:", matrix_addition(matrix_1, matrix_2, m, n))
print("Multiplication is:", matrix_multiplication(matrix_1, matri
x_2, m, n))
print("Transpose of Matrix 1:", matrix_transpose(matrix_1, m, n))
print("Transpose of Matrix 2:", matrix_transpose(matrix_2, m, n))
```

Output:

```
 ⤷  Enter Dimension(m rows):
    2
    Enter Dimension(n columns):
    2
    Start Adding Values for 1st Matrix
    Row 1 Values:
    1
    2
    Row 2 Values:
    3
    4
    Start Adding Values for 2nd Matrix
    Row 1 Values:
    2
    0
    Row 2 Values:
    1
    2
    Matrix 1: [[1, 2], [3, 4]] Matrix 2: [[2, 0], [1, 2]]
    Addition is: [[3, 2], [4, 6]]
    Multiplication is: [[4, 4], [10, 8]]
    Transpose of Matrix 1: [[1, 3], [2, 4]]
    Transpose of Matrix 2: [[2, 1], [0, 2]]
```

2) Write a Python program for finding whether a string is palindrome or not.

```
string = input(print("Enter a String:"))
rev_string = string[::-1]
if rev_string.lower() == string.lower():
  print("Its a palindrome")
else:
  print("Its not a palindrome")
```

```
Enter a String:
Racecar
Its a palindrome
```

```
string = input(print("Enter a String:"))
rev_string = string[::-1]
if rev_string.lower() == string.lower():
  print("Its a palindrome")
else:
  print("Its not a palindrome")
```

```
Enter a String:
hello
Its not a palindrome
```

3) Write a function which accepts a list of names and sorts the list in alphabetical order.

```
names_list = []
n = int(input(print("Enter no. of names:")))
for i in range(0,n):
  name = input(print("Enter a name:"))
  names_list.append(name)J
names_list.sort()
print("Sorted List is: ", names_list)
```

```
Enter no. of names:
5
Enter a name:
Pravesh
Enter a name:
Luv
Enter a name:
Chirag
Enter a name:
John
Enter a name:
Jordan
Sorted List is:  ['Chirag', 'John', 'Jordan', 'Luv', 'Pravesh']
```