**PRACTICAL-10**

**AIM:**

**a.** Write a program to search content using regular expression library in python.

**Source Code:**

import re

text = "Hello, my email is example123@gmail.com, and my phone number is 123-456-7890."

email\_pattern = r'\b[A-Za-z0-9.\_%+-]+@[A-Za-z0-9.-]+\.[A-Z|a-z]{2,7}\b'

phone\_pattern = r'\b\d{3}-\d{3}-\d{4}\b'

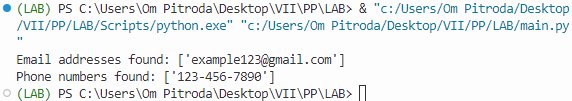
email\_matches = re.findall(email\_pattern, text)

phone\_matches = re.findall(phone\_pattern, text)

print("Email addresses found:", email\_matches)

print("Phone numbers found:", phone\_matches)

**Output:**



**b.** Write a program to implement all the functionalities of Numpy library in Python

**Source Code:**

import numpy as np

arr\_1d = np.array([1, 2, 3])

arr\_2d = np.array([[1, 2, 3], [4, 5, 6]])

arr\_3d = np.array([[[1, 2, 3], [4, 5, 6]], [[7, 8, 9], [10, 11, 12]]])

arr\_arange = np.arange(0, 10, 2)

arr\_zeros = np.zeros((2, 3))

arr\_ones = np.ones((3, 2))

arr\_linspace = np.linspace(0, 1, 5)

arr\_eye = np.eye(3)

print(f"Dimensions of arr\_1d: {arr\_1d.ndim}, Shape: {arr\_1d.shape}, Size: {arr\_1d.size}, Data type: {arr\_1d.dtype}, Item size: {arr\_1d.itemsize}")

arr\_reshaped = arr\_2d.reshape(3, 2)

print("Reshaped 2D array:")

print(arr\_reshaped)

arr\_flattened = arr\_2d.flatten()

print("Flattened 2D array:")

print(arr\_flattened)

arr1 = np.array([1, 2, 3])

arr2 = np.array([4, 5, 6])

arr\_concatenated = np.concatenate((arr1, arr2))

print("Concatenated arrays:")

print(arr\_concatenated)

arr\_shuffled = arr\_3d.transpose(1, 0, 2)

print("Shuffled 3D array:")

print(arr\_shuffled)

arr\_split = np.split(arr\_1d, 3)

print("Split 1D array:")

for subarray in arr\_split:

print(subarray)

arr\_append = np.append(arr1, [7, 8])

arr\_insert = np.insert(arr1, 1, 9)

arr\_delete = np.delete(arr1, 1)

print("Array after append:")

print(arr\_append)

print("Array after insert:")

print(arr\_insert)

print("Array after delete:")

print(arr\_delete)

print(f"Element at index 2 in arr\_1d: {arr\_1d[2]}")

print(f"Element in row 1, column 2 in arr\_2d: {arr\_2d[1, 2]}")

print(f"Element in array 0, row 1, column 2 in arr\_3d: {arr\_3d[0, 1, 2]}")

print("1-D Array Iteration:")

for item in arr\_1d:

print(item)

print("2-D Array Iteration:")

for row in arr\_2d:

for item in row:

print(item)

print("3-D Array Iteration:")

for array in arr\_3d:

for row in array:

for item in row:

print(item)

**Output:**

