EDGE Program

Course: Python Programming and Basic Data Science

Assignment no. 01

Deadline: June 2, Sunday

**1. Problem 1**: Function Parameters and Array Broadcasting

Write a function that takes two arrays of integers as input and returns a new array where each element is the sum of the corresponding elements from the input arrays. If the input arrays are of different lengths, the function should pad the shorter array with zeros.

**Solution:**

import numpy as np

def sum\_corresponding\_elements(arr1, arr2):

# Your code here

arr1 = np.array(arr1)

arr2 = np.array(arr2)

max\_length = max(len(arr1), len(arr2))

#zero padding

padded\_arr1 = np.pad(arr1, (0, max\_length - len(arr1)), 'constant')

padded\_arr2 = np.pad(arr2, (0, max\_length - len(arr2)), 'constant')

result = padded\_arr1 + padded\_arr2

return result

# Example usage:

print(sum\_corresponding\_elements([1, 2, 3], [4, 5, 6]))

# Output: [5, 7, 9]

**2. Problem 2:** Numpy, Masks, and Boolean Logic

Write a function that takes a 2D numpy array as input and returns a new array where all elements that are greater than the mean of the array are set to 1, and all other elements are set to 0.

**Solution:**

import numpy as np

def threshold\_array(input\_array):

# Your code here

mean\_value = np.mean(input\_array)

mask = input\_array > mean\_value

result = np.where(mask, 1, 0)

return result

# Example usage:

input\_array = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])

print(threshold\_array(input\_array))

Sample Input:

1 2 3

4 5 6

7 8 9

Sample Output:

0 0 0

0 0 1

1 1 1