Practical Session 9
Date: 24/09/2025
Topic: Numpy Universal Functions and Broadcasting

Solve the following problems using Jupyter Notebook. Please write the following for each of the programming assignments.

1. The problem statement
2. The entire program
3. The sample input
4. The sample output

Please get the program report signed by the instructor.

1. Demonstrate the usefulness of Numpy's universal function by comparing it with the slowness of Python's loop. Take an example of calculating the sum of two lists of numbers. Print how much time both the procedures are taking to complete the task.
2. Create a 2-D matrix having 3 rows and 2 columns and all the entries are 1. Create a 1-D array with entries from 0 to 2. Add the two vectors.
3. Create a numpy array *mix* with the integers 230, 10, 284, 39, 76. Multiply each number with 2 if the number is more than 100 and return the *mix*.
4. List down the universal functions that are there in numpy. Create one set of arrays to demonstrate the usefulness of all of them.