Homework 2

Programming part

In this part, you should write programs in Python and upload corresponding file/s.

1. Your task is to compute the $1, 2, 3$, and ∞-norm of a given an n-vector x .

   INPUT

   Input consists of a line, which consists a positive integer $n, 1 \leq n \leq 1000$ followed by n real numbers representing the elements of the vector in the transposed form. Each element is separated by a single space.

   OUTPUT

   Output consists of a line, which consists four real numbers namely the $1, 2, 3$ and ∞-norm of the vector rounded to six (6) decimal places. Each number must be separated by a single space.

2. Your task is to compute $1, 2, \infty$ and Frobenius norms of a given $n \times n$ matrix.

   INPUT
   First line consists a positive integer $n, 1 \leq n \leq 1000$ - the size of the matrix.
   The i-th line of the next n lines contains n integers $A_{i1}, A_{i2}, ..., A_{in}$ ($1 \leq A_{ij} \leq 10^9$) - description of the matrix A.

   OUTPUT
   Output must consist four real numbers, namely the $1, 2, \infty$ and Frobenius norms of the matrix rounded to six (6) decimal places. Each number must be separated by a single space