

Average Matrix

Your task is to write a short program that takes in input a matrix A and its dimensions {N x M} and returns 2 vectors:

Vector MR contains the average of each ROW.

Vector MC contains the average of each COLUMN.

Input

The first line contains two numbers N and M that is the dimension of the matrix A.

The other lines contains each ROW of the matrix A.

Output

The first line contains a vector of the row average.

The second line contains a vector of the column average.

Sample input

Sample output

3 3 2 3 4 5 3 4 5 5 5 5 8 7 6 2 3	13.6667 34.3333 301.333 3.33333 318.333 27.6667
2 3 0 1 0 2 0 4	0.333333 2 1 0.5 2
4 2 2 3 2 3 4 4 5 4 4 5 4 5	12.5 19 4.5 45 26.75 13.75