Transpose and Flatten

Transpose

We can generate the transposition of an array using the tool `numpy.transpose`.
It will not affect the original array, but it will create a new array.

```
import numpy

my_array = numpy.array([[1,2,3],
                        [4,5,6]])
print numpy.transpose(my_array)

#Output
[[1 4]
 [2 5]
 [3 6]]
```

Flatten

The tool *flatten* creates a copy of the input array flattened to one dimension.

```
import numpy

my_array = numpy.array([[1,2,3],
                        [4,5,6]])
print my_array.flatten()

#Output
[1 2 3 4 5 6]
```

Task

You are given a NXM integer array matrix with space separated elements (N = rows and M = columns).
Your task is to print the *transpose* and *flatten* results.

Input Format

The first line contains the space separated values of N and M.
The next N lines contains the space separated elements of M columns.

Output Format

First, print the *transpose* array and then print the *flatten*.

Sample Input

```
2 2
1 2
3 4
```

Sample Output

```
[[1 3]
 [2 4]]
```

```
[1 2 3 4]
```