Problem F
Formidable Team

Time limit: 1 second

Memory limit: 2048 megabytes

Problem Description

As a PCCA winter camp staff member, you have been tasked with creating teams of m members from a list of n participants. Each participant has m skills; the i-th participant has skill level $a_{i,j}$ for the j-th skill for $i = 1, 2, \ldots, n$ and $j = 1, 2, \ldots, m$.

To facilitate team selection, you define the metrics for evaluating the teams' skills. For a team b consisting of m members $b_1, b_2, \ldots, b_m$, define the **strength** of S as $\max_{p \in P_m} \sum_{i=1}^{m} a_{b_i, p_i}$, where P_m is the set of all possible permutations of $1, 2, \ldots, m$. That is, the strength of a team is the maximum possible sum of skill levels, considering all possible combinations of the m skills from the m team members.

Your goal is to build a formidable team by maximizing the team's strength.

Input Format

The first line of the input contains two integers n, m. m lines follow, i-th of which contains m integers $a_{i,1}, a_{i,2}, \ldots, a_{i,m}$.

Output Format

Print the maximum possible strength k in the first line. In the i-th line of the following m lines, print two integers s_i, t_i denoting that the team contains s_i-th member with t_i-th skill.

Your solution will be considered correct if it satisfies all the following conditions:

- $1 \leq s_i \leq n$ for $i = 1, 2, \ldots, n$
- $s_i \neq s_j$ for $i \neq j$
- $1 \leq t_i \leq m$ for $i = 1, 2, \ldots, m$
- $t_i \neq t_j$ for $i \neq j$
- $\sum_{i=1}^{m} a_{s_i, t_i} = k$

If there are multiple possible solutions, print any.

Technical Specification

- $1 \leq n \leq 1.5 \times 10^5$
- $1 \leq m \leq 60$
- $m \leq n$
- $n \times m \leq 2 \times 10^6$
- $1 \leq a_{i,j} \leq 10^9$

Sample Input 1

```
6 5
5 5 4 3 4
4 2 3 3 3
4 5 2 5 1
3 3 1 3 1
4 4 2 3 1
2 2 1 3 1
```

Sample Output 1

```
19
1 5
2 3
3 4
4 1
5 2
```