Admirable Professor

Tuan now becomes a famous professor. He has a lot of students with the goal of becoming UCPC Champions. UCPC is a challenging programming competition; it is similar to ICPC but each team has n students instead of 3. This year, Tuan is so proud to have the strongest rosters ever, which are divided into g teams.

Today is Tuan's birthday and all $n \times g$ team members are gathering at Tuan's house. Each of them brings Tuan a special gift: a balloon with a lot of candies inside. Tuan is so thrilled, so he does not want to eat all those cute candies alone! Therefore, he decides to distribute all balloons back to the students. Each student receives a balloon randomly. To make it more exciting, all members in a team will gather and share with each other their balloons and candies.

However, a problem appears! Sometimes, candies cannot be divided evenly to team members. This is when the admirable professor comes to help. Tuan loves his students so much (at least today), so in each team, he will take only the remainder of total candies dividing by number of members. For example, if Tuan has 2 teams, each team has 3 members, the first team has 10 candies and the second has 8, Tuan will take 1 candy from the first team and 2 candies from second one. Overall, he has 3 candies.

Again, Tuan loves his students so much and he is thinking about a wonderful scenario, where he will take as few candies as possible. It should be an easy problem for Tuan, just not today… Please help Tuan find the minimum number of candies he would take and design a scenario to achieve it!

Input

The first line of the input contains 2 positive integers n, g $(1 \leq n \times g \leq 50000)$ – the number of students in a team and number of teams

The next line contains $n \times g$ positive integers $a_i (1 \leq a_i \leq 10^9)$, the number of candies in each balloon.

Output

The first line contains one integer, the minimum number of candies Tuan could take.

The i-th line of next g lines contains n integers representing for number of candies in n balloons the i-th team gets. If there are more than one scenario to achieve the result, print any of them.

Examples

Standard Input	Standard Output
2 2 1 2 3 4	0 1 3 2 4
2 3 2 3 5 7 11 13	1 2 5 3 13 11 7

Explanation:

In the first sample, team 1 has 4 candies, so each member takes 2 and Tuan has 0! Team 2 has 6 candies and Tuan also takes 0! Overall, Tuan is happy!

In the second sample, there is no scenario that Tuan would get 0 candy. However, 1 is not bad… ((2 + 5) mod 2 + (3 + 13) mod 2 + (11 + 7) mod 2 = 1)