Subset Selection

CE3OH 8 – FIFTH ROUND

Given *N* sequences, each containing *M* integers, each of which is between *0* and *B-1* inclusively. We define the sum of a number of sequences as a sequence with the same length, in which each element is equal to the sum of the elements on that specific position, **modulo B**.

For example, the sum of the sequences *{1, 4, 2}*, *{2, 2, 2}* и *{3, 1, 3}* with *B=5* is the sequence *{((1+2+3) mod 5) = **1**, ((4+2+1) mod 5) = **2**, ((2+2+3) mod 5) = **2**}*.

The value of a sequence $\{A_1, A_2, \ldots, A_M\}$ is defined as $\sum_{i=1}^{M} A_i^2$.

Write a program **subsetselection**, which chooses a non-empty subset of the *N* given sequences, such that the value of the sum of the sequences in the chosen subset is as large as possible.

Input

The first line of the input file `subsetselection.in` contains three positive integers – *N, M* and *B*. Each of the next *N* lines contains *M* integers, each of which is between *0* and *B-1*, describing the respective sequence.

Output

On the first line of the output file `subsetselection.out` print one positive integer *K* – the number of the chosen sequences. On each of the following *K* lines print a single positive integer – the input index of the current sequence. Sequences are numbered from *1* to *N*. You can print them in whatever order you wish, but there should not be repeating indices or indices not in the interval between *1* and *N*.

Scoring

If the output does not fulfill the restrictions above, you will receive 0 points for the test.

Otherwise, you will receive $score \times (\frac{yours+1}{best+1})^2$ points, where *score* is the number of points the test is worth, *yours* is the value of the sum-sequence, obtained by you, and *best* is the maximum value of a sum-sequence among all participants for the given test.

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Constraints

Portion of tests	Constraints
15%	$N = 20, M = 20, B \in [2; 20]$
35%	$N = 200, M = 200, B \in [2; 100]$
50%	$N = 1000, M = 1000, B \in [2; 100]$

Time limit: 5 s
Memory limit: 256 MB

Sample test

Input (subsetselection.in)	Output (subsetselection.out)
5 3 3 1 0 0 0 0 0 1 2 3 1 2 2 2 3 1	2 1 4

The proposed output will give a result of 12.