Crayons

Mirko recently got N crayons as a gift. The color of each crayon is a combination of three primary colors: red, green and blue. The color of the ith crayon is represented with three integers: R_i for the red, G_i for the green and B_i for the blue component. The difference between the ith and the jth crayon is $\max(|R_i - R_j|, |G_i - G_j|, |B_i - B_j|)$. The colorfulness of a subsequence of crayons is equal to the largest difference between any two crayons in the subsequence.

Mirko needs a subsequence with K crayons with the smallest colorfulness for his drawing. The subsequence does not have to be consecutive. Find it!

Input

The first line of input contains integers N and K ($2 \le K \le N \le 100\ 000$). The ith of the folowing N lines contains three integers R_i, G_i and B_i ($0 \le R_i, G_i, B_i \le 255$)

Output

The first line of output should contain the smallest colorfulness of a subsequence with K crayons. The following K lines should contain the R, G and B values of the colors of the crayons in the subsequence, in any order. Any subsequence that yields the smallest colorfulness will be accepted.

Sample input

Sample output

Sample input	Sample output
2 2 1 3 2 2 6 4	3 1 3 2 2 6 4
3 2 3 3 4 1 6 4 1 1 2	2 3 3 4 1 1 2
5 3 6 6 4 6 2 7 3 1 3 4 1 5 6 2 6	2 6 2 7 4 1 5 6 2 6