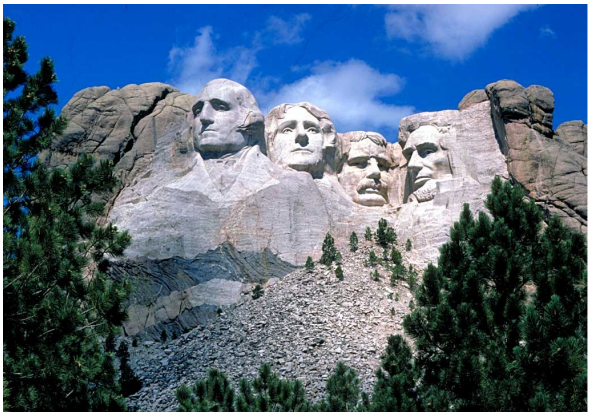
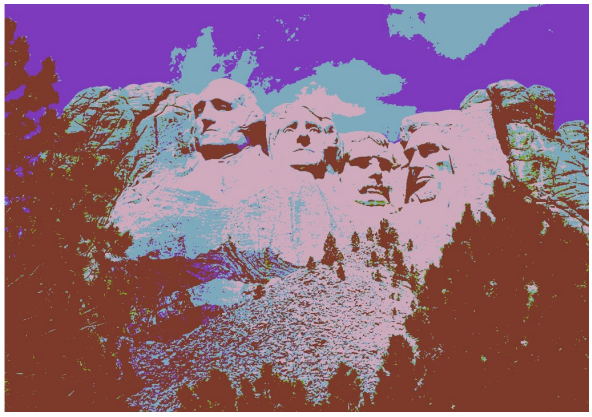
Problem F
Posterize
Time limit: 2 seconds

Pixels in a digital picture can be represented with three integers in the range 0 to 255 that indicate the intensity of the red, green, and blue colors. To compress an image or to create an artistic effect, many photo-editing tools include a "posterize" operation which works as follows. Each color channel is examined separately; this problem focuses only on the red channel. Rather than allow all integers from 0 to 255 for the red channel, a posterized image allows at most k integers from this range. Each pixel's original red intensity is replaced with the nearest of the allowed integers. The photo-editing tool selects a set of k integers that minimizes the *sum of the squared errors* introduced across all pixels in the original image. If there are n pixels that have original red values $r_1, \ldots, r_n$, and k allowed integers $v_1, \ldots, v_k$, the sum of squared errors is defined as

$$\sum_{i=1}^{n} \min_{1 \le j \le k} (r_i - v_j)^2.$$

Your task is to compute the minimum achievable sum of squared errors, given parameter k and a description of the red intensities of an image's pixels.

Input

The first line of the input contains two integers d ($1 \le d \le 256$), the number of distinct red values that occur in the original image, and k ($1 \le k \le d$), the number of distinct red values allowed in the posterized image. The remaining d lines indicate the number of pixels of the image having various red values. Each such line contains two integers r ($0 \le r \le 255$) and p ($1 \le p \le 2^{26}$), where r is a red intensity value and p is the number of pixels having red intensity r. Those d lines are given in increasing order of red value.

Output

Display the sum of the squared errors for an optimally chosen set of k allowed integer values.

Sample Input 1	Sample Output 1
2 1 50 20000 150 10000	66670000

Sample Input 2	Sample Output 2
2 2 50 20000 150 10000	0

Sample Input 3	Sample Output 3
4 2 0 30000 25 30000 50 30000 255 30000	37500000