Criminal Bases

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

The Programming Police are searching for a cybercriminal lair in a remote region of the Rocky Mountains. After surveying the region, they discover that there are N bases scattered in the region. The bases are connected by a network of M preexisting roads, and the ith preexisting road connects bases a_i and b_i. However, the preexisting roads must be repaired in order to become usable. The Programming Police must spend C_i dollars in order to repair the ith preexisting road. The Programming Police also identify K currently nonexistent roads that they can build between bases. The jth currently nonexistent road connects bases e_j and f_j, and the Programming Police must spend D_j dollars in order to build the jth currently nonexistent road. The Programming Police can repair any number of roads, but they have enough resources to build only R roads. Help the Programming Police find the minimum cost to connect all of the bases with usable roads.

Input

Line 1: N, M, K, and R, separated by spaces
Line 2...M+1: On line $i+1$, a_i, b_i, and C_i, separated by spaces
Line M+2...M+K+1: On line $j+M+1$, e_j, f_j, and D_j, separated by spaces

Output

Line 1: The minimum cost to connect all of the bases

Example

standard input	standard output
5 4 2 1 2 3 19 5 2 15 1 2 12 1 4 9 1 5 14 5 3 13	49

Note

$1 \leq N \leq 100,000$
$0 \leq M, K, R \leq 100,000$
$1 \leq a_i, b_i \leq N$
$1 \leq e_j, f_j \leq N$
$1 \leq C_i, D_j \leq 100,000$