Problem J. White Mage

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	256 mebibytes

On the ancient battlefield the White mage fights army of n evil creatures. The mage can use m attack spells. Each spell can kill set of enemies, specific for that spell, and for casting this spell some mana will be used. Note that:

1. Spell can be used only if all creatures to be killed by this spell are alive before it was cast, otherwise it does nothing.
2. Once casted, spell destroys all related to it creatures, the mage cant control it to protect some of them.

Check if the White Mage can destroy all evil creatures and, if yes, how is minimum amount to mana needed for victory?

Input

First line of the input consists two integers n ($1 \le n \le 18$) – number of evil creatures and m ($0 \le m \le 100$) – number of attack spells.

Each of next m lines defines one spell and contains list of affected creatures: integer k_i ($1 \le k_i \le n$) – length of the list, then come k_i integers between 1 and n, inclusively — numbers of creatures, affected by this spell – номера существ, and last integer in the spell definition is v_i ($v_i \le 1000$) – amount of mana used to cast this spell.

Output

Print one integer — minimal amount of mana, needed to destroy all evil creatures. If it is impossible to destroy them all, print -1 instead.

Examples

standard input	standard output
5 6 2 1 2 10 3 3 4 5 18 2 4 5 6 1 3 7 1 2 4 1 1 11	23
3 2 2 1 2 5 2 2 3 5	-1

Note

In the first example mage have 4 ways to win: (spells 1 and 2 – 28 mana), (1,3,4 – 23), (2,5,6 – 33), (3,4,5,6 – 28). So using 1 3 4 is the most effective way.

In the first example creature with number 2 will be killed after casting any of the spells. So only one of spells can be casted, but it can't destroy all evil creatures.