

Annoying Coins Quest

Little Tita has always been annoyed by coins, she's so annoyed that has devised a formula to assign an annoyance level to each transaction. The formula is quite simple, each coin c has a transfer annoyance value (T_c) and a keep annoyance level (K_c), then, each transaction has a total annoyance level (A) defined as the sum of the transfer annoyance (A_T) and the kept annoyance (A_K). Where:

- $A_T = \sum_{c \in C_T} T_c$
- $A_K = \sum_{c \in C_K} K_c$
- C_T is the set of coins transferred, this are the coins from Tita to the seller and the coins the seller gives back as change.
- C_K is the set of coins Tita is left with after the transaction.

Given the list of coins that exist, the cost of a transaction and the list coins Tita has; find the minimum total annoyance level that Tita can guarantee for the transaction assuming the seller has an infinite amount of coins of each type and is not at all thinking about Tita's annoyance level formula.

Input

The first line contains an integer T , which specifies the number of test cases. Then, will follow the descriptions of T test cases.

Each test case will start with two integer N , the number of coin types that exist, and C , the cost of the transaction. The next N lines describe each coin type by with three integers V_i , T_i and K_i which represent the value, transfer annoyance and keep annoyance, respectively. Finally, a line with N integers A_i represent the amount of coins Tita has of each type, in the same order as the coins description.

Output

For each input case you must print a single line with the string Scenario $\#i$: x , where i is the number of the test case (starting at 1), and x is the minimum annoyance level that Tita can guarantee for the transaction or -1 if the transaction cannot be made.

INPUT

OUTPUT

INPUT	OUTPUT
3	Scenario #1: 24
3 1 1	Scenario #2: 42
2 1 1 0	Scenario #3: -1
10 20 20	
3 1 1	
2 1 0	
4 1 1	
2 1 1 0	
10 20 20	
3 1 1	
1 1 0 1	
2 1 0 0	
2 3	
4 1 1	
3 1 1	
1 0	



tinypic

This image is no longer available.
Visit tinypic.com for more information.