Questions asked 1

Submissions

Country Leader
4pt | Not attempted **2262/3789 users** correct (60%)
7pt | Not attempted **1722/2218 users** correct (78%)

Rain
9pt | Not attempted **558/1288 users** correct (43%)
15pt | Not attempted **502/552 users** correct (91%)

Jane's Flower Shop
6pt | Not attempted **1003/1408 users** correct (71%)
19pt | Not attempted **319/735 users** correct (43%)

Clash Royale
13pt | Not attempted **200/410 users** correct (49%)
27pt | Not attempted **28/101 users** correct (28%)

Top Scores

jcvb	100
NAFIS	100
ZhouYuChen	100
wwwwodddd	100
chffy	100
Seter	100
19891101	100
Constroy	100
Ronnoc	100
Jason911	100

Problem D. Clash Royale

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the Quick-Start Guide to get started.

Small input
13 points
Solve D-small

Large input
27 points
Solve D-large

Problem

Clash Royale is a real time strategy card game. Each card has an attack power and a level. Each player picks 8 cards to form a battle deck; the total attack power of a deck is the sum of the attack power of each of its cards. Players fight with each other by placing cards from their battle decks into the battle arena. The winner of a battle is rewarded with coins, which can be used to upgrade cards. Upgrading a card increases its attack power. <p/>

After days of arena fighting, Little Shawn has accumulated a total of **M** coins. He has decided to upgrade some of his cards. Little Shawn has **N** cards. The i-th card can have any level from 1 through $\mathbf{K_i}$; the attack power for the j-th level is $\mathbf{A_{i,j}}$. Cards must be upgraded one level at a time; the price to upgrade the i-th card from level j to level j+1 costs $\mathbf{C_{i,j}}$ coins. The i-th card is currently at level $\mathbf{L_i}$ before Little Shawn has upgraded any cards.

Little Shawn wants to use some or all of his coins to upgrade cards, and then form a deck of exactly 8 cards, so that the deck's total attack power is as large as possible. Can you help him do this? He can upgrade the same card more than once as long as he can afford it, and he does not have to upgrade every card.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each test case starts with 2 integers **M** and **N**, the number of coins and the number of cards that Little Shawn possesses. Then **N** blocks follow. The i-th block consists of 3 lines describing the i-th card. The first line contains two integers $\mathbf{K_i}$ and $\mathbf{L_i}$, the maximum possible level and current level of the card. The second line contains $\mathbf{K_i}$ integers $\mathbf{A_{i,1}}$, $\mathbf{A_{i,2}}$, ..., $\mathbf{A_{i,K_i}}$, the attack power of each level. The third line contains $\mathbf{K_i}$-1 integers $\mathbf{C_{i,1}}$, $\mathbf{C_{i,2}}$, ..., $\mathbf{C_{i,K_i-1}}$, the number of coins required to upgrade a card that is currently at level 1, 2, ..., $\mathbf{K_i}$-1.

Output

For each test case, output one line containing `Case #x: y`, where x is the test case number (starting from 1) and y is the maximal possible total attack power of a deck that Little Shawn can form, using the coins that he has.

Limits

$1 \le \mathbf{T} \le 100$.
$1 \le \mathbf{K_i} \le 10$.
$1 \le \mathbf{L_i} \le \mathbf{K_i}$.
$\mathbf{A_{i,j}} < \mathbf{A_{i,j+1}}$.

Small dataset

$1 \le \mathbf{M} \le 1{,}000$.
$\mathbf{N} = 8$.
$1 \le \mathbf{A_{i,j}} \le 1{,}000$.
$1 \le \mathbf{C_{i,j}} \le 1{,}000$.

Large dataset

$1 \le \mathbf{M} \le 1{,}000{,}000{,}000$.
$8 \le \mathbf{N} \le 12$.
$1 \le \mathbf{A_{i,j}} \le 1{,}000{,}000{,}000$.
$1 \le \mathbf{C_{i,j}} \le 1{,}000{,}000{,}000$.

Sample

Input	Output
2 20 8 3 1	Case #1: 422 Case #2: 504

```
1 10 100
1 2
3 1
1 10 100
1 3
3 1
1 10 100
1 4
3 1
1 10 100
1 5
3 1
1 10 100
1 6
3 1
1 10 100
1 7
3 1
1 10 100
1 8
3 1
1 10 100
1 9
30 10
4 1
1 10 100 200
1 2 3
3 1
1 10 100
2 4
3 1
1 10 100
3 6
4 2
1 10 100 200
4 8 16
3 1
1 10 100
5 10
3 1
1 10 100
6 12
3 1
1 10 100
7 14
3 1
1 10 100
8 16
3 1
1 10 100
9 18
3 1
1 10 100
10 20
```

In sample case #1, you can upgrade the first 4 cards to level 3, upgrade the 5th and 6th card to level 2, keep the last 2 cards level 1. This will cost you (1+2)+(1+3)+(1+4)+(1+5)+1+1=20 coins and the total attack power is 100+100+100+100+10+10+1+1=422 which is the maximal possible we can get.

Sample case #2 would only appear in Large dataset.