D: Moneychangers

Rarely are exchanges rates set such that converting one currency to another can be done precisely. You will be given the denominations and counts of bills in one currency and the proposed denominations and counts of bills in a second currency, along with the exchange rate. Your task is to determine if the values of the two sets are as close as possible, given the values of the base units of each currency.

Input

There may be multiple cases. The number will be specified in the first line. Each proposed exchange will be given in four lines. The first line contains two number: the number of denominations of the currency being exchanged followed by the number of denominations of the target currency. The second line contains pairs of integers for each denomination of the currency being exchanged. The first value is the face value of the denomination and the second value is the number of bills of that denomination. The third line contains the same information, but for the target currency. The fourth line contains two positive integers representing a number of base units of the first currency and of the target currencies that have been determined to represent the exact same value.

Output

For each case display the case number followed by the response *good* or *bad* depending on if the two currency values are as close as possible.

Sample Input

```
2
1 3
5 3
1 5    5 1    10 1
56 75
3 2
1 3    5 2    20 4
1 6   10 7
56 75
```

Sample Output

```
Case 1: good
Case 2: bad
```