Wolfgang Puck has an extensive collection of cake recipes. They are separated into different binders depending on the type of cake. Although Wolfgang has restaurant franchises all over the world, he is in a period of hard times and is struggling to afford ingredients for his cakes. What cakes can he create with his small budget?

Input

On the first line you are given t ($1 \leq t \leq 100$), the number of binders. Each binder begins with *title*, the name of the binder, then on the next line m n b ($1 \leq m, n \leq 100$, $1 \leq b \leq 10^6$) where b is Wolfgang's budget in dollars. The next m lines are given as '*ingredient c*' (see sample input) where c ($0 \leq c \leq 5000$) is the price in dollars for one unit of ingredient.

Then follow n recipes. Each recipe begins with *name* on a line of its own, then on the very next line k ($1 \leq k \leq 100$). The following k lines are of the form '*requirement x*' (see sample input) where x is the number of units of the ingredient *requirement* used in the recipe *name*.

Output

For each binder, output the name of the binder in uppercase letters then on separate lines a list of recipes within Wolfgang's budget in increasing order of cost. If no such recipe exists, print 'Too expensive!'. If recipes have the same cost print them in lexicographical order. Print a blank line after each binder.

Sample Input

```
2
My Favourite Cheesecake
8 3 100
sugar 4
water 0
lemonjuice 3
creamcheese 20
vanilla 5
egg 5
cream 10
strawberry 5
Strawberry Whipped Cream
2
cream 5
strawberry 3
Scrumptious Caramel Topping
3
sugar 6
water 3
lemonjuice 1
Secret Cheesecake Base
5
creamcheese 3
sugar 5
vanilla 1
egg 6
cream 1
Million Dollar Cakes
3 1 999999
costlyflour 500
gold 4500
diamond 5000
Display Cake - Do Not Eat!
3
costlyflour 100
gold 100
diamond 100
```

Sample Output

```
MY FAVOURITE CHEESECAKE
Scrumptious Caramel Topping
Strawberry Whipped Cream

MILLION DOLLAR CAKES
Too expensive!
```