videoplaza

Monetising the New TV

Videoplaza programming puzzle

You are in charge of selling online video advertising at a large media company. Your job is to make sure that you make as much money as possible from ads running on your site. You are very good at what you do and can sell virtually an infinite amount of impressions (a display of an ad to a user) to a multitude of advertisers.

However, your boss isn't happy. He claims that you cannot show more than 3 ads before each video clip on the site, or no one will visit the site. Although you are very skeptical about this, you must do what your boss tells you. This upcoming month you therefore have a total ad inventory of 32 356 000 impressions available (meaning that you can display ads a maximum of 32 356 000 times).

To further complicate matters, you cannot sell an arbitrary number of impressions to a customer. Your customers buy impressions in chunks of different sizes called campaigns. For instance the advertiser Acme Inc. always buys campaigns of size 2 000 000 impressions that are to be delivered during one month. If you cannot deliver the full 2 000 000 impressions in time, Acme won't pay you. On the other hand, since you are such a good sales person, you are able to sell each customer an arbitrary amount of campaigns, as long as you can deliver all impressions in each campaign.

Your job will be to choose how many campaigns to sell to what customers in order to maximize the revenue.

For the upcoming month, your options are as follows:

Customers	Impressions per campaign	Revenue per campaign
Acme	2 000 000	200 €
Lorem	3 500 000	400 €
Ipsum	2 300 000	210 €
Dolor	8 000 000	730 €
SIT	10 000 000	1,000 €
Amet	1 500 000	160 €
Mauris	1 000 000	100 €

Since you are not only a good sales person, but also an excellent programmer, you decide to write a program that will help you find the best possible mix of campaigns. And since you hate repeating yourself, you make sure you write the program so you can re-use it next month as well.

Write a java program that takes a single argument on the command line. This argument must be a file name, which contains the input data.

The input file will always be formatted as follows:

```
<monthly inventory>
<customer>,<impressions per campaign>,<price per campaign>
...
<customer>,<impressions per campaign>,<price per campaign>
```

The monthly inventory will be an integer.
The customer name will contain no spaces.
The cost will be an integer.
The values will be separated by commas.

I.e. the file contents for the upcoming month would be

```
32356000
Acme,2000000,200
Lorem,3500000,400
Ipsum,2300000,210
Dolor,8000000,730
SIT,10000000,1000
Amet,1500000,160
Mauris,1000000,100
```

The program should output to standard out the best possible mix of campaigns to sell in the following form:

```
<customer>,<number of campaigns to sell>,<total impressions for customer>,<total
revenue for customer>
...
<total number of impressions>,<total revenue>
```

Please note:
If you get stuck trying to implement the algorithm to solve this, it does not necessarily mean that you are not qualified to work with us. Drop us a line at talents@videoplaza.com and we will give you a hint.