6713 Harddisk

Dipu's harddisk crashed last week. He bought a new one and has already installed all necessary software. But he has lost his personal collection of media files. It is just unbearable! How can he avoid such a loss in future?

Dipu is planning to maintain a "fresh" second harddisk in his computer as a backup device. He wants to make sure that the backup harddisk is never too old, by replacing it with a new one every few months. This is what he will do: after a backup harddisk has been used for a few months, Dipu will buy a new harddisk, move all the data from the old backup disk to the new one and then sell the old one. He knows that he will have to sell an old backup disk at a price lower than its original price because of both depreciation and the drop in the market price of new harddisks. His goal is to keep the total cost of maintaining the backups as low as possible.

Given the prices of different harddisks in the next few months, your job is to determine the minimum cost of maintaining the backup disks in the same period of time. Assume:

- Dipu will buy and sell harddisks on the first day of a month, and he will buy a new disk and sell the old one on the same day.
- He has no backup disk to sell on the first day of the first month. He will never sell the disk used in the last month.
- The amount he will get by selling a harddisk is Tk 100 less than the *current* price of a new harddisk of the same model. Also, the price of a new harddisk never goes up, and always remains more than Tk 100. Note that Tk represents ancient unit of money (Tonka) used in this region.

Input

Input consists of several datasets. Each dataset consists of the followings:

- A line containing the name of the set (which has 2 to 16 alphanumeric characters).
- A line containing 2 positive integers n and m, denoting respectively the number of different harddisks and the number of months to consider ($1 < n < 100$, $1 < m < 200$).
- Each of next n lines contains the description of one harddisk. The description of a harddisk consists of its model name followed by m positive integers denoting its price on the first day of the m months in order. The name of a harddisk consists of 2 to 16 alphanumeric characters.

The end of input is marked with a line consisting of '`TheEnd`'. All data on a single line are separated by exactly one space. All prices are below Tk 20000.

Output

For each set of input, the output should contain the name of the set on the first line, followed by the minimum possible cost on the second line, followed by one line for each harddisk to be used in those m months, followed by an empty line. For each harddisk, its name should be followed by the number of month(s) it will be used. See the sample output for the exact format. Obviously, the harddisks should be listed in order of their use. If there are multiple possibilities, any one of them is acceptable.

The end of output should be marked with a line consisting of '`TheEnd`'.

Sample Input

```
FirstSet
24
Brand1 4000 3600 3500 3400
Brand2 3500 3500 3200 3000
SecondSet
48
Mintor 4500 4500 4400 4200 4000 3700 3500 3200
Rivergate 4500 4400 4300 4100 3900 3800 3600 3300
EasternDigital 5000 4900 4800 4700 4500 4100 3700 3500
WesternAnalog 7500 7200 7000 6800 6500 6200 6000 5500
TheEnd
```

Sample Output

```
FirstSet
Tk 3400
Brand2 for 1 month(s)
Brand1 for 2 month(s)
Brand2 for 1 month(s)

SecondSet
Tk 4500
Mintor for 8 month(s)

TheEnd
```