Assignment 1: Board Game Party

In the lively neighborhood of Funville, where laughter fills the air and friendships flourish, the local event planner, Miss Merrymaker, undertakes the delightful task of organizing a themed party for a cherished group of friends. With a commitment to spreading joy and fostering connections, Miss Merrymaker aims to create an unforgettable gathering celebrating their shared passion for board games. However, mindful of the limited space available in the bustling heart of Funville, she meticulously allocates party invitations, ensuring the venue's capacity isn't exceeded while maximizing the presence of board game enthusiasts. Moreover, party invitations should take into account that groups of players only play a specific board game. Each player group associated with a board game requests Miss Merrymaker to host them. Miss Merrymaker needs to take into account that each group enjoys board games differently, so they have distinct values of enthusiasm. Miss Merrymaker is good at organizing and wants to bring players together. She uses a special program to choose the board games, and consequently players for an evening full of enthusiasm, friendly competition, and happy memories.

Task

Create a program to help Miss Merrymaker that organizes a themed party for groups of players based on their interests in various board games and their enthusiasm. The program receives the available space (in number of players) for the party and a list of board games by ascending order of request. Each board game request is represented by the board game name, the number of players of the board game, and the total enthusiasm those players bring to the party. The program should take into account the available space for the party and prioritize as much enthusiasm as possible in the party, while ensuring that the total number of players does not exceed the available space of the venue. The program should print the total number of players in the party and the total party enthusiasm value. To decide which board games to take, it should prioritize the list of board games with higher enthusiasm. If two lists of board games have the same enthusiasm, the program should select the list of board games that contains the earliest request. If there is tie on the earliest, then it is broken on the second most earlier, and so forth.

Input

The first line specifies the available space, *S,* for the party (in number of players). The second line indicates the number of requested board games, *N*. Subsequent *N* lines contain data about each board game: a string *bgn* representing the board game name, followed by an integer *P*

indicating the total number of players that board game will bring, the second integer E represents the total enthusiasm those players bring to the party.

Constraints

$1 \leq S \leq 600000$	available space
$1 \leq N \leq 60$	number of board games
$1 \leq$ len $bgn \leq 10$	characters
$0 \leq P \leq 1048576$	number of players
$0 \leq E \leq 1000$	enthusiasm value

Output

The output should begin with a line indicating the number of board games selected for the party, followed by the total number of players and then the total party enthusiasm value. Subsequent lines should list the names of the board game, in the order they were requested to the party.

Sample Input 1

```
18010
6
monopoly 5000 1
catan 7000 2
splendor 6000 3
codenames 6000 2
azul 7000 1
pandemic 5000 3
```

Sample Output 1

```
3 18000 8
catan
splendor
pandemic
```

Sample Explanation 1

If more than three board games are selected, their total number of players exceed the available space. This combination has the highest possible enthusiasm value. catan appears instead of codenames because it was requested earlier.

Sample Input 2

18000
6
monopoly 5000 3
catan 5000 3
splendor 6000 3
codenames 6000 3
azul 7000 3
pandemic 7000 3

Sample Output 2

3 16000 9
monopoly
catan
splendor

Sample Explanation 2

If more than three board games are selected, their total number of players exceeds the available space. Any combination of three board games has the same total enthusiasm value of 9. This combination has the three earliest requests for board games.