The placements/recruitment season is going on in various colleges. The interviews are over, and each company has selected some students. But since each student can end up finally in at most one company, a student might have to reject a company which selected him. The companies know this, and hence, the companies usually select more students than it can actually employ. So now, the exact pairings should be done. This program can handle one such session in a famous college.

There are a total of **N** candidates (numbered from 1 to **N**) and **M** companies (numbered from 1 to **M**) taking part in it. Each candidate has a certain minimum expectation of salary, which is given by the array **minSalary** (All the arrays are 1-indexed). For each candidate, you are also given the information regarding the companies which have selected him. This information is given by an array **qual** of size **N \* M**, where **qual**[i][j] = 1 if and only if the i-th candidate has qualified for a job in the j-th company. A company will provide a fixed salary to the candidates it employs, which is given by the companyrelatedinfo[i][0] (here i is the company number), a company has an upper bound on the number of candidates it can employ and finally give an offer to, this information is provided by companyrelatedinfo[i][1] (here i is the company number).

The D-day has come. Each candidate from 1, 2, .. **N** (in this order) will go to the placements coordinator. When the i-th student goes, among the companies which have selected him, and which still haven't reached their maximum job offers limit ( that is companyrelatedinfo[i][1] ), he picks the company which provides the maximum **offered Salary**, provided that it is at least his **minSalary**.

You have to find the number of the candidates that will end up with a job, the total amount of salaries that the candidates will get, and the number of companies that won't be able to employ even a single candidate. This information is very crucial for the placement coordinator, so as to analyze whether it makes sense to invite a company to come to the placements session next year or not. Please help the coordinator!

**Input**

* The first line of the input contains an integer **T** denoting the number of Test Cases. The description of **T** test cases follows
* First line of each test case contains two space separated integer **N, M**.
* The next line contains **N** space separated integers denoting the array **minSalary**.
* Each of the next **M** lines contains two space separated integers denoting **offeredSalary**[i] and **maxJobOffers**[i].
* The next **N** lines will contain the description of the 2-D array **qual**. Each of the **N** lines will contain **M** binary integers (without any space): j-th integer in the i-th line will denote **qual**[i][j].

**Output**

* For each test case, output three integers in a new line, denoting the number of the candidates that will get a job, the total amount of salaries that the candidates will get, and the number of companies that won't be able to hire even a single candidate.

### Example

**Input:**

1

5 6

5000 10000 3000 20 100

10000 2

800 2

600 1

10 8

1000 9

2000 10

111111

100000

000000

000001

100100

**Output:**

3 22000 4