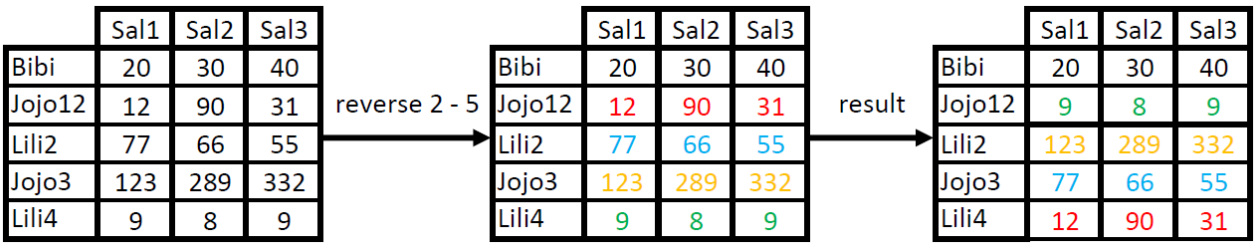
Data Hacking

Lili, a professional hacker, managed to hack your company data. The data that got hacked and modified were a series of employees data in the format of 1 employee name and 3 numbers representing employees salary in the last 3 months. Lilis hacking was fatal because it could lead to mistakes in paying employees salaries in the last month. You as a manager in the company are aware of the incident and must immediately rearrange the data into the original data to avoid mistakes in paying employees salaries.

You are presented with **series of data that Lili has scrambled** according to the format mentioned above. When you browse through the data, you notice a sequence of orders that Lili performed in randomizing or modifying the data. There are 2 types of commands with the format shown below.

- 1 U V , which reverse the sequence of salaries of employees from index U to V vertically.

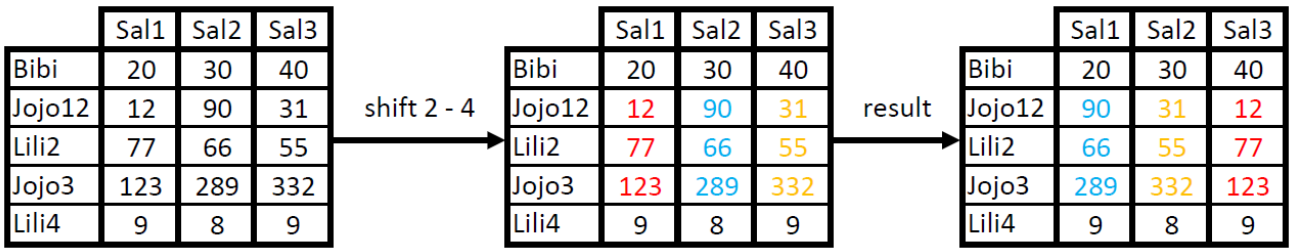


	Sal1	Sal2	Sal3
Bibi	20	30	40
Jojo12	12	90	31
Lili2	77	66	55
Jojo3	123	289	332
Lili4	9	8	9

	Sal1	Sal2	Sal3
Bibi	20	30	40
Jojo12	12	90	31
Lili2	77	66	55
Jojo3	123	289	332
Lili4	9	8	9

	Sal1	Sal2	Sal3
Bibi	20	30	40
Jojo12	9	8	9
Lili2	123	289	332
Jojo3	77	66	55
Lili4	12	90	31

- 2 U V , which perform left "shift" of the salaries of employees between index U and V horizontally.



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After you analyze all the commands made by Lili, now you have to rearrange the data into the original form.

Format Input

There are T test cases. Each testcase contains the integers N and Q, where N represents the amount of data and Q represents the number of orders Lili performed. N next lines contains a string S_i and the 3 digits A_i, B_i, and C_i which represent the employees name and the employees salary for the last 3 months. Then, the next Q line is the command Lili performs according to the format above.

Format Output

Output T line with format "$Case\ \#X$: ", where X represents the testcase number, then in the next N lines there are string S_i and integer Z_i which represents employees name and his last salary.

Constraints

- $1 \leq T \leq 20$
- $1 \leq N, Q \leq 150$
- $1 \leq |S_i| \leq 25$
- $1 \leq A_i, B_i, C_i \leq 10^9$
- $0 \leq U_i \leq V_i \leq N$

Sample Input (standard input)

```
2
5 1
Bibi 20 30 40
Jojo12 9 8 9
Lili2 123 289 332
Jojo3 77 66 55
Lili4 12 90 31
1 2 5
5 5
Bibi 20 30 40
Jojo12 9 8 9
Lili2 123 289 332
Jojo3 77 66 55
Lili4 12 90 31
1 3 5
2 2 4
1 1 5
1 2 4
2 1 5
```

Sample Output (standard output)

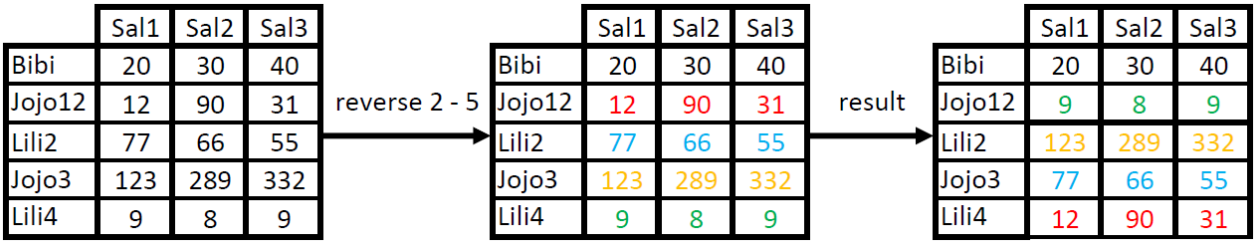
```
Case #1:
Bibi 40
Jojo12 31
Lili2 55
Jojo3 332
Lili4 9
Case #2:
Bibi 90
Jojo12 9
Lili2 30
Jojo3 77
Lili4 123
```

Data Hacking

Lili, seorang peretas professional, berhasil melakukan peretasan data di perusahaanmu. Data perusahaan yang diretas dan dimodifikasi tersebut merupakan deretan data dengan format 1 nama karyawan, serta 3 buah angka yaitu gaji karyawan dalam 3 bulan terakhir. Peretasan yang dilakukan Lili sangat fatal karena dapat menyebabkan kesalahan untuk mengaji karyawan di bulan terakhir. Anda sebagai manager dalam perusahaan tersebut mengetahui insiden itu dan harus segera menata ulang data tersebut menjadi data semula untuk menghindari kesalahan dalam mengaji karyawan.

Anda diperhadapkan dengan **deretan data yang telah diacak Lili** sesuai format yang dijelaskan di atas. Ketika anda menyusuri data-data tersebut, anda menyadari adanya urutan perintah yang dilakukan Lili dalam mengacak atau memodifikasi data tersebut. Ada 2 jenis perintah dengan format seperti di bawah.

- 1 U V , yaitu membalik urutan gaji dari karyawan yang berada dari indeks U sampai V secara vertikal.



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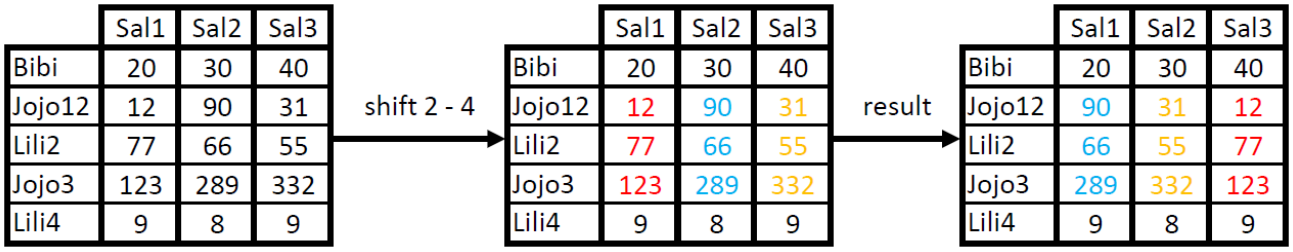
Lili4	12	90	31

- 2 U V , yaitu melakukan "shift" kiri terhadap urutan gaji dari karyawan yang berada di indeks U dan V secara horizontal.



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Setelah anda menganalisis urutan perintah yang dilakukan Lili, maka sekarang anda harus menata ulang data tersebut menjadi data semula.

Format Input

Terdapat T buah testcase. Setiap testcase berisi bilangan bulat N dan Q, dimana N merepresentasikan jumlah data dan Q merepresentasikan jumlah urutan perintah yang dilakukan Lili. N Baris selanjutnya terdapat sebuah string S_i dan 3 angka A_i, B_i, dan C_i yang merepresentasikan nama karyawan dan gaji karyawan 3 bulan terakhir. Kemudian, Q baris selanjutnya terdapat perintah yang dilakukan Lili sesuai format di atas.

Format Output

Keluarkan T baris dengan format "$Case\ \#X$:, dimana X merepresentasikan nomor testcase, kemudian N baris selanjutnya terdapat string S_i dan angka Z_i yang merepresentasikan nama karyawan dan gaji pada bulan terakhir.

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