7219 Problem on Group Trip

Group trip usually (if not always) fun for the participants, but for the organizer, it could be a nightmare; especially when the group size is large and the organizer doesn't have authority against the participant (e.g., in a school trip, teachers can imposed several rules which must be obeyed by all students, thus the teachers have authority and it eases their work). It becomes even worse if the participants are your friends!

One problem which is usually overlooked by any organizer is ... the morning time, i.e. the time you spend to prepare yourself for the day, including toilet-time, shower-time, and using wash basin. For example, let there be 3 persons: Andi, Budi, and Chandra, and the time they need for each morning time is presented in the following table.

	S1	**S2**	**S3**
P1 — Andi	10	25	15
P2 — Budi	0	0	25
P3 — Chandra	0	15	10

S1: toilet, S2: shower, S3: wash basin. All time are in minutes.

Andi requires 50 minutes to do all his morning time, Budi needs 25 minutes (he skips toilet and shower), and Chandra also needs 25 minutes (he skips toilet). If there is only one bathroom which has all the stations (toilet, shower, washing basin) and each person uses the bathroom exclusively, then the total amount of time needed by those 3 persons to complete all their morning time is 50 + 25 + 25 = 100 minutes!

One considerate inn would provide more bathrooms for the guests, but it's not always possible given the usual limited space. Another option is to separate the stations. Instead of having toilet, shower, and wash basin in one room (thus only one person can use any of them at any time), we can separate those three stations into three different rooms, so people using different stations don't have to wait each other, e.g., Andi can use the toilet at the same time as Budi using the wash basin and Chandra using the shower. However, still, each station can only be used by one person at any time.

Given the time required by N persons (numbered from 1 to N) to do their morning time, determine the total amount of time needed by them to complete all their morning time, assuming there is only one toilet, one shower, and one wash basin, but all those three are in separated rooms. To simplify the problem, we set some rules:

1. Each person will do his morning time in order: toilet-time (S1), shower-time (S2), and using wash basin (S3). One will not do shower if he hasn't completed his toilet-time. One will not use the wash basin before he completed his toilet-time and shower-time.

2. A required time of 0 (zero) means he decides to skip the corresponding station and it is considered as completed right away, thus he can proceed to the next station (if any).

3. Whenever a station is free (not in used), the person who needs to use the station, ready to use it, and has the smallest number will be given the first chance to use it.

For example, let Andi, Budi, and Chandra numbers are 1, 2, and 3, respectively. Then, using the same example with aforementioned rules, they will complete all their morning time in 55 minutes. Following table simulates how they utilize each station.

	1..5	6..10	11..15	16..20	21..25	26..30	31..35	36..40	41..45	46..50	51..55
S1: Toilet	1	1	-	-	-	-	-	-	-	-	-
S2: Shower	3	3	3	1	1	1	1	1	-	-	-
S3: Wash Basin	2	2	2	2	2	3	3	-	1	1	1

Specifically in this table, each cell corresponds to 5 minutes in time. 1 = Andi, 2 = Budi, and 3 = Chandra.

Input

The first line of input contains T ($T \leq 100$) denoting the number of cases. Each case begins with an integer N ($1 \leq N \leq 100$) denoting the number of people. The next N following lines each contain three integers M_1, M_2, and M_3 ($0 \leq M_1, M_2, M_3 \leq 100$) representing the time needed for station S1, S2, and S3 by the i-th person respectively.

Output

For each case, output '`Case #`X`:` Y' (without quotes) in a line where X is the case number (starts from 1) and Y is the total amount of time needed by those people to complete all their morning time.

Note: Explanation for 2nd sample case

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	2	2	2	2	2	2	2	2	1	1	1	1	3	3	-	-	-	-	-
S3	-	-	-	-	-	-	-	-	2	2	-	-	1	1	1	1	3	3	3

Note that at minute 9, the shower (S2) is free and there are 2 persons waiting for it, i.e. P1 (i.e. person number 1) and P3. P1 is given the first chance as he has a smaller number (1 compared to 3). At minute 11, wash basin (S3) is free, but there is no people who needs and ready to use it.

Sample Input

```
4
3
10 25 15
0 0 25
0 15 10
3
4 4 4
0 8 2
0 2 3
4
5 15 3
4 10 10
10 0 5
0 0 7
2
100 90 80
80 90 100
```

Sample Output

```
Case #1: 55
Case #2: 19
Case #3: 40
Case #4: 380
```