Problem B
Job Allocation

Input File: *testdata.in*
Time Limit: 2 seconds

Problem Description

Lion Mall has been completed recently. The managers of the mall recruited a number of new employees before the opening of the mall. Now they encounter the issue of assigning employees specific jobs more suitable for them. Our goal is to help the managers to accomplish this allocation process.

The mall contains three departments, Food, Clothing, and Entertainment. Every employee has his/her merits. But not every one of them has the best performance in every department. In order to make the allocation process more convenient, the managers of the mall decided to score each employee three abilities of employment in these three departments (F: the ability of working in "Food department", C: the ability of working in "Clothing department", E: the ability of working in "Entertainment department"). Moreover, each employee has one more attribute which is his/her happiness index H. An employee considers the job with highest score among F, C and E his ideal job, and he/she will obtain his/her happiness index H if he/she is assigned his/her ideal job; otherwise, he/she obtains '0' value for his/her happiness index. For example, if F is the maximum of his/her three scores and the employee works in "Food department", then he/she gets his/her ideal job and the happiness index of the employee will be H. However, if he/she works in "Clothing department" or "Entertainment department", his/her happiness index will be '0' instead.

One employee is only assigned to work in one department, Food, Clothing, or Entertainment. Moreover, each department has its own upper limit on the number of employees assigned to it. More precisely, "Food department"

requires at most J_f employees, "Clothing department" requires at most J_c employees, and "Entertainment department" requires at most J_e employees. In the allocation process, you can try to attain these upper limits as much as possible. If you reach the upper limit of a specific department, you cannot assign any more employee to that department. If all the three departments are fully occupied, then you cannot assign remaining employees to any of the departments. In this case, the managers of the mall will have other arrangements for these remaining employees; however, the happiness indices for these remaining employees will be considered to be '0' value. A good allocation process will help the managers of the mall to make their decisions. The goal for this allocation process is to maximize the total happiness index H_T of all employees assigned to the three departments. Please write an efficient program to find the optimal total happiness index value H_T.

Technical Specifications

1. N: The number of employees. It may not be equal to $J_f + J_c + J_e$. $1 \leq N \leq 100000$.

   J_f: The maximum number of employees who can be assigned to "Food department". $1 \leq J_f \leq 30000$.

   J_c: The maximum number of employees who can be assigned to "Clothing department". $1 \leq J_c \leq 30000$.

   J_e: The maximum number of employees who can be assigned to "Entertainment department". $1 \leq J_e \leq 30000$.

2. F: The ability value of an employee working in "Food department". $0 \leq F \leq 10$ and F is an integer.

   C: The ability value of an employee working in "Clothing department". $0 \leq C \leq 10$ and C is an integer.

   E: The ability value of an employee working in "Entertainment department". $0 \leq E \leq 10$ and E is an integer.

   H: The happiness index of an employee when he/she gets his/her ideal job. $5 \leq H \leq 10$ and H is an integer.

   Each employee has his/her own F, C, E, and H. $F \neq C \neq E$.

3. *Employee's happiness index*: It depends on the assigned job.

   Employee's happiness index =

   $$\begin{cases} H & \text{He/she is assigned to the ideal job} \\ 0 & \text{Otherwise} \end{cases}$$

4. *Optimal total happiness index value*: The maximum of the sum of the happiness indices for all employees assigned to the three departments.

Input Format

The input starts with an integer representing the number of test cases. The first line of each test case includes one number N. The second line of each test case includes three numbers J_f, J_c, and J_e. Next there are N lines. Each line includes four numbers F, C, E, and H representing the three ability values and the happiness index of an employee.

Output Format

For each test case in the input file, output the optimal total happiness index value in a single line.

Sample Input

```
2
4
1 2 1
4 8 1 8
1 7 2 9
7 9 1 10
1 2 6 5
3
2 1 3
1 9 5 7
2 3 4 5
4 1 7 8
```

Sample Output

```
24
20
```