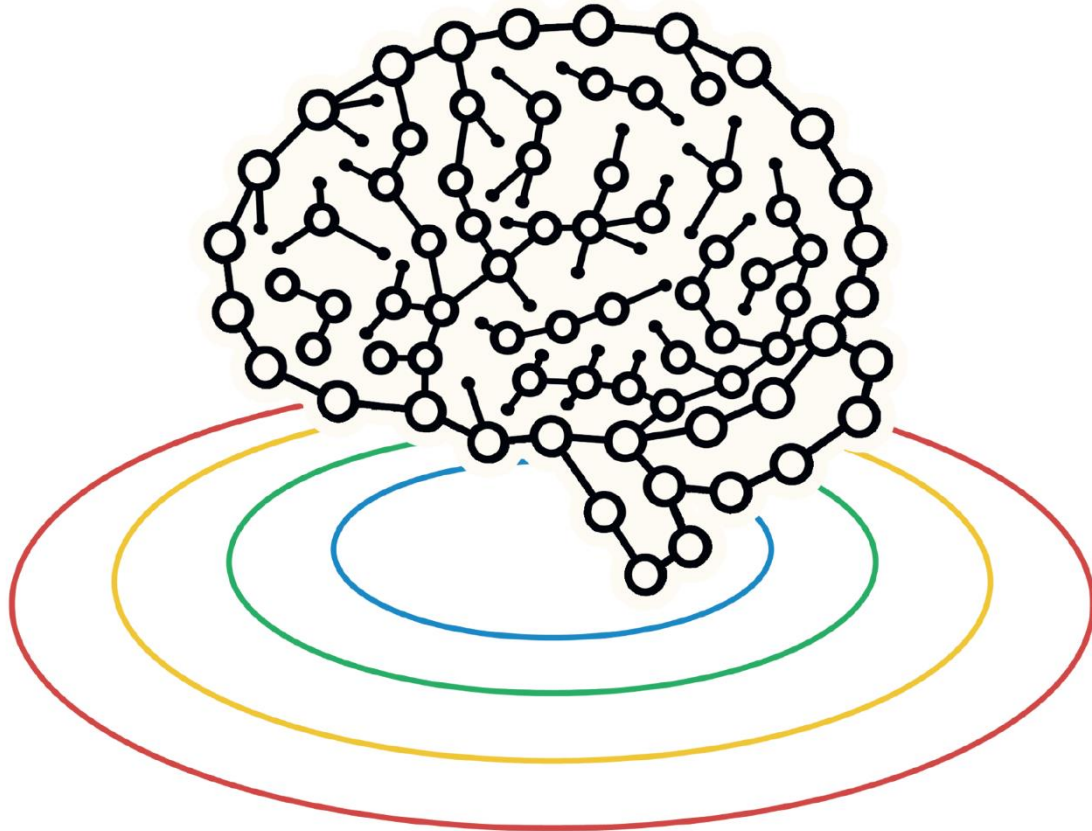




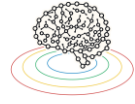
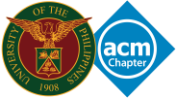
Association for Computing Machinery
University of the Philippines Diliman Student Chapter, Inc.



ALGOLYMPICS 2022

UP ACM PROGRAMMING COMPETITION

PRACTICE PROBLEMS



Sample Problem

Attack of the Cones

Time limit: 2 seconds

After a long and intense struggle, it's finally over. You took the high ground, didn't underestimate the power of Emperor Palpatine, and in the end managed to capture him and his men. Actually, it wasn't just him and his men, but his women and children too.

You take them to your star ship, but as you're about to set off, you find out that you're surrounded by a battalion of clone troopers. It must have been Princess Leia Organa's estranged evil grandson, Leo Organo.

Some quick thinking on your part reminded you of some obscure pieces of history. The clone troopers were clones of Jango Fett who had another famous clone, Boba Fett. Boba Fett was in turn nicknamed Boba because of his well-known love of the popular milk and tea drink with tapioca pearls. You remember that in the cargo hold of your ship, you have some ice cream left over from when your journey first started.

You offer this as a bribe to the clone army for them to let you leave and they graciously accept as long as you can satisfy their conditions. In particular, the cloning process had slight imperfections so each clone trooper has his own favorite flavor of ice cream.

There are f **flavors** of ice cream, labelled $1, \dots, f$.

Each clone trooper wants ice cream, but each one has a preferred number of scoops and ice cream flavor.

The clones of Jango Fett each want either 1, 3, or 6 scoops of ice cream. They do not want any other number of scoops. In addition, each one has a favorite flavor of ice cream labelled 0 to f . If a clone trooper prefers flavor 0 , it actually means they are happy to get any combination of flavors. Otherwise he just wants one flavor, f .

For each of the $3(f + 1)$ distinct preferences, you will be given how many clones have that as their preference. You also have s_i scoops of flavor i .

What is the maximum number of clone troopers that you can satisfy?

You don't need to use all scoops you have.

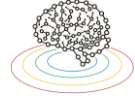
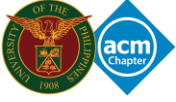
Input Format

The first line of input contains an integer t , the number of test cases.

The first line of each test case contains an integer f .

The second line contains f space-separated integers s_1, \dots, s_f .

Then $f + 1$ lines follow. Specifically, there is a line for each i from 0 to f containing three space-separated integers: $p_{i,1}, p_{i,3}, p_{i,6}$, where $p_{i,j}$ is the number of clone troopers that each want j scoops and whose favorite flavor is i . Remember that if $i = 0$, then they are happy to get any combination of flavors.



Constraints

- $1 \leq t \leq 20000$
- $1 \leq f \leq 20$
- The sum of the f s in a single file is $\leq 10^5$.
- $1 \leq p_{ij} \leq 10^6$
- $1 \leq s_i \leq 10^7$

Output Format

For each test case, output a line containing an integer denoting the answer for that test case.

Sample input

Sample Output

2	30
4	3
100 100 100 100	
2 2 2	
2 2 2	
2 2 2	
2 2 2	
2 2 2	
1	
11	
0 2 0	
0 2 0	