Naruto and Ichiraku san

Input file:	`standard input`
Output file:	`standard output`
Time limit:	5 seconds
Memory limit:	256 megabytes

One day Naruto came from his last mission hungry and went to **Ramen Ichiraku**.

Ichikaru was preparing a problem when someone stole the input. The problem was:

Given an array a of n elements and n queries, Each query will be denoted by L and R. Print $\sum_{i=L}^{R} a_i$ (sum of elements between L and R (inclusive)).

Now he has only the output files and n the number of queries and the number elements in the array. He also remembered that none of the subarrays he asked about were of a single element ($L_i \neq R_i$).

He asked Naruto to help and he will offer him 100 plates of ramen. Can you help them find an array of n elements and n queries on this array that produces the given output file? If you helped them, Naruto will lend you some of his Cuban energy to qualify to IOI 2020

Input

The first line will contain T which is the number of test cases you need to solve $1 \leq T \leq 20$.

Each test case starts with a line containing a single integer n ($3 \leq n \leq 10^5$).

The next line contains n integers representing answers of the n queries where ($-10^6 \leq ans_i \leq 10^6$)

Output

For each case, if there is no solution output a single integer -1. Otherwise, output n.

The next line should contains n integers representing array a where ($-10^{12} \leq a_i \leq 10^{12}$)

Then n lines each containing L and R which are the range of the query ($1 \leq L < R \leq n$)

Scoring

Sub task #1 (15 points):

- $500 \leq n \leq 10^5$.
- $-100 \leq ans_i \leq 100$

Sub task #2 (23 points):

- $3 \leq n \leq 6$
- $0 \leq ans_i \leq 8$

Sub task #3 (32 points): ($3 \leq n \leq 10^3$).

Sub task #4 (30 points): ($3 \leq n \leq 10^5$).

Example

standard input	standard output
1 5 3 5 7 9 14	5 1 2 3 4 5 1 2 2 3 3 4 4 5 2 5

Note

Warning: Large Input/Output files. Be sure to use fast I/O methods.