Problem K. Vision Test

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

Prof. Pang has an extraordinary vision. He can see the pixels on a 4K monitor. To test Prof. Pang's vision, Prof. Shou will show Prof. Pang several pixels and let Prof. Pang guess a straight line that contains these pixels. Given k pixels with coordinates (i, y_i) $(0 \le i < k)$, Prof. Pang must find nonnegative integers a, b and c (which represent the line $y = \frac{ax+b}{c}$) such that $y_i = \lfloor \frac{ai+b}{c} \rfloor$ for all $0 \le i < k$.

Prof. Shou will ask Prof. Pang multiple questions. They are given as follows: Prof. Shou has a fixed array $x_1, \ldots, x_n$. For each question, Prof. Shou chooses a range in the array, $x_l, \ldots, x_r$. Then he defines $y_i = x_{l+i}$ for $0 \le i \le r - l$ and asks Prof. Pang to answer the question for the $r - l + 1$ pixels $(0, y_0), \ldots, (r - l, y_{r-l})$.

Please help Prof. Pang answer all the questions. For each question, output the answer with the **minimum** (c, a, b) **in lexical order**.

It is guaranteed that the answer exists when Prof. Pang chooses the whole array $x_1, x_2, \ldots, x_n$. So the answer always exists when Prof. Pang chooses an interval of this array.

Input

The first line contains a single integer T $(1 \le T \le 10^5)$ denoting the number of test cases.

For each test case, the first line contains an integer n $(1 \le n \le 10^5)$. The second line contains n numbers $x_1, \ldots, x_n$ $(0 \le x_i \le 10^9)$.

The next line contains an integer q $(1 \le q \le 10^5)$ denoting the number of questions.

Each of the following q lines contains two integers l, r $(1 \le l \le r \le n)$.

It is guaranteed that the sum of n over all test cases will not exceed 10^5 and that the sum of q over all test cases will not exceed 10^5.

Output

In the order of input, output one line with three integers a, b, c denoting the answer for each question.

Example

standard input	standard output
3 5 1 1 2 2 2 4 1 5 1 1 3 5 2 3 5 1 2 3 4 6 3 1 5 2 4 3 5 3 0 3 5 1 1 3	1 4 3 0 1 1 0 2 1 1 1 1 5 4 4 1 2 1 3 6 2 5 1 2