Problem C
Data Recovery
Time limit: 2 seconds

In the IoT era, mass data transimision and exchanges occur every second. To prevent secret information or documents from an accidental loss or an intentional release, the concept of information sharing and recovering has raised an interest of a lot of researchers. This problem asks you to write a program to solve a data recovery problem based on a collection of a sufficient number of participants according to modular operations of Number Theory.

Let P be a large prime number, for example, $P = 65537$, suppose that the secret message has been encryted and converted into M pairs of integers (x_i, y_i), $i = 1, 2, \cdots, M$, to allocate to M participants according to the following strategy

$$y_i = a_0 + a_1 x_i + a_2 x_i^2 + \cdot + a_{n-1} x_i^{n-1} \pmod{P}$$

where the secret message is represented as the integers $a_0, a_1, a_2, \cdots, a_{n-1}$, and each participant holds partial information (x_i, y_i), $i = 1, 2, \cdots, M$ about the whole secret message where $n \leq M < P$ and all of the computations are under modular P operations.

According to the strategy of secret sharing and recovering as introduced above, collecting any n distinct pairs of integers (x_j, y_j) from M participants, one can recover the original message $a_0, a_1, \cdots, a_{n-1}$. This problem asks you to write a program to reconstruct the secret message $a_0, a_1, \cdots, a_{n-1}$ based on n given pairs of integers $\{(x_j, y_j) \mid j = 1, 2, \cdots, n\}$ under the modular P computations.

Restriction: $P = 65537$, $M = n = 3$ are fixed and $a_0, a_1, a_2 \in [0, P)$, $0 < x_1 < x_2 < x_3 < P$ in this problem.

Input Format

The first line of the input file contains one integer $K \leq 5$ indicating the number of test cases to come. *Each of the test cases* consists of 3 lines of the information

$$x_1 \quad y_1$$

$$x_2 \quad y_2$$

$$x_3 \quad y_3$$

where x_i and y_i are separated by a Tab or spaces and $0 \leq x_i, y_i < P$, $i = 1, 2, 3$.

Output Format

There are K lines of the output file, each line contains a triple of integers

$$a_0 \quad a_1 \quad a_2$$

for each test case, where $0 \le a_0, a_1, a_2 < P$ which are separated by a Tab or spaces.

Sample Input

```
2
1 4
2 9
3 16
4 147
8 515
16 1923
```

Sample Output for the Sample Input

```
1 2 1
3 8 7
```