

Problem B: Secret Polynomial

You may have encountered IQ tests with inane questions such as the following: find the next number in the sequence 1, 2, 3, __. Obviously the correct answer is 16, since the sequence lists the values $f(1)$, $f(2)$, $f(3)$, $f(4)$, ..., where $f(x) = 2x^3 - 12x^2 + 23x - 12$. More generally, given some information about the values of a polynomial, can you find the polynomial? We will restrict our attention to polynomials whose coefficients are all non-negative integers.

Input Specification

The first line of input contains an integer $0 < n \leq 10000$, the number of polynomials to be identified. Each of the next n lines contains two integers, the values $f(1)$ and $f(f(1))$, where f is the polynomial to be found. Each of these values fits within the range of a signed two's complement 32-bit integer.

Sample Input

```
1
3 5
```

Output Specification

For each polynomial to be found, output a single line listing its coefficients separated by spaces. Assuming the degree of the polynomial is d , list the $d+1$ coefficients in descending order of power (i.e. starting with the coefficient of x^d and finishing with the coefficient of x^0). If the polynomial is the zero polynomial, just output 0. If no polynomial f has the desired values of $f(1)$ and $f(f(1))$, instead output a line containing the word IMPOSSIBLE. If multiple polynomials f have the desired values of $f(1)$ and $f(f(1))$, instead output a line containing the word AMBIGUOUS.

Output for Sample Input

```
1 2
```

Ian Goldberg, Ondřej Lhoták



This work is licensed under a [Creative Commons Attribution-ShareAlike 3.0 Unported License](https://creativecommons.org/licenses/by-sa/3.0/).