



# Irrational Root

Problem Code: **APRPS**

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as well.

It is well-known that  $\sum \text{sqrt}(a_i)$ ,  $a_i \in \mathbb{N}$  is a root of some **integer-coefficient** polynomial.

For example:  $\text{sqrt}(2)$  is a root of polynomial:  $x^2 - 2$ . Now, your task is to find not only such polynomial but also the minimal one. When comparing two polynomials, firstly, we consider their degree and then the coefficient of the highest term, and then the second highest term and so on.

(Note that we consider only polynomial with the coefficient of highest term is positive)

## Input

First line contains an integer **T** denotes the number of testcases. Each testcase is described by an integer **n** and followed by **n** space-separated integers  $a_i$ .

## Output:

Each testcase print an integer **k** denotes the degree of polynomial in a single line. Then next line print **k + 1** space-separated integers modulo  $10^9 + 7$ , coefficients from lowest to highest term.

## Constraints

$1 \leq T \leq 5$ ,  $1 \leq n \leq 15$

$a_i$  are **n** distinct primes,  $1 \leq a_i \leq 10^9$

## Subtasks

- Subtask #1: **(10 points)**:  $n \leq 3$
- Subtask #2: **(20 points)**:  $n \leq 5$
- Subtask #3: **(30 points)**:  $n \leq 10$
- Subtask #4: **(40 points)**:  $n \leq 15$

## Example

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Input :

2  
1  
2  
2  
2 3

Output :

2  
1000000005 0 1  
4  
1 0 999999997 0 1

## Explanation

The first polynomial is  $x^2 - 2$ , and the second one is  $x^4 - 10x^2 + 1$ .

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Date Added: 7-02-2017

Time Limit: 4 secs

Source Limit: 50000 Bytes

Languages: ADA, ASM, BASH, BF, C, C99 strict, CAML, CLOJ, CLPS, CPP 4.3.2, CPP 4.9.2, CPP14, CS2, D, ERL, FORT, FS, GO, HASK, ICK, ICON, JAVA, JS, LISP clisp, LISP sbcl, LUA, NEM, NICE, NODEJS, PAS fpc, PAS gpc, PERL, PERL6, PHP, PIKE, PRLG, PYPY, PYTH, PYTH 3.4, RUBY, SCALA, SCM chicken, SCM guile, SCM qobi, ST, TCL, TEXT, WSPC

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