Permuted Arithmetic Sequence

Problem ID: permutedarithmeticsequence
CPU Time limit: 1 second
Memory limit: 1024 MB
Difficulty: 2.0

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An arithmetic sequence is a list of values where the difference between consecutive values is always the same. For example, $3, 7, 11, 15$ qualifies and so does $25, 15, 5, -5, -15$. However $2, 4, 7$ and $3, 6, 9, 6$ are not arithmetic sequences.

Input

Input begins with an integer, $1 \leq n \leq 100$, on a line by itself. Following this are n lines, each describing a sequence. Each line begins with an integer, $3 \leq m \leq 100$, giving the length of the sequence. This is followed by the m integer values that actually make up the sequence. Each of the sequence integers is in the range $[-10^6, 10^6]$.

Output

For each sequence, output a line that says "arithmetic" if the sequence is an arithmetic sequence. Output "permuted arithmetic" if the sequence can be reordered to make an arithmetic sequence. Otherwise, output "non-arithmetic".

Sample Input 1

```
3
5 1 2 3 4 5
3 20 6 13
4 5 9 15 19
```

Sample Output 1

```
arithmetic
permuted arithmetic
non-arithmetic
```