# SEQUENCE

DAY 1 (22-APR-2004)
**ENGLISH VERSION**

BOI Ventspils 2004

Short formulation. The number sequence is given. Your task is to construct the increasing sequence that approximates the given one in the best way. The best approximating sequence is the sequence with the least total deviation from the given sequence.

More precisely. Let $t_1, t_2, \ldots, t_N$ is the given number sequence. Your task is to construct the increasing number sequence $z_1 < z_2 < \ldots < z_N$.

The sum $|t_1 - z_1| + |t_2 - z_2| + \ldots + |t_N - z_N|$ should be a minimal feasible.

***Input***

There is the integer N ($1 \le N \le 1000000$) in the first line of input file `seq.in`. Each of the next N lines contains single integer – the given sequence element. There is $t_K$ in the (K+1)-th line. Any element is satisfying to relation $0 \le t_K \le 2000000000$.

***Output***

The first line of output file `seq.out` must contain the single integer – the minimal possible total deviation. Each of the next N lines must contain single integer – the recurrent element of the best approximating sequence.

If there are several solutions, your program must output any one sequence with a least total deviation.

***Example***

| seq.in | seq.out |
|---|---|
| 7<br>9<br>4<br>8<br>20<br>14<br>15<br>18 | 13<br>6<br>7<br>8<br>13<br>14<br>15<br>18 |