Search in a unimodal vector — X82938_en

In this problem, we say that a vector with n integer numbers @v[0..@$n-1$@]@ is *unimodal* if $n \geq 1$, and there exists an index j such that $0 \leq j \leq n-1$ and satisfying:

- @v[0]@ < ... < @v[@$j-1$@]@ < @v[@j@]@, and
- @v[@j@]@ > @v[@$j+1$@]@ > @v[@$j+2$@]@ > ... > @v[@$n-1$@]@.

For instance, the vector @[0, 2, 5, 7, 6, 5, 4, 3, 1]@ is unimodal (with $j = 3$).

Note that vectors with $n \leq 2$ different elements are unimodal. In general, note that any strictly increasing vector is also unimodal (and in all cases $j = n-1$), and analogously, any strictly decreasing vector is also unimodal (and then $j = 0$).

Implement an *efficient* function

bool *search*(**int** x, **const** *vector*<**int**>& v);

such that, given an integer number @x@ and a unimodal vector @v@, returns true if @x@ appears in @v@, and false otherwise. You can use and implement auxiliary functions if you need them.

Precondition

The vector @v@ is unimodal.

Observation

You only need to submit the required procedure; your main program will be ignored.

Problem information

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