

Largest axis parallel rectangle in a histogram

Difficulty level: *moderate*

You are given a histogram consisting of  $n$  vertical bars each of unit width. Your aim is to compute the axis-parallel rectangle of maximum area which can be covered by the histogram. See Figure 1 for a better understanding.

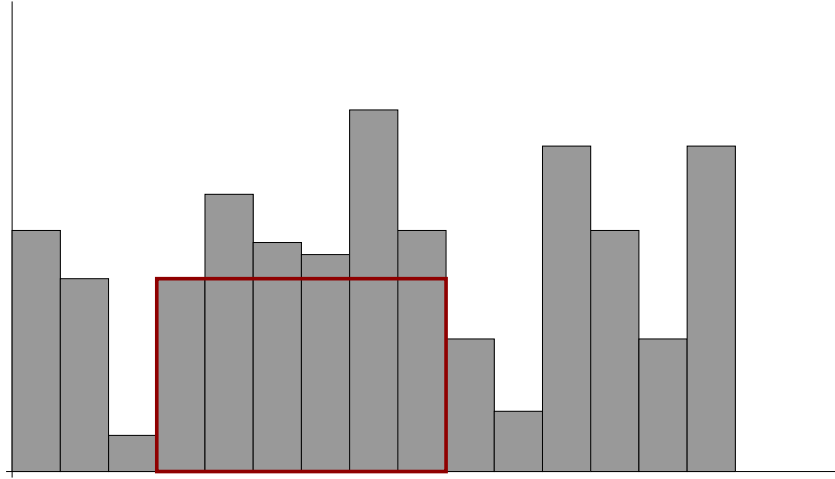


Figure 1: The rectangle with red boundaries is the largest area rectangle that can be covered by the histogram.

The input is given in the form of an array  $H$  storing  $n$  numbers such that  $H[i]$  is the height of the  $i$ th vertical bar in the histogram. Design the most efficient algorithm for computing the rectangle with the properties mentioned above.



every art is beautiful and so is the art of algorithm design ...