Input: [100, 4, 200, 1, 3. 2].     Output: 4

①     Map [100] = 1

②     map [4] = 1

③     map [200] = 1

④     map [1] = 1

⑤   map [3] = 1
        ↓

   Merge (map, 3, 4)

      upper = 4 + 1 - 1 = 4

      lower = 3 - 1 + 1 = 3

      length = 4 - 3 + 1 = 2

      Map [4] = 2

      map [3] = 2

$l = \max(1, 2) = 2$

(b) $\text{map}[2] = 1$
↓
$\text{merge}(\text{map}, 1, 2)$

$\text{upper} = 2 + 1 - 1 = 2$

$\text{lower} = 1 - 1 + 1 = 1$

$\text{length} = 2 - 1 + 1 = 2$

$\text{map}[2] = 2$

$\text{map}[1] = 2$

$l = \max(2, 2) = 2$

$\text{merge}(\text{map}, 2, 3)$

$\text{upper} = 3 + 2 - 1 = 4$

$\text{lower} = 2 - 2 + 1 = 1$

$\text{length} = 4 - 1 + 1 = 4$

$\text{map}[4] = 4$

$\text{map}[1] = 4$

$\ell = Max(2,4) = 4$

$\ell = Max(2,4) = 4$