1 Number compression

- Time complexity: $O(n \log_2 n + n)$

a_i	100	100	2000	1500	900000
pos_i	1	2	3	4	5

- Sort the array in $O(n \log_2 n)$:

a_i	100	100	1500	2000	900000
pos_i	1	2	4	3	5
cnt	1	1	2	3	4

- Iterate through all elements, assign $b[pos_i] = cnt$ in $O(n)$.
  - $b_1 = 1$
  - $b_2 = 1$
  - $b_4 = 2$
  - $b_3 = 3$
  - $b_5 = 4$

b_i	1	1	3	2	4
$pos[b_i]$	1	2	3	4	5

- After sorting, $b = [1, 1, 2, 3, 4]$.