```cpp
 1  #include "../bits/stdc++.h"
 2  template <typename T>
 3  void coordinateCompression(std::vector<T> &a)
 4  {
 5      int N = a.size();
 6      std::vector<T> xs = a;
 7      sort(xs.begin(), xs.end());
 8      xs.erase(unique(xs.begin(), xs.end()), xs.end());
 9      for (int i = 0; i < N; i++)
10      {
11          a[i] = lower_bound(xs.begin(), xs.end(), a[i]) - xs.begin();
12      }
13  }
14
```