

Assignment 1 (24/06/2016: 12.05 AM)

1. Given an array of positive integers, find maximum possible value K such that the array has at-least K elements that are greater than or equal to K. The array is unsorted and may contain duplicate values.

Examples:

Input: [2, 3, 4, 5, 6, 7]

Output: 4

Explanation: 4 elements [4, 5, 6, 7] are greater than equal to 4

Input: [1, 2, 3, 4]

Output: 2

Explanation: 3 elements [2, 3, 4] are greater than equal to 2

Input: [4, 7, 2, 3, 8]

Output: 3

Explanation: 4 elements [4, 7, 3, 8] are greater than equal to 3

Input: [6, 7, 9, 8, 10]

Output: 5

Explanation: All 5 elements are greater than or equal to 5

Note: Expected time complexity: $O(n)$. You can use extra space.

Q.2. Given a set of strings, find the longest common prefix.

Input: {"geeksforgeeks", "geeks", "geek", "geezer"}

Output: "gee"

Input: {"apple", "ape", "april"}

Output: "ap"

Time Complexity: $O(l^2)$

l: length of smallest string

Q.3. There are N stations on the route of a train. The train goes from station 0 to N-1. The ticket cost for all pair of stations (i, j) is given where j is greater than i. Find the minimum cost to reach the destination.

Consider the following example:

Input:

$\text{cost}[N][N] = \{ \{0, 15, 80, 90\}, \{\text{INF}, 0, 40, 50\}, \{\text{INF}, \text{INF}, 0, 70\}, \{\text{INF}, \text{INF}, \text{INF}, 0\} \};$

There are 4 stations and $\text{cost}[i][j]$ indicates cost to reach j from i. The entries where $j < i$ are meaningless.

Output:

The minimum cost is 65

Source: 0

Destination: n-1