// Selection sort

#include<iostream>

using namespace std;

void Input(int arr[], int Size) {

cout << "Enter an Unsorted array of elements -->\n" << endl;

for (int i = 0; i < Size; i++) {

cout << "Enter element " << i + 1 << " : ";

cin >> arr[i];

}

}

void Output(int arr[], int Size) {

for (int i = 0; i < Size; i++) {

cout << "Element " << i + 1 << " : " << arr[i] << endl;

}

}

// arr[] same as \*arr as pointer to first element

// so always changes saved in main

void SelectionSort(int arr[], int Size) {

// Outer loop runs for each pass (each position in the array)

for (int i = 0; i < Size - 1; i++) {

// assume smallest element at i index

int minIndex = i;

// Inner loop finds the actual index of the smallest element in the remaining array ( j from i+1)

for (int j = i + 1; j < Size; j++) {

if (arr[j] < arr[minIndex]) {

// update the index of the smallest element

minIndex = j;

}

}

// Swap the element at 'i' with the element at 'minIndex'

// arr[minIndex] is not a copy — it directly refers to the element (arrays are special case)

// at position 'minIndex' in the array, so changing it updates the real array.

int temp = arr[i];

arr[i] = arr[minIndex];

arr[minIndex] = temp;

}

}

int main() {

int arr[100];

int size = 0;

cout << "Enter size of array (max size = 100): ";

cin >> size;

if (size < 0 || size > 100) return 0;

Input(arr, size);

cout << "\nUnsorted array -->" << endl;

Output(arr, size);

cout << "\nSorted array -->" << endl;

SelectionSort(arr, size);

Output(arr, size);

return 0;

}