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#### LEARN DATA STRUCTURE

#### organizing data

### Data Structures & Algorithms

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- DSA Dynamic Programming

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DSA - Circular Linked List

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## DSA - Graph Data Structure

**Graph Data Structure** 

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DSA - Tree Traversal

Tree Data Structure

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# Data Structure and Algorithms Selection Sort

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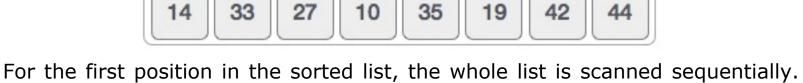
Selection sort is a simple sorting algorithm. This sorting algorithm is an inplace comparison-based algorithm in which the list is divided into two parts, the sorted part at the left end and the unsorted part at the right end. Initially, the sorted part is empty and the unsorted part is the entire list.

the leftmost element, and that element becomes a part of the sorted array. This process continues moving unsorted array boundary by one element to the right.

This algorithm is not suitable for large data sets as its average and worst case complexities are of  $O(n^2)$ , where **n** is the number of items.

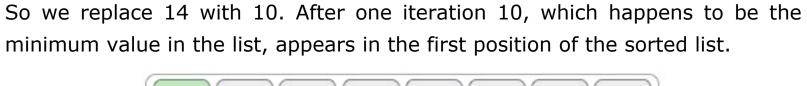
# **How Selection Sort Works?**

Consider the following depicted array as an example.



find that 10 is the lowest value. 35 33 27 19

The first position where 14 is stored presently, we search the whole list and



14

14

14

27

27

27

33

33

33

10

10

For the second position, where 33 is residing, we start scanning the rest of the list in a linear manner.

35

35

35

19

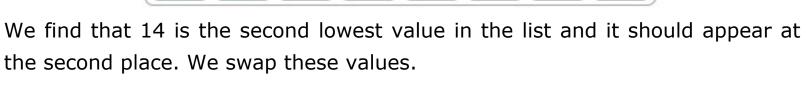
19

19

42

42

42



After two iterations, two least values are positioned at the beginning in a sorted manner.



Following is a pictorial depiction of the entire sorting process –



Algorithm Step 1 - Set MIN to location 0

Now, let us learn some programming aspects of selection sort.

### **Step 2** - Search the minimum element in the list

Step 3 - Swap with value at location MIN **Step 4** - Increment MIN to point to next element

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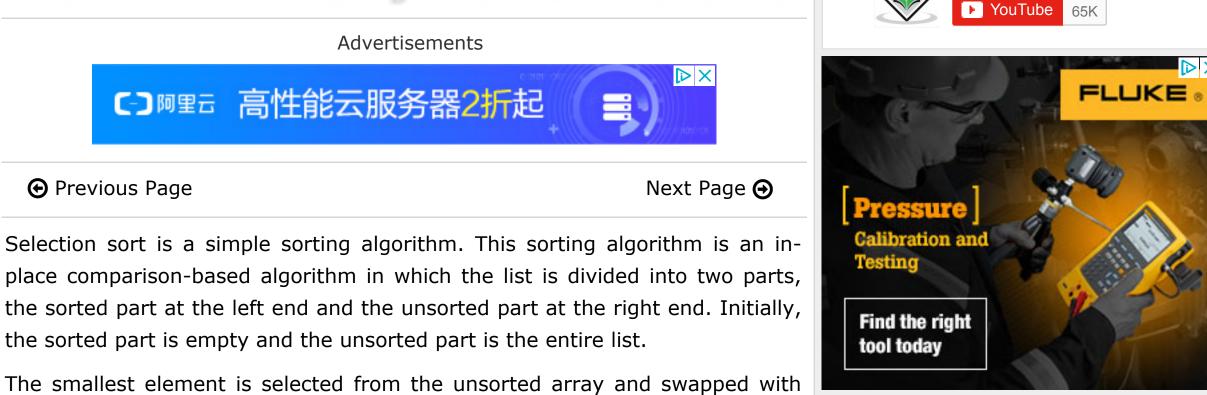
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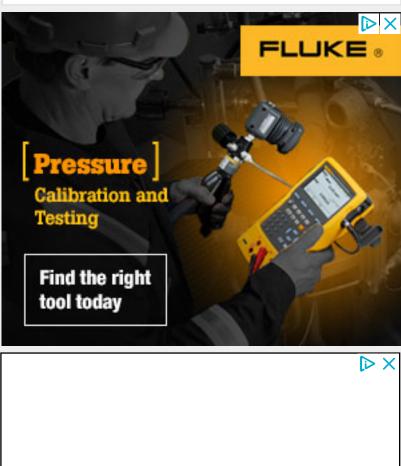
- Step 5 Repeat until list is sorted
- Pseudocode procedure selection sort

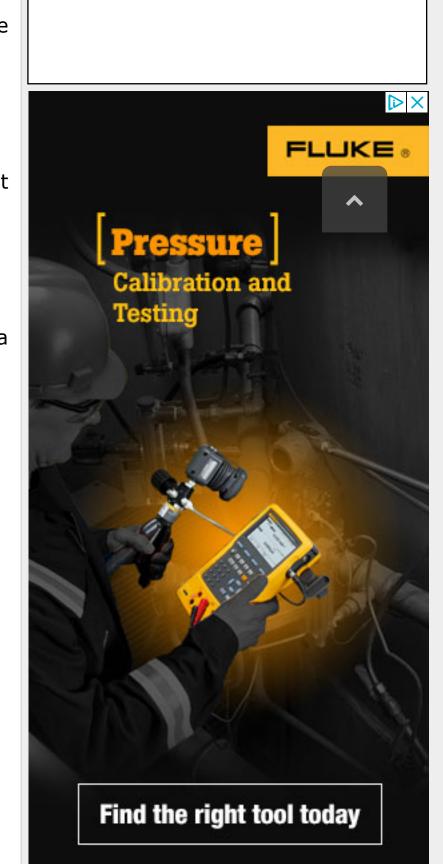
#### list : array of items : size of list

```
for i = 1 to n - 1
   /* set current element as minimum*/
      min = i
      /* check the element to be minimum */
      for j = i+1 to n
         if list[j] < list[min] then</pre>
            min = j;
         end if
      end for
      /* swap the minimum element with the current element*/
      if indexMin != i then
         swap list[min] and list[i]
      end if
   end for
end procedure
To know about selection sort implementation in C programming language,
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```

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