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Data Structures

" Data Structures are widely used to organize data into unique structures to enhance programs performance. "

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sorting&title=Selection%20Sorting%20in%20Data%20Structures&ate=A
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✓ Basics and Sorting

- Introduction to Data Structures (introduction-to-data-structures)
- Time Complexity of Algorithms (time-complexity-of-algorithms)
- Introduction to Sorting (introduction-to-sorting)
- Bubble Sort (bubble-sort)
- Insertion Sort (insertion-sorting)
- Selection Sort (selection-sorting)
- Quick Sort (quick-sort)
- Merge Sort (merge-sort)
- Heap Sort (heap-sort)

✓ Data Structures

- Stack Data Structure (stack-data-structure)
- Queue Data Structure (queue-data-structure)

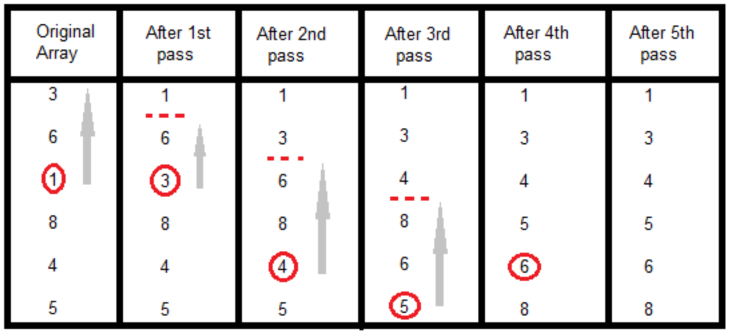
Test Yourself !

If you have studied all the lessons of Data Structure, then evaluate yourself by taking these tests.

Selection Sorting

Selection sorting is conceptually the most simplest sorting algorithm. This algorithm first finds the smallest element in the array and exchanges it with the element in the first position, then find the second smallest element and exchange it with the element in the second position, and continues in this way until the entire array is sorted.

How Selection Sorting Works



Original Array	After 1st pass	After 2nd pass	After 3rd pass	After 4th pass	After 5th pass
3	1	1	1	1	1
6	6	3	3	3	3
1	3	6	4	4	4
8	8	8	8	5	5
4	4	4	6	6	6
5	5	5	5	8	8

In the first pass, the smallest element found is 1, so it is placed at the first position, then leaving first element, smallest element is searched from the rest of the elements, 3 is the smallest, so it is then placed at the second position. Then we leave 1 nad 3, from the rest of the elements, we search for the smallest and put it at third position and keep doing this, until array is sorted.

Sorting using Selection Sort Algorithm

Coming Soon

```
void selectionSort(int a[], int size)
{
  int i, j, min, temp;
  for(i=0; i < size-1; i++ )
  {
    min = i;   //setting min as i
    for(j=i+1; j < size; j++)
    {
      if(a[j] < a[min])   //if element at j is less than element at min position
      {
       min = j;    //then set min as j
      }
    }
  }
   temp = a[i];
   a[i] = a[min];
   a[min] = temp;
}
```

Complexity Analysis of Selection Sorting

Worst Case Time Complexity : O(n^2)

Best Case Time Complexity : O(n^2)

Average Time Complexity : O(n^2)

Space Complexity : O(1)

← Prev (insertion-sorting)

Next → (quick-sort)