1. Write a JavaScript program to sort a list of elements using Quick sort.

Quick sort is a comparison sort, meaning that it can sort items of any type for which a "less-than" relation (formally, a total order) is defined.

2. Write a JavaScript program to sort a list of elements using Merge sort.

According to Wikipedia "Merge sort (also commonly spelled mergesort) is an O (n log n) comparison-based sorting algorithm. Most implementations produce a stable sort, which means that the implementation preserves the input order of equal elements in the sorted output."

3. Write a JavaScript program to sort a list of elements using Heap sort.

In computer science, heapsort (invented by J. W. J. Williams in 1964) is a comparison-based sorting algorithm. Heapsort can be thought of as an improved selection sort: like that algorithm, it divides its input into a sorted and an unsorted region, and it interactively shrinks the unsorted region by extracting the largest element and moving that to the sorted region. The improvement consists of the use of a heap data structure rather than a linear-time search to find the maximum. Although somewhat slower in practice on most machines than a well-implemented quicksort, it has the advantage of a more favorable worst-case O(n log n) runtime. Heapsort is an in-place algorithm, but it is not a stable sort.

4. Write a JavaScript program to sort a list of elements using Insertion sort.

Insertion sort is a simple sorting algorithm that builds the final sorted array (or list) one item at a time. It is much less efficient on large lists than more advanced algorithms such as quicksort, heapsort, or merge sort

5. Write a JavaScript program to sort a list of elements using the Selection sort algorithm.

The selection sort improves on the bubble sort by making only one exchange for every pass through the list.

6. Write a JavaScript program to sort a list of elements using Shell sort.

According to Wikipedia "Shell sort or Shell's method, is an in-place comparison sort. It can be seen as either a generalization of sorting by exchange (bubble sort) or sorting by insertion (insertion sort). The method starts by sorting pairs of elements far apart from each other, then progressively reducing the gap between elements to be compared. Starting with far apart elements can move some out-of-place elements into position faster than a simple nearest neighbor exchange."

7. Write a JavaScript program to sort a list of elements using Bubble sort

According to Wikipedia "Bubble sort, sometimes referred to as sinking sort, is a simple sorting algorithm that repeatedly steps through the list to be sorted, compares each pair of adjacent items and swaps them if they are in the wrong order. The pass through the list is repeated until no swaps are needed, which indicates that the list is sorted. The algorithm, which is a comparison sort, is named for the way smaller elements "bubble" to the top of the list. Although the algorithm is simple, it is too slow and impractical for most problems even when compared to insertion sort. It can be practical if the input is usually in sort order but may occasionally have some out-of-order elements nearly in position."

8. Write a JavaScript program to sort a list of elements using Cocktail shaker sort.

Cocktail shaker sort (also known as bidirectional bubble sort, cocktail sort, shaker sort, ripple sort, shuffle sort, or shuttle sort ) is a variation of bubble sort that is both a stable sorting algorithm and a comparison sort. The algorithm differs from a bubble sort in that it sorts in both directions on each pass through the list. This sorting algorithm is only marginally more difficult to implement than a bubble sort, and solves the problem of turtles in bubble sorts. It provides only marginal performance improvements, and does not improve asymptotic performance; like the bubble sort, it is not of practical interest,, though it finds some use in education.

9. Write a JavaScript program to sort a list of elements using Comb sort.

The Comb Sort is a variant of the Bubble Sort. Like the Shell sort, the Comb Sort increases the gap used in comparisons and exchanges. Some implementations use the insertion sort once the gap is less than a certain amount. The basic idea is to eliminate turtles, or small values near the end of the list, since in a bubble sort these slow the sorting down tremendously. Rabbits, large values around the beginning of the list, do not pose a problem in bubble sort.

In bubble sort, when any two elements are compared, they always have a gap of 1. The basic idea of comb sort is that the gap can be much more than 1.

10. Write a JavaScript program to sort a list of elements using Gnome sort.

Gnome sort is a sorting algorithm originally proposed by Dr. Hamid Sarbazi-Azad (Professor of Computer Engineering at Sharif University of Technology) in 2000 and called "stupid sort"[1] (not to be confused with bogosort), and then later on described by Dick Grune and named "gnome sort".

The algorithm always finds the first place where two adjacent elements are in the wrong order, and swaps them. It takes advantage of the fact that performing a swap can introduce a new out-of-order adjacent pair only next to the two swapped elements.

11. Write a JavaScript program to sort a list of elements using Counting sort.

According to Wikipedia "In computer science, counting sort is an algorithm for sorting a collection of objects according to keys that are small integers; that is, it is an integer sorting algorithm. It operates by counting the number of objects that have each distinct key value, and using arithmetic on those counts to determine the positions of each key value in the output sequence. Its running time is linear in the number of items and the difference between the maximum and minimum key values, so it is only suitable for direct use in situations where the variation in keys is not significantly greater than the number of items. However, it is often used as a subroutine in another sorting algorithm, radix sort, that can handle larger keys more efficiently".

12. Write a JavaScript program to sort a list of elements using Flash sort.

Flashsort is a distribution sorting algorithm showing linear computational complexity O(n) for uniformly distributed data sets and relatively little additional memory requirement. The original work was published in 1998 by Karl-Dietrich Neubert. The basic idea behind flashsort is that in a data set with a known distribution, it is easy to immediately estimate where an element should be placed after sorting when the range of the set is known.

13. Write a JavaScript program to sort a list of elements using Pancake sort.

Pancake sorting is the colloquial term for the mathematical problem of sorting a disordered stack of pancakes in order of size when a spatula can be inserted at any point in the stack and used to flip all pancakes above it. A pancake number is the minimum number of flips required for a given number of pancakes. The problem was first discussed by American geometer Jacob E. Goodman. It is a variation of the sorting problem in which the only allowed operation is to reverse the elements of some prefix of the sequence.

14. Write a JavaScript program to sort a list of elements using Bogosort.

In computer science, bogosort is a particularly ineffective sorting algorithm based on the generate and test paradigm. The algorithm successively generates permutations of its input until it finds one that is sorted. It is not useful for sorting, but may be used for educational purposes, to contrast it with other more realistic algorithms.

15. Write a JavaScript program to sort an array of numbers, using the bucket sort algorithm.

16. Write a JavaScript program to sort an array of objects, ordered by properties and orders.

17. Write a JavaScript program to find the highest index at which a value should be inserted into an array in order to maintain its sort order, based on a provided iterator function.

18. Write a JavaScript program to sort an array of objects, ordered by a property, based on the array of orders provided.

19. Write a JavaScript program to sort the characters in a string alphabetically.

20. Write a JavaScript program to find the lowest index at which a value should be inserted into an array in order to maintain its sorting order, based on the provided iterator function.

21. Write a JavaScript program to Finds the index of a given element in a sorted array using the binary search algorithm.

22. Write a JavaScript program to finds the lowest index at which a value should be inserted into an array in order to maintain its sorting order.

23. Write a JavaScript program to find the highest index at which a value should be inserted into an array in order to maintain its sort order.

24. Write a JavaScript program to check if a numeric array is sorted or not.