1. This code defines a merge_sort function that takes an array as input and recursively breaks it into smaller halves until the base case is reached (arrays of size 1). It then merges the sorted halves back together to produce the final sorted array. The example usage demonstrates how to use the merge_sort function to sort an array.

2. This code defines a bubble_sort function that takes an array as input and sorts it in ascending order using the bubble sort algorithm. The idea behind bubble sort is to repeatedly step through the list, compare adjacent elements, and swap them if they are in the wrong order. The process is repeated for each element until the entire array is sorted. The example usage demonstrates how to use the bubble_sort function to sort an array.

3. This code defines an insertion_sort function that takes an array as input and sorts it in ascending order using the insertion sort algorithm. The idea behind insertion sort is to build a sorted portion of the array by iteratively inserting elements into their correct positions. The example usage demonstrates how to use the insertion_sort function to sort an array.

4. This code defines a quick_sort function that takes an array as input and sorts it using the Quick Sort algorithm. The algorithm selects a pivot element and partitions the array into two sub-arrays - elements less than or equal to the pivot and elements greater than the pivot. The process is then applied recursively to the two sub-arrays until the entire array is sorted. The example usage demonstrates how to use the quick_sort function to sort an array.

5. This code defines a selection_sort function that takes an array as input and sorts it in ascending order using the Selection Sort algorithm. The idea behind selection sort is to divide the array into two parts: the sorted and the unsorted. In each iteration, the minimum element from the unsorted part is selected and swapped with the first element of the unsorted part. The example usage demonstrates how to use the selection_sort function to sort an array.