1. Quick Sort is based on the divide-and-conquer technique. Which step does it involve?
   1. **Partitioning**
   2. Merging
   3. Selection
   4. Insertion
2. Which sorting algorithm does Quick Sort closely resemble?
   1. Bubble Sort
   2. Insertion Sort
   3. Selection Sort
   4. **Merge Sort**
3. What is the average time complexity of Quick Sort?
   1. O(n)
   2. **O(n log n)**
   3. O(n^2)
   4. O(log n)
4. Quick Sort is an in-place sorting algorithm. What does "in-place" mean?
   1. **It does not require any additional memory.**
   2. It requires additional memory equal to the size of the input.
   3. It uses both main memory and secondary memory.
   4. It is a term used for sorting algorithms that use recursion.
5. Which data structure is commonly used to implement Quick Sort?
   1. **Stack**
   2. Queue
   3. Linked List
   4. Array
6. In Quick Sort, which element is selected as the pivot element?
   1. First element
   2. Last element
   3. Middle element
   4. **Any element**
7. What is the worst-case time complexity of Quick Sort?
   1. O(n)
   2. O(n log n)
   3. **O(n^2)**
   4. O(log n)
8. Quick Sort is not stable. What does it mean for a sorting algorithm to be stable?
   1. It sorts the elements in descending order.
   2. **It preserves the relative order of elements with equal keys.**
   3. It guarantees a worst-case time complexity of O(n log n).
   4. It can handle duplicate elements efficiently.
9. Which sorting algorithm is often used as the base case for Quick Sort?
   1. Bubble Sort
   2. **Insertion Sort**
   3. Selection Sort
   4. Merge Sort
10. Which sorting algorithm uses a pivot element to divide the list into two sublists?
    1. **Quick Sort**
    2. Merge Sort
    3. Bubble Sort
    4. Insertion Sort
11. In Quick Sort, the process of partitioning divides the list into two parts. What are these parts called?
    1. Partitions
    2. **Sublists**
    3. Segments
    4. Slices
12. What is the time complexity of the partitioning step in Quick Sort?
    1. **O(n)**
    2. O(log n)
    3. O(n^2)
    4. O(1)
13. Merge Sort is based on the divide-and-conquer technique. Which step does it involve?
    1. Partitioning
    2. **Merging**
    3. Selection
    4. Insertion
14. What is the worst-case time complexity of Merge Sort?
    1. O(n)
    2. **O(n log n)**
    3. O(n^2)
    4. O(log n)
15. Merge Sort is a stable sorting algorithm. What does it mean for a sorting algorithm to be stable?
    1. It sorts the elements in descending order.
    2. **It preserves the relative order of elements with equal keys.**
    3. It guarantees a worst-case time complexity of O(n log n).
    4. It can handle duplicate elements efficiently.
16. Which data structure is commonly used to implement Merge Sort?
    1. Stack
    2. Queue
    3. **Linked List**
    4. Array
17. What is the average time complexity of Merge Sort?
    1. O(n)
    2. **O(n log n)**
    3. O(n^2)
    4. O(log n)
18. Merge Sort is not an in-place sorting algorithm. What does it mean for a sorting algorithm to be in-place?
    1. It does not require any additional memory.
    2. **It requires additional memory equal to the size of the input.**
    3. It uses both main memory and secondary memory.
    4. It is a term used for sorting algorithms that use recursion.
19. Which sorting algorithm is known for its stability and consistent performance?
    1. Bubble Sort
    2. Insertion Sort
    3. Selection Sort
    4. **Merge Sort**
20. Merge Sort divides the list into sublists until each sublist contains how many elements?
    1. **1**
    2. 2
    3. 3
    4. 4
21. In Merge Sort, the merging step involves merging two sorted sublists. How many sublists are merged at a time?
    1. 1
    2. **2**
    3. 3
    4. 4
22. What is the time complexity of the merging step in Merge Sort?
    1. **O(n)**
    2. O(log n)
    3. O(n^2)
    4. O(1)
23. Which sorting algorithm is based on the principle of "divide and conquer"?
    1. Bubble Sort
    2. Insertion Sort
    3. **Quick Sort**
    4. Selection Sort
24. In Quick Sort, the pivot element is moved to its correct position during the partitioning process. What is this position called?
    1. Pivot point
    2. Pivot position
    3. **Final position**
    4. Correct position
25. Which sorting algorithm can be easily implemented using recursion?
    1. Bubble Sort
    2. Insertion Sort
    3. **Quick Sort**
    4. Selection Sort
26. In Quick Sort, the worst-case time complexity occurs when the pivot element always divides the list into two sublists of equal size. What is this scenario called?
    1. Best case
    2. Average case
    3. **Worst case**
    4. Edge case
27. Merge Sort is a stable sorting algorithm. What advantage does this stability provide?
    1. It guarantees a worst-case time complexity of O(n log n).
    2. **It preserves the relative order of elements with equal keys.**
    3. It can handle duplicate elements efficiently.
    4. It is more efficient than Quick Sort.
28. In Quick Sort, the partitioning process rearranges the elements in such a way that all elements smaller than the pivot are on one side, and all elements larger than the pivot are on the other side. What is this property called?
    1. Order preservation
    2. In-place sorting
    3. Stability
    4. **Partition property**
29. Merge Sort works by repeatedly dividing the list into smaller sublists. What is the base case for this recursion?
    1. When the list is empty
    2. **When the list contains only one element**
    3. When the list is already sorted
    4. When the list is in reverse order
30. In Merge Sort, the time complexity for the merging step is O(n). What does 'n' represent here?
    1. **The number of elements in the list**
    2. The number of comparisons performed
    3. The number of recursive calls
    4. The number of swaps performed
31. Which of the following sorting algorithms has the highest worst-case time complexity?
    1. Quick Sort
    2. Merge Sort
    3. Insertion Sort
    4. **Selection Sort**
32. Quick Sort is considered to be faster than Merge Sort in practice. However, under what condition can Merge Sort be faster than Quick Sort?
    1. When the list is already sorted
    2. When the list is in reverse order
    3. **When the list contains a large number of duplicate elements**
    4. When the list contains a large number of unique elements
33. In Quick Sort, the worst-case time complexity occurs when the pivot element is consistently chosen as the smallest or largest element in the list. What is this scenario called?
    1. Best case
    2. Average case
    3. Worst case
    4. **Edge case**
34. Merge Sort is an example of which type of sorting algorithm?
    1. **Comparison-based sorting**
    2. Radix sorting
    3. Bucket sorting
    4. Counting sorting
35. Which sorting algorithm has a time complexity that remains the same regardless of the initial order of the elements?
    1. Bubble Sort
    2. Insertion Sort
    3. Quick Sort
    4. **Merge Sort**