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NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 6_MCQ_Updated_1

Attempt : 1
Total Mark : 20
Marks Obtained : 18

Section 1 : MCQ

1. In a quick sort algorithm, what role does the pivot element play?

Answer

It is used to partition the array

Status : Correct   *Marks : 1/1*

2. Let P be a quick sort program to sort numbers in ascending order using the first element as a pivot. Let t1 and t2 be the number of comparisons made by P for the inputs {1, 2, 3, 4, 5} and {4, 1, 5, 3, 2}, respectively. Which one of the following holds?

Answer

t1 > t2

3.   What happens during the merge step in Merge Sort?

Answer

Two sorted subarrays are combined into one sorted array

Status : Correct   *Marks : 1/1*

4.   Which of the following modifications can help Quicksort perform better on small subarrays?

Answer

Switching to Insertion Sort for small subarrays

Status : Correct   *Marks : 1/1*

5.   Which of the following statements is true about the merge sort algorithm?

Answer

It requires additional memory for merging

Status : Correct   *Marks : 1/1*

6.   Which of the following scenarios is Merge Sort preferred over Quick Sort?

Answer

When sorting small datasets

Status : Wrong   *Marks : 0/1*

7.   Which of the following strategies is used to improve the efficiency of Quicksort in practical implementations?

Answer

Choosing the pivot randomly or using the median-of-three method

Status : Correct

Marks : 1/1

8. Which of the following sorting algorithms is based on the divide and conquer method?

Answer

Merge Sort

Status : Correct

Marks : 1/1

9. In a quick sort algorithm, where are smaller elements placed to the pivot during the partition process, assuming we are sorting in increasing order?

Answer

To the left of the pivot

Status : Correct

Marks : 1/1

10. Merge sort is _____.

Answer

Comparison-based sorting algorithm

Status : Correct

Marks : 1/1

11. Why is Merge Sort preferred for sorting large datasets compared to Quick Sort?

Answer

Merge Sort has better worst-case time complexity

Status : Correct

Marks : 1/1

12. What happens when Merge Sort is applied to a single-element array?

Answer

The array remains unchanged and no merging is required

Status : Correct   *Marks : 1/1*

13. Is Merge Sort a stable sorting algorithm?

Answer

Yes, always stable.

Status : Correct   *Marks : 1/1*

14. What is the best sorting algorithm to use for the elements in an array that are more than 1 million in general?

Answer

Quick sort.

Status : Correct   *Marks : 1/1*

15. Which of the following is true about Quicksort?

Answer

It is an in-place sorting algorithm

Status : Correct   *Marks : 1/1*

16. Consider the Quick Sort algorithm, which sorts elements in ascending order using the first element as a pivot. Then which of the following input sequences will require the maximum number of comparisons when this algorithm is applied to it?

Answer

22 25 56 67 89

17.   Which of the following is not true about QuickSort?

Answer

It as an adaptive sorting algorithm

Status : Wrong   *Marks : 0/1*

18.   What is the main advantage of Quicksort over Merge Sort?

Answer

Quicksort requires less auxiliary space

Status : Correct   *Marks : 1/1*

19.   The following code snippet is an example of a quick sort. What do the 'low' and 'high' parameters represent in this code?

```
void quickSort(int arr[], int low, int high) {
   if (low < high) {
      int pivot = partition(arr, low, high);
      quickSort(arr, low, pivot - 1);
      quickSort(arr, pivot + 1, high);
   }
}
```

Answer

The range of elements to sort within the array

Status : Correct   *Marks : 1/1*

20.   Which of the following methods is used for sorting in merge sort?

Answer

merging