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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 : 19

Section 1 : MCQ

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

Answer

It can be implemented as a stable sort

Status : Correct ***Marks : 1/1***

2. 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***

3. Which of the following is true about Quicksort?

Answer

It is an in-place sorting algorithm

Status : Correct ***Marks : 1/1***

4. 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***

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

Answer

Two sorted subarrays are combined into one sorted array

Status : Correct ***Marks : 1/1***

6. 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

52 25 89 67 76

Status : Wrong ***Marks : 0/1***

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

Answer

Quicksort requires less auxiliary space

Status : Correct **Marks : 1/1**

8. Is Merge Sort a stable sorting algorithm?

Answer

Yes, always stable.

Status : Correct **Marks : 1/1**

9. 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**

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

Answer

It requires additional memory for merging

Status : Correct **Marks : 1/1**

11. 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***

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

Answer

When sorting linked lists

Status : Correct ***Marks : 1/1***

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

Answer

merging

Status : Correct ***Marks : 1/1***

14. Merge sort is ________.

Answer

Comparison-based sorting algorithm

Status : Correct ***Marks : 1/1***

15. 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***

16. 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***

17. 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***

18. 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***

19. 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

Status : Correct ***Marks : 1/1***

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

Answer

Merge Sort

Status : Correct ***Marks : 1/1***