Rajalakshmi Engineering College

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NeoColab\_REC\_CS23231\_DATA STRUCTURES

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REC\_DS using C\_Week 6\_MCQ\_Updated\_1

Attempt : 1

Total Mark : 20

Marks Obtained : 20

Section 1 : MCQ

*Marks : 1/1*

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1. Merge sort is \_\_\_\_\_\_\_\_.

Comparison-based sorting algorithm *Status :* Correct

*Answer*

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

Switching to Insertion Sort for small subarrays

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*Marks : 1/1*

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*Answer*

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*Status :* Correct

1. Which of the following is true about Quicksort?

*Answer*

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*Marks : 1/1*

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It is an in-place sorting algorithm

*Status :* Correct

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

*Answer*

Quicksort requires less auxiliary space

*Status :* Correct

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

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*Answer*

Quick sort.

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

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

*Answer*

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*Marks : 1/1*

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Two sorted subarrays are combined into one sorted array

*Status :* Correct

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

It requires additional memory for merging

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*Answer*

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*Status :* Correct

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

*Answer*

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*Marks : 1/1*

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It is used to partition the array

*Status :* Correct

1. 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?

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*Marks : 1/1*

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*Answer*

t1 &gt; t2 *Status :* Correct

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1. 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) {

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int pivot = partition(arr, low, high); quickSort(arr, low, pivot - 1);

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quickSort(arr, pivot + 1, high);

} }

*Answer*

The range of elements to sort within the array

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

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

*Answer*

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

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*Marks : 1/1*

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*Status :* Correct

1. Is Merge Sort a stable sorting algorithm?

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*Answer*

Yes, always stable.

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

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

*Answer*

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*Marks : 1/1*

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It can be implemented as a stable sort

*Status :* Correct

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

*Answer* merging

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*Status :* Correct

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

*Marks : 1/1*

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*Answer*

The array remains unchanged and no merging is required

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

1. 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?

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22 25 56 67 89

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*Answer*

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*Status :* Correct

1. 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

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

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*Marks : 1/1*

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*Answer*

When sorting linked lists

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

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

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*Answer*

Merge Sort

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

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

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*Answer*

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Merge Sort has better worst-case time complexity

*Status :* Correct

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