

course_13606 / General / QUIZ 1

Started on	Thursday, 6 July 2023, 11:45 AM
State	Finished
Completed on	Thursday, 6 July 2023, 12:04 PM
Time taken	18 mins 58 secs
Grade	5.00 out of 10.00 (50%)

Question 1

Complete Mark 0.00 out of 1.00

Choose the incorrect statement about merge sort from the following?

Select one:

- ☐ a. it is stable algorithm
- ☒ d. it is not an in place algorithm



Question 2

Complete Mark 0.00 out of 1.00

In a modified merge sort, the input array is split at a position one-third of the length(n) of the array. Which of the following is the tightest upper bound on time complexity of this modified Merge Sort.

Select one:

- ☐ a. $n(\log n \text{ base } 3/2)$
- ☐ b. $n(\log n \text{ base } 2/3)$
- ☐ c. $n(\log n \text{ base } 1/3)$
- ☒ d. $n(\log n \text{ base } 3)$

Question 3

Complete Mark 1.00 out of 1.00

Quicksort is efficient that it runs faster than merge sort and heapsort on

Select one:

- ☐ a. array with many duplicates
 - ☒ b. randomly ordered arrays
 - ☐ c. descending ordered arrays
 - ☐ d. ascending ordered arrays
-

Question 4

Complete Mark 0.00 out of 1.00



Select one:

- ☐ a. Lower bound
 - ☒ b. Upper bound
 - ☐ c. Both lower and upper bounds
 - ☐ d. None
-

Question 5

Complete Mark 0.00 out of 1.00

What is the time complexity of following code:

```
void fun( )  
{  
    for( i=1,i<=n;i++)  
        for(j=1;j<=i2;j++)  
            for(k=1;k<=n/2;k++)  
                sum=sum + a[i][j]*k;  
}
```

Select one:



- ☐ a. n^3
- ☐ b. n^2
- ☐ c. n^2
- ☐ d. $\log_2 n$

Question 6

Complete Mark 1.00 out of 1.00

Randomized quicksort is an extension of quicksort where the pivot is chosen randomly. What is the worst case complexity of sorting n numbers using randomized quicksort?

Select one:

- ☐ a. $O(n!)$
- ☐ b. $O(n)$
- ☐ c. $O(n \log n)$
- ☒ d. $O(n^2)$

Question 7

Complete Mark 0.00 out of 1.00

Suppose we have a $O(n)$ time algorithm that finds median of an unsorted array. Now consider a Quicksort implementation where we first find median using the above algorithm, then use median as pivot. What will be the worst case time complexity of this modified Quicksort.

Select one:

- ☐ a. $O(n \log n \log n)$
 - ☐ b. $O(n^2)$
 - ☒ c. $O(n^2 \log n)$
 - ☐ d. $O(n \log n)$
-



Complete Mark 2.00 out of 2.00

Considering the algorithm of Selection Sort as per the Levitin textbook, how many times the min value gets updated in the 2nd iteration (Assume that the iteration are numbered from 1 to n) for the input

89 45 68 90 29 34 17

Select one:

- ☐ A. 3
 - ☐ B. None
 - ☐ C. 0
 - ☒ D. 1
 - ☐ E. 2
-

Question 9

Complete Mark 1.00 out of 1.00

On the average case scenario, quicksort makes

Select one:

- ☐ a. 39% more comparisons than in the worst case
 - ☒ b. 39% more comparisons than in the best case
 - ☐ c. 70% more comparisons than in the best case
 - ☐ d. 50% more comparisons than in the worst case
-

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