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CSU22010-A-YEAR02-201920 ALGORITHMS AND DATA STRUCTURES   Tests, Surveys and Pools

Tests   Test Canvas : Last year's e-test for practice

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The Test Canvas lets you add, edit and reorder questions, as well as review a test. *More Help*

Create Question   **Reuse Question**   **Upload Questions**

Question Settings

Description	
Instructions	Please do not start the test until instructed to do so by a demonstrator.
	The test is multiple choice, and it consists of 14 questions. You have 45 minutes in total to complete the test.
	Once you press submit your answers cannot be changed, so please double-check all of your answers before submitting.
Total Questions	14
Total Points	100

Select: All None   Select by Type: - Question Type - ▼

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☐   Points: **6**

1. Multiple Choice: Insertion sort is an example of which...

Question	Insertion sort is an example of which algorithm design approach
Answer	Greedy
	Brute force
	✅ Decrease and conquer

Divide and conquer

Points: **6**

2. Multiple Choice: Which one of the sorting algorithms l...

Question	Which one of the sorting algorithms listed below is NOT stable?
Answer	Insertion
	✅ Selection
	Merge sort
	All 3 are stable

Points: **6**

3. Multiple Choice: What is the worst case input for stan...

Question	What is the worst case input for standard quicksort, if the first element in the (sub)array is always used as a pivot?
Answer	✅ already sorted array
	random array
	array with a very few unique values
	it does not matter - performance of quicksort is the same regardless of input order

Points: **6**

4. Multiple Choice: What is the worst case complexity for...

Question	What is the worst case complexity for merge sort algorithm?
Answer	O(n^2)
	✅ O(n log n)
	O(n)
	O(log n)

Points: **6**

5. Multiple Choice: Which of the following algorithms,&nb...

Question	Which of the following algorithms, in its basic implementation, has space complexity of O(n)?
Answer	insertion sort
	bubble sort
	quick sort
	✅ merge sort

Points: **6**

6. Multiple Choice: Given an array of 8 almost sorted int...

Question	Given an array of 8 almost sorted integers, which of the following algorithms would be the most suitable to use to sort it?
Answer	✅ Insertion sort
	Merge sort
	Quick sort

Bubble sort

Points: **6**

7. Multiple Choice: Which one of the following sort algor...

Question	Which one of the following sort algorithms is generally not implemented using recursion?
Answer	Most Significant Digit Radix Sort
	✅ Least Significant Digit Radix Sort
	Merge sort
	quick sort

Points: **6**

8. Multiple Choice: Which of the following substring sear...

Question	Which of the following substring search algorithms does NOT require backup?
Answer	✅ Knuth-Morris-Prath
	Brute force approach
	Boyer-Moore
	all of the above require backup

Points: **6**

9. Multiple Choice: Implementation of Knuth-Morris-Prath&...

Question	

Implementation of Knuth-Morris-Prath (KMP) string search algorithm requires the following amount of additional space, where M is the length of the string to be searched for, N is the length of the text in which we are searching, and R is the radix of the alphabet we are working with

Answer	
	N
	✅ MR
	R
	M^2

Points: **6**

10. Multiple Choice: What is the worst case performance of...

Question	What is the worst case performance of Boyer Moore string search algorithm, if N is the size of the string we are searching for, M is the size of the text in which we are searching, and R the radix of the algo
Answer	MR
	M^2
	M
	✅ MN

Points: **10**

11. Multiple Choice: Assume you are searching for a string...

Question	Assume you are searching for a string "BANANA" using Boyer-Moore algorithm. What is the final content of the "skip array" going to be, assuming the alphabet consists only of letters A B C D and N
Answer	

A	1
B	0
C	0
D	0
N	2

A	1
B	0
C	-1
D	-1
N	2

✅

A	5
B	0
C	-1
D	-1
N	4

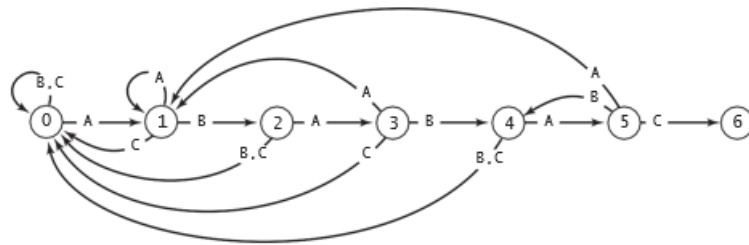| A	5
B	0
C	-1
D	-1
N	-1

Points: **10**

12. Multiple Choice: Assume the following DFA table has be...

Question

Assume the following DFA table has been constructed to search for a string "ABABAC" using KMP algorithm.

j	0	1	2	3	4	5
pat.charAt(j)	A	B	A	B	A	C
A	1	1	3	1	5	1
dfa[][j] B	0	2	0	4	0	4
C	0	0	0	0	0	6

The string which you are searching in is "ABABABABACAB".

Which of the answers below shows the correct trace of states of DFA this search would produce until it finds a full match?

Answer

0,1,2,3,4,5,0,1,2,3,4,5,4,5,6

0,1,2,3,4,5,4,5,4,5,6,4,5

✅ 0,1,2,3,4,5,4,5,4,5,6

0,1,2,3,4,5,6

Points: **10**

13. **Multiple Choice: Assume you are required to sort the f...**

Question

Assume you are required to sort the following array using the LSD (Least Significant Digit) radix sort algorithm.

C	A	T
C	A	R
A	R	T
B	A	R
B	O	T
C	O	T

Which of the answers below shows how will array look like after the FIRST pass (out of the total of 3 passes) of the algorithm through index key counting?

Answer ✅

C	A	R
B	A	R
C	A	T
A	R	T
B	O	T
C	O	T

A	R	T
B	A	R
B	O	T
C	O	T
C	A	T
C	A	R

C	A	R
B	A	R
A	R	T
B	O	T
C	A	T
C	O	T

```
A R T
B A R
B O T
C A T
C A R
C O T
```

Points: **10**

14. Multiple Choice: You are required to sort the followin...

Question	You are required to sort the following array using merge sort { 2, 11, 7, 8, 3, 19, 13, 5 }. How many calls to the "merge" method will be made during the top down merge sort execution?
Answer	5
	✅ 7
	8
	10

Select: All None | Select by Type: - Question Type - ▼

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