Data Structure QUIZ (22 MCQ)

Time Complexity, Stack, Queue, Circular Q, Priority Q, LinkedList, Sorting, Searching

Points: 17/22

1

Enter your KU ID *

cc26

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SAY Sophea

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Cloud

✕ **Incorrect** 0/1 Points

4

You are given a list of numbers, and you need to find the maximum and minimum numbers from the list. What is the time complexity of finding the maximum and minimum numbers in the list? *

- O(1)

- O(n)
- O(nlogn)
- O(n^2)

✓ **Correct** 1/1 Points

5

Which of the following statements about linked lists is true *

- Linked lists have a fixed size.
- Linked lists allow constant-time insertion and deletion at any position.
- Linked lists use contiguous memory allocation.
- Linked lists have direct access to arbitrary elements.

✓ **Correct** 1/1 Points

6

Which of the following sorting algorithms can be used to sort a random linked list with minimum time complexity *

- Selection Sort
- Quick Sort
- Merge Sort
- Bubble Sort

✗ **Incorrect** 0/1 Points

7

Which one of the following is an application of Queue Data Structure *

- When a resource is shared among multiple consumers

- When data is transferred asynchronously (data not necessarily received at same rate as sent) between two processes
- Load Balancing
- All of these

✓ **Correct** 1/1 Points

8

Which of the following is true about linked list implementation of stack *

- In push operation, if new nodes are inserted at the end, then in pop operation, nodes must be removed from the beginning.
- In push operation, if new nodes are inserted at the beginning of linked list, then in pop operation, nodes must be removed from end.
- All of the above
- (●) None of the above

✓ **Correct** 1/1 Points

9

A hash table of length 10 uses open addressing with hash function h(k)=k mod 10, and linear probing. After inserting 6 values into an empty hash table, the table is as shown below. *

- 46, 42, 34, 52, 23, 33
- 34, 42, 23, 52, 33, 46
- (●) 46, 34, 42, 23, 52, 33
- 42, 46, 33, 23, 34, 52

✓ **Correct** 1/1 Points

10

The keys 12, 18, 13, 2, 3, 23, 5 and 15 are inserted into an initially empty hash table of length 10 using open addressing with hash function h(k) = k mod 10 and linear probing. What is the resultant hash table? *

- A
- B
- C
- D

✓ **Correct** 1/1 Points

11

In the worst case, the number of comparisons needed to search a singly linked list of length n for a given element is *

- log(2*n)
- n/2
- log(2*n) -1
- n

✓ **Correct** 1/1 Points

12

Let P be a singly linked list. Let Q be the pointer to an intermediate node x in the list. What is the worst-case time complexity of the best known algorithm to delete the node Q from the list? *

- O(log2 n)
- O(n)
- O(logn)
- O(1)

✓ **Correct** 1/1 Points

13

The minimum number of stacks needed to implement a queue is *

- 1
- 2
- 3
- 4

✗ **Incorrect** 0/1 Points

14

You are building a contact management system that needs to store and retrieve contact information efficiently. The system should allow quick access to contacts based on their email addresses. Which data structure would you choose to store the contact information? *

- Hash Table
- Array

- [x] Linked List
- [ ] Graph

✗ **Incorrect** 0/1 Points

15

What is the best time complexity of bubble sort *

- [x] N^2
- [ ] NlogN
- [ ] N
- [ ] N(logN)^2

✓ **Correct** 1/1 Points

16

You have to sort 1 GB of data with only 100 MB of available main memory. Which sorting technique will be most appropriate? *

- [ ] Heap sort
- [x] Merge sort
- [ ] Quick sort
- [ ] Insertion sort

✓ **Correct** 1/1 Points

17

Which of the following sorting algorithms has the lowest worst-case complexity *

- [ ] Bubble Sort
- [x] Merge Sort

- ( ) Quick Sort
- ( ) Selection Sort

✗ **Incorrect** 0/1 Points

18

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

- (•) Merge sort.
- ( ) Bubble sort
- ( ) Quick sort
- ( ) Selection Sort

✓ **Correct** 1/1 Points

19

Which of the following is true for computation time in insertion, deletion and finding maximum and minimum element in a sorted array ? *

- ( ) Insertion – 0(1), Deletion – 0(1), Maximum – 0(1), Minimum – 0(l)
- (•) Insertion – 0(n), Deletion – 0(n), Maximum – 0(1), Minimum – 0(1)
- ( ) Insertion – 0(1), Deletion – 0(1), Maximum – 0(n), Minimum – 0(n)
- ( ) Insertion – 0(n), Deletion – 0(n), Maximum – 0(n), Minimum – 0(n)

✓ **Correct** 1/1 Points

20

Which of the following information is stored in a doubly-linked list's nodes *

- ( ) Address of the Previous Node
- ( ) Value

- Address of the Next Node
- All of these

✓ **Correct** 1/1 Points

21

Which of the following algorithms is not feasible to implement in a linked list? *

- Linear Search
- Binary Search
- Merge Sort
- None of these

✓ **Correct** 1/1 Points

22

Which type of linked list stores the address of the head node in the next pointer of the last node *

- Doubly Linked List
- Singly Linked List
- Circular Linked List
- None of these

✓ **Correct** 1/1 Points

23

In which type of linked lists traversals can be performed in both directions *

- Doubly Linked List
- Singly Linked List

- ○ Circular Linked List
- ○ None of these

✓ **Correct** 1/1 Points

24

A linked list in which none of the nodes contains a NULL pointer is *

- ○ Doubly Linked List
- ○ Singly Linked List
- ◉ Circular Linked List
- ○ None of these

✓ **Correct** 1/1 Points

25

In a stack, if a user tries to remove an element from an empty stack it is called *

- ◉ Underflow
- ○ Empty
- ○ Overflow
- ○ None of These

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