megaleap
Comprehensive MCA Entrance Coaching

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M. C. A. ENTRANCE **TEST CODE: C PROGRAMMING TEST - III** **Total Questions: 15**
Max. Time: 20 Min.

1. struct node *nPtr, *sPtr; /* pointers for a linked list. */
for (nPtr=sPtr; nPtr; nPtr=nPtr->next)
{
free(nPtr);
}
The sample code above releases memory from a linked list. Which of the choices below accurately describes how it will work?
(a) It will work correctly since the for loop covers the entire list.
(b) It may fail since each node "nPtr" is freed before its next address can be accessed
(c) In the for loop, the assignment "nPtr=nPtr->next" should be changed to "nPtr=nPtr.next".
(d) This is invalid syntax for freeing memory.
(e) The loop will never end.

2. Which one of the following provides conceptual support for function calls?
(a) The system stack
(b) The data segment
(c) The processor's registers
(d) The text segment
(e) The heap

3. One difference between a queue and a stack is:
(a) Queues require linked lists, but stacks do not.
(b) Stacks require linked lists, but queues do not.
(c) Queues use two ends of the structure; stacks use only one.
(d) Stacks use two ends of the structure, queues use only one.

4. If the characters 'D', 'C', 'B', 'A' are placed in a queue (in that order), and then removed one at a time, in what order will they be removed?
(a) ABCD (b) ABDC
(c) DCAB (d) DCBA

5. Suppose we have a circular array implementation of the queue , with ten items in the queue stored at data[2] through data[11]. The current capacity is 42. Where does the insert method place the new entry in the array?
(a) data[1] (b) data[2]
(c) data[11] (d) data[12]

6. In the linked list implementation of the queue class, where does the insert method place the new entry on the linked list?
(a) At the head
(b) At the tail
(c) After all other entries that are greater than the new entry.
(d) After all other entries that are smaller than the new entry.

7. If data is a circular array of CAPACITY elements, and rear is an index into that array, what is the formula for the index after rear?
(a) (rear % 1) + CAPACITY
(b) rear % (1 + CAPACITY)
(c) (rear + 1) % CAPACITY
(d) rear + (1 % CAPACITY)

8. I have implemented the queue with a circular array, keeping track of front, rear, and manyItems (the number of items in the array). Suppose front is zero, and rear is one less than the current capacity. What can you tell me about manyItems?
(a) manyItems must be zero.
(b) manyItems must be equal to the current capacity.
(c) count could be zero or the capacity, but no other values could occur.
(d) None of the above.

9. I have implemented the queue with a linked list, keeping track of a front node and a rear node with two reference

variables. Which of these reference variables will change during an insertion into a NONEMPTY queue?
(a) Neither changes
(b) Only front changes.
(c) Only rear changes.
(d) Both change.

10. All complete binary trees with an odd number of nodes are also full binary trees.
(a) True (b) False

11. A tree with at least two nodes has at least as many leaves as it has internal nodes.
(a) True (b) False

12. Suppose a binary tree has only three nodes A, B, and C, and you are given that the post-order traversal for the tree is B-A-C. The pre-order traversal for the tree is:
(a) C-A-B (b) A-B-C
(c) C-B-A
(d) A definite pre-order traversal cannot be determined from the information given

13. Suppose you are given that a general tree has 4 nodes and has height 2.
How many leaves does this tree contain?
(a) 1 (b) 2
(c) 3 (d) 4
(e) The number of leaves cannot be determined from the information given.

14. Which of the following sorting algorithms perform in O(n) time in the best case?
(a) Insertion Sort
(b) Bubble Sort
(c) Selection Sort
(d) All of the above
(e) None of the above

15. Which of the following best represents the Big-Oh runtime for dequeuing an item from a linked list implemented queue
(a) O(N lg N) (b) O(N)
(c) O(1) (d) O(lg N) (e) O(N2)