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1. Consider a class `List` that is implemented using a doubly linked list with only a `head` pointer (i.e. pointer to the first node in the list).

Given that implementation, which of the following operations *cannot* be implemented in O(1) time?

I. Insert item at the front of the list
II. Insert item at the rear of the list
III. Delete front item from list
IV. Delete rear item from list

A. I and III
B. All of them
C. I and II
D. I, II and III
E. [Correct Answer] [Your Answer] II and IV

2. In a singly linked list containing n nodes, the time required to find the maximum element is:

A. O(log n).
B. O(n log n).
C. $O(n^2)$.
D. [Correct Answer] [Your Answer] O(n).
E. O(1).

3. In a singly-linked list of size n,you are given the address of the last node. What will be the time required to access the data stored in the second last node?

A. [Your Answer] It cannot be accessed
B. O(1)
C. O(loglog n)
D. O(log n)
E. [Correct Answer] O(n)

4. Which of the following List ADT implementations gives us an O(1) time for `removeAtEnd`, i,e removing an element from the end of the list?

I. A singly-linked list with only a `head` pointer.
II. A singly-linked list with `head` and `tail` pointers.
III. A doubly-linked list with only a `head` pointer.
IV. A doubly-linked list with `head` and `tail` pointers.

A. II and IV
B. I, III and IV
C. [Correct Answer] [Your Answer] None of the other options is correct
D. I, II, III and IV
E. I and III

5. Consider the following function definition and suppose that 1) the `node` class consists of an integer `data` element, and a `node` pointer called `next`, and 2) variable `head` is the address of a linked list of such `nodes`.

What does the function do?

```
void fun(node * curr) {
   if (curr != NULL) {
      fun(curr->next);
      cout << curr->data;
   }
}

node * head = NULL;
// maybe insert data into the chain here
fun(head);
```

A. `fun` prints the elements of the list from `head` to the end.
B. None of the other options is correct.
C. `fun` prints every other element of the list.
D. [Correct Answer] [Your Answer] `fun` prints the reverse of the list.
E. `fun` segfaults on lists of odd length.