

CSE220 Quiz 2 (Fall 2021)

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* Required

CSE220 Quiz 2

Department of Computer Science and Engineering
CSE220: Data Structures
Total Marks:10 | Time: 30 Minutes

- Answers must be hand written
- Don't refresh the page unnecessarily
- Answer the questions in your script
- Mention your Student ID at the top left corner of your answer script
- Show rough work where necessary
- Draw properly the diagrams where necessary

Question

Given a singly linked list, you need to do two tasks.
Swap the **first node with the last node**. Then **delete the middle** of the resulting linked list. For example, if the given linked list is 1->2->3->4->5 then the linked list should be modified to 5->2->4->1. Because 1 and 5 will be swapped and 3 will be deleted.

If there are **even** nodes, then there would be **two middle** nodes, we need to delete the **second middle element**. If the input linked list is NULL, then it should remain NULL. If the input linked list has 1 node, then this node should be deleted and a new head should be returned.

Sample 1: Input: NULL output: NULL

Sample 2: Input: 1 output: NULL

Sample 3: Input: 1->2 output: 2

Sample 4: Input: 1->2->3->4->5 output: 5->2->4->1.

Sample 5: Input: 1->2->3->4->5->6 output: 6->2->3->5->1

Input: The function takes one argument as input, the reference pointer to the **head** of the linked list.

Output: Your function should return the head of the modified linked list. If the linked list is empty then it should return NULL.

User Task: The task is to complete the function **swapDelete(Node head)** which will perform swap and should delete the middle node from the linked list **based on whether the number of nodes in the linked list is odd or even respectively**.

```
Java method signature:  
Node swapDelete(Node head)  
    // write your code here  
    //return new head of the linked list  
}
```

```
Python method signature:  
swapDelete(head):  
    # write your code here  
    #return new head of the linked list
```

Note:

1. Assume that the Node class and Linked Lists constructors are already written. You ONLY need to write the **swapDelete()** method/function.
2. No need to write the Tester Class.
3. Use of Built in Method is not allowed except **count()**. You must take an **in-place** approach and modify the given list.
4. You cannot use arrays to solve this problem.

File Naming Convention

Make sure to put all the tasks in a pdf file. (Only one file submission is accepted)
File name must be in the form of 'Q2_SectionNum_StudentID', eg: Q2_9_18102541. Failure in naming the file properly will result in cancellation of the submission.

Section 9 *

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