

## CSE220 Quiz 2 (Fall 2021)

bokhtiar.rahman.juboraz@g.bracu.ac.bd [Switch account](#)



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### 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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