

Note: All questions are about singly linked-lists here.

1. Write the singly linked list class and a function to add a new element to the front of a singly linked list. Also write a function to print all the elements of the linked-list.

Sample Input: [1, 2, 3, 4, 5], new element: 0

Sample Output: Singly linked list containing the elements [0, 1, 2, 3, 4, 5]

2. Write a function to remove the first element of a singly linked list.

Sample Input: [1, 2, 3, 4, 5]

Sample Output: Singly linked list containing the elements [2, 3, 4, 5]

3. Write a function to remove the last element of a singly linked list.

Sample Input: [1, 2, 3, 4, 5]

Sample Output: Singly linked list containing the elements [1, 2, 3, 4]

4. Write a function to find the i-th index of a singly linked list.

Sample Input: [1, 2, 3, 4, 5], i = 2

Sample Output: 3

5. Write a function to add a new element to the back of a singly linked list.

Sample Input: [1, 2, 3, 4, 5], new element: 0

Sample Output: Singly linked list containing the elements [1, 2, 3, 4, 5, 0]

6. Write a function to check if a singly linked list contains a given element.

Sample Input: [1, 2, 3, 4, 5], element: 3

Sample Output: True

7. Write a function to sort a singly linked list in ascending order?

Sample Input: [4, 2, 5, 1, 3]

Sample Output: Singly linked list containing the elements [1, 2, 3, 4, 5]

Hint: Look at the insertion sort code that we implemented in the array. Try to write the code in linked-list. Take your time and try your best to solve this problem on your own.