# COMPUTER ENGINEERING LABORATORY

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# Lab exercises


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# Stack exercise



Write a program that reads a sequence of characters and prints them in reverse order.  Use a stack managed by a linked list.

esicrexe ysae

listInizialization

createNode

push

push

# Queue exercise



Write a program that reads a sequence of characters and prints them in reading order. Use a queue managed by a linked list.

- queueInizialization
- createNode
- enQueue
- deQueue

# Stack exercise



Design a Stack with Middle Element Operations

Problem: Implement a stack that supports the following operations in O(1):
Push: Add an element to the stack.
Pop: Remove the top element from the stack.
FindMiddle: Retrieve the middle element of the stack.
DeleteMiddle: Remove the middle element from the stack.

Requirements:
Use a doubly linked list to implement the stack.
Write a main function to test the implementation.

# Stack/queue exercise



Palindrome Check Using a Queue and a Stack
Problem: Write a program to check if a given string is a palindrome using both a queue and a stack. The program should:
Use a stack and a queue implemented with linked lists.
Push/enqueue each character of the string into the stack and queue.
Compare elements popped from the stack with elements dequeued from the queue.

Example:
Input: "madam"Output: Palindrome
Input: "hello"Output: Not a Palindrome