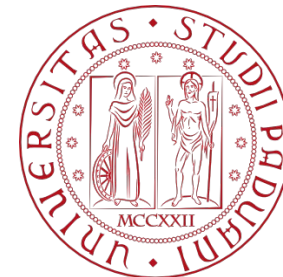


COMPUTER ENGINEERING LABORATORY

Luigi Rizzo

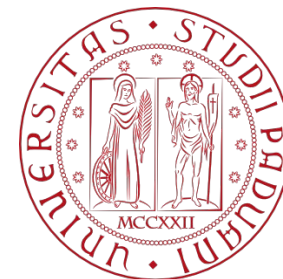
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October 2024-January 2025



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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

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

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.

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