

RETRIEVING THE TRUMP

OVERVIEW

This C program manipulates a singly linked list based on commands read from a text file. It allows users to add nodes to the end of the linked list, delete the last node, and find the middle number(s) in the list. The program demonstrates the following functionality:

1. LINKED LIST STRUCTURE (STRUCT NODE):

- The program defines a structure called Node to represent a node in the linked list. Each node contains an integer data value and a pointer to the next node.

2. ADDING NODES TO THE LINKED LIST (ADDNODE FUNCTION):

- The addNode function adds a new node with a given data value to the end of the linked list.
- It dynamically allocates memory for the new node using malloc and initializes its data and next pointer.
- If the linked list is empty, the new node becomes the head of the list.

3. DELETING NODES FROM THE LINKED LIST (DELETENODE FUNCTION):

- The deleteNode function removes the last node from the linked list.
- If the list is empty, it returns without performing any action.
- If there is only one node in the list, it is deleted and the head is set to NULL.
- Otherwise, it traverses to the second-to-last node and deletes the last node.

4. FINDING MIDDLE NUMBER(S) IN THE LINKED LIST (GETTRUMP FUNCTION):

- The getTrump function finds and prints the middle number(s) in the linked list.
- It first counts the number of nodes in the list.
- Based on the count, it determines the middle node(s) or pair of nodes.
- It then traverses to the middle node(s) and prints their data values.

5. FREEING ALLOCATED MEMORY (FREELIST FUNCTION):

- The freeList function is responsible for deallocating the memory allocated for the linked list.
- It iterates through the linked list, freeing each node's memory, and finally sets the head to NULL.

6. MAIN FUNCTION (MAIN):

- The main function is the entry point of the program.
- It opens the file text in read mode to read commands and data.
- It reads and processes commands from the file, which include "ADD" (to add a node), "DELETE" (to delete a node), and "END" (to terminate).
- Depending on the commands, it calls the corresponding functions to manipulate the linked list.
- After processing the commands, it calls the getTrump function to find and print the middle number(s).
- Finally, it calls the freeList function to release memory and closes the file.