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NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 1_COD_Question 2

Attempt : 1
Total Mark : 10
Marks Obtained : 0

Section 1 : Coding

1. Problem Statement

Arun is learning about data structures and algorithms. He needs your help in solving a specific problem related to a singly linked list.

Your task is to implement a program to delete a node at a given position. If the position is valid, the program should perform the deletion; otherwise, it should display an appropriate message.

Input Format

The first line of input consists of an integer N, representing the number of elements in the linked list.

The second line consists of N space-separated elements of the linked list.

The third line consists of an integer x, representing the position to delete.

Position starts from 1.

Output Format

The output prints space-separated integers, representing the updated linked list after deleting the element at the given position.

If the position is not valid, print "Invalid position. Deletion not possible."

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
8 2 3 1 7
2
Output: 8 3 1 7

Answer

```
#include <stdio.h>
#include <stdlib.h>

void insert(int);
void display_List();
void deleteNode(int);

struct node {
    int data;
    struct node* next;
} *head = NULL, *tail = NULL;
```

```
#include <stdio.h>
#include <stdlib.h>

// Define the structure for a node in the linked list
struct Node {
    int data;
    struct Node* next;
};

// Function to create a new node
```

```
struct Node* createNode(int data) {
    struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
    if (newNode == NULL) {
        printf("Memory allocation failed\n");
        exit(1); // Exit the program if memory allocation fails
    }
    newNode->data = data;
    newNode->next = NULL;
    return newNode;
}

// Function to insert a node at the end of the linked list
void insertEnd(struct Node** head, int data) {
    struct Node* newNode = createNode(data);
    if (*head == NULL) {
        *head = newNode;
        return;
    }
    struct Node* temp = *head;
    while (temp->next != NULL) {
        temp = temp->next;
    }
    temp->next = newNode;
}

// Function to delete a node at a given position
void deleteNode(struct Node** head, int position) {
    if (*head == NULL) {
        printf("List is empty. Deletion not possible.\n");
        return;
    }
    if (position == 1) {
        struct Node* temp = *head;
        *head = (*head)->next;
        free(temp);
        return;
    }
    struct Node* prev = NULL;
    struct Node* curr = *head;
    int count = 1;
    while (curr != NULL && count < position) {
        prev = curr;
```

```
        curr = curr->next;
        count++;
    }
    if (curr == NULL) {
        printf("Invalid position. Deletion not possible.\n");
        return;
    }
    prev->next = curr->next;
    free(curr);
}

// Function to display the linked list
void displayList(struct Node* head) {
    struct Node* temp = head;
    while (temp != NULL) {
        printf("%d ", temp->data);
        temp = temp->next;
    }
    printf("\n");
}

int main() {
    int n, data, position;
    struct Node* head = NULL;

    // Read the number of elements in the linked list
    scanf("%d", &n);

    // Read the elements of the linked list and insert them
    for (int i = 0; i < n; i++) {
        scanf("%d", &data);
        insertEnd(&head, data);
    }

    // Read the position to delete
    scanf("%d", &position);

    // Delete the node at the given position
    deleteNode(&head, position);

    // Display the updated linked list
    displayList(head);
```

```
    return 0;
}


int main() {
    int num_elements, element, pos_to_delete;

    scanf("%d", &num_elements);

    for (int i = 0; i < num_elements; i++) {
        scanf("%d", &element);
        insert(element);
    }

    scanf("%d", &pos_to_delete);

    deleteNode(pos_to_delete);

    return 0;
}
```

Status : Wrong **Marks : 0/10**