

# Rajalakshmi Engineering College

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## NeoColab\_REC\_CS23231\_DATA STRUCTURES

### REC\_DS using C\_Week 1\_COD\_Question 5

Attempt : 1  
Total Mark : 10  
Marks Obtained : 10

#### Section 1 : Coding

##### 1. Problem Statement

Imagine you are tasked with developing a simple GPA management system using a singly linked list. The system allows users to input student GPA values, insertion should happen at the front of the linked list, delete record by position, and display the updated list of student GPAs.

##### ***Input Format***

The first line of input contains an integer  $n$ , representing the number of students.

The next  $n$  lines contain a single floating-point value representing the GPA of each student.

The last line contains an integer position, indicating the position at which a student record should be deleted. Position starts from 1.

### **Output Format**

After deleting the data in the given position, display the output in the format "GPA: " followed by the GPA value, rounded off to one decimal place.

Refer to the sample output for formatting specifications.

### **Sample Test Case**

Input: 4

3.8

3.2

3.5

4.1

2

Output: GPA: 4.1

GPA: 3.2

GPA: 3.8

### **Answer**

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

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

```
struct Node {
```

```
    float gpa;
```

```
    struct Node* next;
```

```
};
```

```
struct Node* createNode(float gpa) {
```

```
    struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
```

```
    newNode->gpa = gpa;
```

```
    newNode->next = NULL;
```

```
    return newNode;
```

```
}
```

```
void insertFront(struct Node** head, float gpa) {
```

```
    struct Node* newNode = createNode(gpa);
```

```
    newNode->next = *head;
```

```
    *head = newNode;
```

```
}
```

```
void deleteAtPosition(struct Node** head, int position) {
```

```
    if (*head == NULL) return;
```

```
    struct Node* temp = *head;
    if (position == 1) {
        *head = temp->next;
        free(temp);
        return;
    }
    for (int i = 1; temp != NULL && i < position - 1; i++) {
        temp = temp->next;
    }
    if (temp == NULL || temp->next == NULL) return;
    struct Node* nodeToDelete = temp->next;
    temp->next = nodeToDelete->next;
```

```
    free(nodeToDelete);
}

void printList(struct Node* head) {
    struct Node* temp = head;
    while (temp != NULL) {
        printf("GPA: %.1f\n", temp->gpa);
        temp = temp->next;
    }
}
```

```
int main() {
    int n;
    scanf("%d", &n);

    struct Node* head = NULL;

    for (int i = 0; i < n; i++) {
        float gpa;
        scanf("%f", &gpa);
        insertFront(&head, gpa);
    }

    int position;
    scanf("%d", &position);

    deleteAtPosition(&head, position);

    printList(head);
}
```

```
} return 0;
```

**Status :** Correct

**Marks :** 10/10