

# Rajalakshmi Engineering College

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## NeoColab\_REC\_CS23231\_DATA STRUCTURES

### REC\_DS using C\_Week 1\_COD\_Question 3

Attempt : 2  
Total Mark : 10  
Marks Obtained : 10

#### Section 1 : Coding

##### 1. Problem Statement

Imagine you are working on a text processing tool and need to implement a feature that allows users to insert characters at a specific position.

Implement a program that takes user inputs to create a singly linked list of characters and inserts a new character after a given index in the list.

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

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

The second line consists of a sequence of N characters, representing the linked list.

The third line consists of an integer index, representing the index(0-based) after

which the new character node needs to be inserted.

The fourth line consists of a character value representing the character to be inserted after the given index.

### ***Output Format***

If the provided index is out of bounds (larger than the list size):

1. The first line of output prints "Invalid index".
2. The second line prints "Updated list: " followed by the unchanged linked list values.

Otherwise, the output prints "Updated list: " followed by the updated linked list after inserting the new character after the given index.

Refer to the sample output for formatting specifications.

### ***Sample Test Case***

Input: 5

a b c d e

2

X

Output: Updated list: a b c X d e

### ***Answer***

```
// You are using GCC
```

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

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

```
struct node{
```

```
    char data;
```

```
    struct node*link;
```

```
};
```

```
void print(struct node *head){
```

```
    struct node *ptr=head;
```

```
    while(ptr!=NULL){
```

```
        printf("%c ",ptr->data);
```

```

        ptr=ptr->link;
    }
}

int main(){
    int n,pos=0;
    struct node *head=NULL;
    scanf("%d",&n);
    getchar();
    struct node *temp=NULL;
    for(int i=0;i<n;i++){
        struct node*temp=(struct node*)malloc(sizeof(struct node ));
        temp->data=getchar();
        getchar();
        temp->link=NULL;

        if(head==NULL){
            head=temp;
        }
        else{
            struct node *ptr=head;
            while(ptr->link!=NULL){
                ptr=ptr->link;
            }
            ptr->link=temp;
        }
    }
    scanf("%d",&pos);
    if(pos<0||pos>n){
        printf("Invalid index");
    }
    else{
        struct node *newn=(struct node*)malloc(sizeof(struct node));
        getchar();
        newn->data=getchar();
        newn->link=NULL;
        if(pos==0){
            newn->link=head->link;
            head->link=newn;
        }
        else{
            struct node *ptr=head;
            pos++;

```

```
while(pos!=1){  
    ptr=ptr->link;  
    pos--;  
}  
newn->link=ptr->link;  
ptr->link=newn;  
}  
}printf("Updated List:\n");  
print(head);  
}
```

**Status :** Correct

**Marks : 10/10**