

# Rajalakshmi Engineering College

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## NeoColab\_REC\_CS23231\_DATA STRUCTURES

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

Attempt : 1  
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>
```

```
int main()
```

```
{
```

```
    int n;
```

```
    scanf("%d",&n);
```

```
    char *ptr;
```

```
    ptr=(char *)malloc((n+1)*sizeof(char));
```

```
    for(int i=0;i<n;i++){
```

```
        scanf(" %c",(ptr+i));
```

```

    }
    int pos;
    char letter;
    scanf("%d",&pos);
    scanf(" %c",&letter);
    if(pos<n)
    {
        for(int i=n;i>pos;i--){
            *(ptr+i)=*(ptr+(i-1));

        }
        *(ptr+(pos+1))=letter;
        n++;
        printf("Updated list: ");
        int i;
        for(i=0;i<n;i++){
            printf("%c ",*(ptr+i));
        }
        printf("\n");
    }
    else
    {
        printf("Invalid index\n");
        printf("Updated list: ");
        for(int i=0;i<n;i++){
            printf("%c ",*(ptr+i));
        }
    }
}

```

**Status :** Correct

**Marks :** 10/10