

Rajalakshmi Engineering College

Name: Monish T
Email: 240801208@rajalakshmi.edu.in
Roll no: 240801208
Phone: 8838363490
Branch: REC
Department: I ECE AF
Batch: 2028
Degree: B.E - ECE

Scan to verify results



NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 2_COD_Question 1

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Your task is to create a program to manage a playlist of items. Each item is represented as a character, and you need to implement the following operations on the playlist.

Here are the main functionalities of the program:

Insert Item: The program should allow users to add items to the front and end of the playlist. Items are represented as characters. Display Playlist: The program should display the playlist containing the items that were added.

To implement this program, a doubly linked list data structure should be used, where each node contains an item character.

Input Format

The input consists of a sequence of space-separated characters, representing the items to be inserted into the doubly linked list.

The input is terminated by entering - (hyphen).

Output Format

The first line of output prints "Forward Playlist: " followed by the linked list after inserting the items at the end.

The second line prints "Backward Playlist: " followed by the linked list after inserting the items at the front.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: a b c -

Output: Forward Playlist: a b c

Backward Playlist: c b a

Answer

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

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

```
struct Node {  
    char item;  
    struct Node* next;  
    struct Node* prev;  
};
```

```
void insertAtEnd(struct Node** head, char item) {  
    struct Node* nn=(struct Node*)malloc(sizeof(struct Node));  
    nn->item=item;  
    nn->next=NULL;  
    nn->prev=NULL;  
    if(*head==NULL){  
        *head=nn;  
        return;  
    }  
}
```

```
struct Node* temp=*head;
while(temp->next!=NULL){
    temp=temp->next;
}
temp->next=nn;
nn->prev=temp;
```

```
}
void displayForward(struct Node* head) {
    struct Node* temp=head;
    while(temp!=NULL){
        printf("%c ",temp->item);
        temp=temp->next;
    }
    printf("\n");
}
```

```
void displayBackward(struct Node* tail) {
/*
    struct Node* curr=tail;
    struct Node* prev=NULL;
    while(curr!=NULL){
        prev=curr->prev;
        curr->prev=curr->next;
        curr->next=prev;
        curr=curr->prev;
    }
```

```
tail=prev;*/
```

```
struct Node* temp=tail;
while(temp!=NULL){
    printf("%c ",temp->item);
    temp=temp->prev;
```

```
void freePlaylist(struct Node* head) {
```

```
}
```

```
int main() {
```

```
    struct Node* playlist = NULL;
```

```
    char item;
```

```
    while (1) {
```

```
        scanf(" %c", &item);
```

```
        if (item == '-') {
```

```
            break;
```

```
        }
```

```
        insertAtEnd(&playlist, item);
```

```
    }
```

```
    struct Node* tail = playlist;
```

```
    while (tail->next != NULL) {
```

```
        tail = tail->next;
```

```
    }
```

```
    printf("Forward Playlist: ");
```

```
    displayForward(playlist);
```

```
    printf("Backward Playlist: ");
```

```
    displayBackward(tail);
```

```
    freePlaylist(playlist);
```

```
    return 0;
```

```
}
```

Status : Correct

Marks : 10/10