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2023_27_III_Data Structures and Algorithms using C_CSBS

Doubly Linked Lists_Day5_SB_COD

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Imagine you are building a system to manage a sequence of integers. Each integer is represented by a node in a doubly linked list. The program allows users to add integers to the end of the list and remove the integer at the front of the list.

Answer

```
// You are using GCC
#include <stdio.h>

#include <stdlib.h>

// Defne the structure for the node
typedef struct Node {
 int value;
```

```
 struct Node* next;
 struct Node* prev;

} Node;

// Function to create a new node
Node* createNode(int value) {
 Node* newNode = (Node*)malloc(sizeof(Node));
 newNode->value = value;
 newNode->next = NULL;
 newNode->prev = NULL;
 return newNode;
}
// Function to append a node to the end of the list
void appendNode(Node** head_ref, int value) {
 Node* newNode = createNode(value);
 if (*head_ref == NULL) {
 *head_ref = newNode;
 return;
 }
 Node* temp = *head_ref;
 while (temp->next != NULL) {
 temp = temp->next;
 }
 temp->next = newNode;
 newNode->prev = temp;
}
// Function to delete the front node of the list
void deleteFront(Node** head_ref) {
 if (*head_ref == NULL) return;
 Node* temp = *head_ref;
 *head_ref = (*head_ref)->next;
 if (*head_ref != NULL) {
 (*head_ref)->prev = NULL;
 }
 free(temp);
}
// Function to print the list
void printList(Node* head) {
 Node* temp = head;
 while (temp != NULL) {
    printf("%d", temp->value);
```

```
 if (temp->next != NULL) {

 printf(" ");
 }
 temp = temp->next;
 }
 printf("\n"); }
int main() {
 int n;
 scanf("%d", &n);

 if (n < 1) {
 printf("\n");
 return 0;
 }
 Node* head = NULL;
 int value;

 for (int i = 0; i < n; i++) {
 scanf("%d", &value);
 appendNode(&head, value);
 }
 deleteFront(&head);

 printList(head);

 return 0;
}
```

Status : Correct **Marks : 10/10**