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/* NAME            :MOHAMMED SINAN.P
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   DATE            :15/12/22
   PROGRAM         :IMPLEMENTATION OF VARIOUS LINKED LIST OPERATIONS
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#include<stdio.h>
#include<stdlib.h>
void insert();
void delete();
void display();
struct node
{
        int data;
        struct node *next;
}       *head,*ptr;
void main()
{
        int choice;
        head = NULL;
        do
        {
                printf("\nMENU\n.....\n");
                printf("1.INSERT\n2.DELETE\n3.DISPLAY\n4.EXIT\n");
                printf("ENTER YOUR CHOICE\t");
                scanf("%d",&choice);
                switch(choice)
                {
                        case 1:insert();
                                break;
                        case 2:delete();
                                break;
                        case 3:display();
                                break;
                        case 4:printf("EXITED FROM MENU");
                                break;
                        default:printf("Womg selection....\n");
                }
        }while(choice!=4);
}
void insert()
{
        struct node *temp = (struct node *)malloc(sizeof(struct node));
        int x, ch, key;
        printf("Enter the element to be inserted: ");
        scanf("%d", &x);
        temp->data = x;
        temp->next = NULL;
        if(head == NULL)
        {
                head = temp;
                head->next = NULL;
                printf("Element inserted Successfully\n");
        }
        else
        {
```

```
                printf("\n1.Insert at first");
                printf("\n2.Insert at end");
                printf("\n3.Insert in the middle");
                printf("\nEnter your choice:\t");
                scanf("%d", &ch);
                switch(ch)
                {
                        case 1: temp->next = head;
                                head = temp;
                                printf("Element inserted successfully\n");
                                break;
                        case 2: ptr = head;
                                while(ptr->next != NULL)
                                {
                                        ptr = ptr->next;
                                }
                                ptr->next = temp;
                                temp->next = NULL;
                                printf("Element inserted successfully\n");
                                break;
                        case 3: printf("Enter the key value: ");
                                scanf("%d", &key);
                                ptr = head;
                                while(ptr->data != key && ptr->next != NULL)
                                {
                                        ptr = ptr->next;
                                }
                                        if(ptr->next == NULL)
                                {
                                        ptr->next = temp;
                                        printf("key not found,hence inserted at end\n");
                                }
                                else
                                {
                                         temp->next = ptr->next;
                                         ptr->next = temp;
                                         printf("Element inserted successfully");
                                }
                                break;
                }
        }
}
void delete()
{
        int ch, key;
        struct node *t;
        if(head == NULL)
        {
                printf("!!!Empty linked list!!!");
        }
        else
        {
                printf("\n1. Delete first element");
                printf("\n2. Delete last element");
                printf("\n3. Delete intermediate element");
                printf("\nEnter your choice: ");
                scanf("%d", &ch);
```

```
                switch(ch)
                {
                case 1: ptr = head;
                        head = head->next;
                        free(ptr);
                        printf("Element deleted successfully\n");
                        break;
                case 2: ptr = head;
                        t = head;
                        if(head->next == NULL)
                        {
                              head = NULL;
                        }
                        else
                        {
                                while(ptr->next != NULL)
                                {
                                      t = ptr;
                                      ptr = ptr->next;
                                }
                                free(ptr);
                                t->next = NULL;
                        }
                        printf("Element deleted successfully...\n");
                        break;
                case 3: printf("Enter the element to be deleted: ");
                        scanf("%d", &key);
                        ptr = head;
                        t = head;
                        while(ptr->data != key)
                        {
                                t = ptr;
                                ptr = ptr->next;
                        }
                        t->next = ptr->next;
                        free(ptr);
                        printf("Element deleted successfully...\n");
                        break;
                }
        }
}
void display()
{
        ptr = head;
        if(head == NULL)
        {
                printf("!!!Empty linked list!!!");
        }
        while(ptr != NULL)
        {
                printf("%d\t",ptr->data);
                ptr = ptr->next;
        }
}
```

Output :-

```
MENU
.....
1.INSERT
2.DELETE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE    1
Enter the element to be inserted: 3
Element inserted Successfully

MENU
.....
1.INSERT
2.DELETE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE    1
Enter the element to be inserted: 4
1.Insert at first
2.Insert at end
3.Insert in the middle
Enter your choice:          3
Enter the key value: 9
key not found,hence inserted at end

MENU
.....
1.INSERT
2.DELETE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE    3
3          4

MENU
.....
1.INSERT
2.DELETE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE    2
1. Delete first element
2. Delete last element
3. Delete intermediate element
Enter your choice: 2
Element deleted successfully...

MENU
.....
1.INSERT
2.DELETE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE    2
```

1. Delete first element
2. Delete last element
3. Delete intermediate element
Enter your choice: 1
Element deleted successfully

MENU
.....
1.INSERT
2.DELETE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE 3
!!!Empty linked list!!!

MENU
.....
1.INSERT
2.DELETE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE 4
EXITED FROM MENU