PROGRAM 6

Write a program to Implement Singly Linked List with following operations a) a) Create a linked list. b) Deletion of first element, specified element and last element in the list. c) Display the contents of the linked list -

```
#include <stdlib.h>
#include <stdio.h>
void create();
void display();
void delete_begin();
void delete_end();
void delete_pos();
struct node
{
    int info;
    struct node *next;
};
struct node *start = NULL;
int main()
{
    int choice;
    while (1)
    {

        printf("\n MENU          \n");
        printf("\n 1.Create      \n");
        printf("\n 2.Display     \n");
```

```
        printf("\n 3.Delete from beginning      \n");
        printf("\n 4.Delete from the end        \n");
        printf("\n 5.Delete from specified position
\n");
        printf("\n 6.Exit       \n");
        printf("\n-------------------------------------
\n");
        printf("Enter your choice:");
        scanf("%d", &choice);
        switch (choice)
        {
        case 1:
            create();
            break;
        case 2:
            display();
            break;
        case 3:
            delete_begin();
            break;
        case 4:
            delete_end();
            break;
        case 5:
            delete_pos();
            break;
        case 6:
            exit(0);
            break;
```

```
        default:
            printf("\n Wrong Choice:\n");
            break;
        }
    }
    return 0;
}
void create()
{
    struct node *temp, *ptr;
    temp = (struct node *)malloc(sizeof(struct node));
    if (temp == NULL)
    {
        printf("\nOut of Memory Space:\n");
        exit(0);
    }
    printf("\nEnter the data value for the node:");
    scanf("%d", &temp->info);
    temp->next = NULL;
    if (start == NULL)
    {
        start = temp;
    }
    else
    {
        ptr = start;
        while (ptr->next != NULL)
        {
            ptr = ptr->next;
```

```
        }
        ptr->next = temp;
    }
}
void display()
{
    struct node *ptr;
    if (start == NULL)
    {
        printf("\nList is empty:\n");
        return;
    }
    else
    {
        ptr = start;
        printf("\nThe List elements are:\n");
        while (ptr != NULL)
        {
            printf("%d", ptr->info);
            ptr = ptr->next;
        }
    }
}
void delete_begin()
{
    struct node *ptr;
    if (ptr == NULL)
    {
        printf("\nList is Empty:\n");
```

```
        return;
    }
    else
    {
        ptr = start;
        start = start->next;
        printf("\nThe deleted element is :%d", ptr->info);
        free(ptr);
    }
}
void delete_end()
{
    struct node *temp, *ptr;
    if (start == NULL)
    {
        printf("\nList is Empty:");
        exit(0);
    }
    else if (start->next == NULL)
    {
        ptr = start;
        start = NULL;
        printf("\nThe deleted element is:%d", ptr->info);
        free(ptr);
    }
    else
    {
        ptr = start;
```

```
        while (ptr->next != NULL)
        {
            temp = ptr;
            ptr = ptr->next;
        }
        temp->next = NULL;
        printf("\nThe deleted element is:%d", ptr->info);
        free(ptr);
    }
}
void delete_pos()
{
    int i, pos;
    struct node *temp, *ptr;
    if (start == NULL)
    {
        printf("\nThe List is Empty:\n");
        exit(0);
    }
    else
    {
        printf("\nEnter the position of the node to be
deleted:");
        scanf("%d", &pos);
        if (pos == 0)
        {
            ptr = start;
            start = start->next;
```

```
            printf("\nThe deleted element is:%d", ptr->info);
            free(ptr);
        }
        else
        {
            ptr = start;
            for (i = 0; i < pos; i++)
            {
                temp = ptr;
                ptr = ptr->next;
                if (ptr == NULL)
                {
                    printf("\nPosition not Found:\n");
                    return;
                }
            }
            temp->next = ptr->next;
            printf("\nThe deleted element is:%d", ptr->info);
            free(ptr);
        }
    }
}
```

Output –

```
                MENU

 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

-------------------------------------
Enter your choice:1

Enter the data value for the node:00

                MENU

 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

-------------------------------------
Enter your choice:1

Enter the data value for the node:22
```

```
                MENU

 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

-------------------------------------
Enter your choice:3

The deleted element is :0
                MENU

 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

-------------------------------------
Enter your choice:2

The List elements are:
2277
```

```
                MENU

 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

--------------------------------------
Enter your choice:1

Enter the data value for the node:33

                MENU

 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

--------------------------------------
Enter your choice:4

The deleted element is:33
```

```
 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

--------------------------------------
Enter your choice:1

Enter the data value for the node:77

                MENU

 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

--------------------------------------
Enter your choice:2

The List elements are:
02277
```

```
--------------------------------------
Enter your choice:5

Enter the position of the node to be deleted:3

The deleted element is:88
```

```
                MENU

 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

--------------------------------------
Enter your choice:1

Enter the data value for the node:88

                MENU

 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

--------------------------------------
Enter your choice:5

Enter the position of the node to be deleted:3
```

```
                MENU

 1.Create

 2.Display

 3.Delete from beginning

 4.Delete from the end

 5.Delete from specified position

 6.Exit

--------------------------------------
Enter your choice:6


...Program finished with exit code 0
Press ENTER to exit console.
```