Program 5:

#include <stdio.h>

#include <stdlib.h>

struct node {

int info;

struct node\* link;

};

struct node\* start = NULL;

void createList()

{

if (start == NULL) {

int n;

printf("\nEnter the number of nodes: ");

scanf("%d", &n);

if (n > 0) {

int data;

struct node\* newnode;

struct node\* temp;

newnode = malloc(sizeof(struct node));

start = newnode;

temp = start;

printf("\nEnter number to be inserted : ");

scanf("%d", &data);

start->info = data;

for (int i = 2; i <= n; i++) {

newnode = malloc(sizeof(struct node));

temp->link = newnode;

printf("\nEnter number to be inserted : ");

scanf("%d", &data);

newnode->info = data;

temp = temp->link;

}

temp->link = NULL;

}

printf("\nThe list is created\n");

} else {

printf("\nThe list is already created\n");

}

}

void display()

{

struct node\* temp;

if (start == NULL)

printf("\nList is empty\n");

else {

temp = start;

while (temp != NULL) {

printf("Data = %d\n", temp->info);

temp = temp->link;

}

}

}

void deleteFirst()

{

struct node\* temp;

if (start == NULL)

printf("\nList is empty\n");

else {

temp = start;

start = start->link;

free(temp);

}

}

void deleteEnd()

{

struct node \*temp, \*prevnode;

if (start == NULL)

printf("\nList is Empty\n");

else {

temp = start;

while (temp->link != NULL) {

prevnode = temp;

temp = temp->link;

}

free(temp);

prevnode->link = NULL;

}

}

void deletePosition()

{

struct node \*temp, \*position, \*prevnode;

int i = 1, pos;

if (start == NULL)

printf("\nList is empty\n");

else {

printf("\nEnter index : ");

scanf("%d", &pos);

if (pos <= 0) {

printf("\nInvalid position\n");

return;

}

temp = start;

position = NULL;

if (pos == 1) {

start = start->link;

free(temp);

return;

}

while (i < pos && temp != NULL) {

prevnode = temp;

temp = temp->link;

i++;

}

if (temp == NULL) {

printf("\nInvalid position\n");

return;

}

position = temp;

prevnode->link = temp->link;

free(position);

}

}

int main()

{

createList();

int choice;

while (1) {

printf("\n\t1. To see list\n");

printf("\t2. For deletion of "

"first element\n");

printf("\t3. For deletion of "

"last element\n");

printf("\t4. For deletion of "

"element at any position\n");

printf("\t5. To exit\n");

printf("\nEnter Choice :\n");

scanf("%d", &choice);

switch (choice) {

case 1:

display();

break;

case 2:

deleteFirst();

break;

case 3:

deleteEnd();

break;

case 4:

deletePosition();

break;

case 5:

exit(1);

break;

default:

printf("Incorrect Choice\n");

}

}

return 0;

}

OUTPUT:

