Program

#include <stdio.h>

#include<stdlib.h>

typedef struct node

{

int data;

struct node \* next;

}node;

node \* create(int);

node \* insert\_beg(node \*start);

node \* insert\_end(node \*start);

node \* insert\_after(node \*start);

node \* delete\_beg(node \*start);

node \* delete\_end(node \*start);

node \* delete\_node(node \*start);

void display(node \*start);

int main() {

int n,ch;

node \*start=NULL;

do

{

printf("\n\n \*\*\*\*\*MAIN MENU \*\*\*\*\*");

printf("\n 1: Create a list");

printf("\n 2: Display the list");

printf("\n 3: Add a node at the beginning");

printf("\n 4: Add a node at the end");

printf("\n 5: Add a node after a given node");

printf("\n 6: Delete a node from the beginning");

printf("\n 7: Delete a node from the end");

printf("\n 8: Delete a given node");

printf("\n 9: EXIT");

printf("\n\n Enter your option : ");

scanf("%d", &ch);

switch(ch)

{

case 1:

printf("How many nodes:");

scanf("%d",&n);

start = create(n);

break;

case 2:

display(start);

break;

case 3: start = insert\_beg(start);

break;

case 4: start = insert\_end(start);

break;

case 5: start = insert\_after(start);

break;

case 6: start = delete\_beg(start);

break;

case 7: start = delete\_end(start);

break;

case 8: start = delete\_node(start);

break;

}

}while(ch !=9);

return 0;

}

node \* create(int n)

{

int i;

node \*start=NULL;

node\*newnode=NULL;

node \*ptr=NULL;

for(i=0;i<n;i++)

{

newnode=(node \*)malloc(sizeof(node));

printf("Enter the data for node number %d:",i+1);

scanf("%d",&newnode->data);

newnode->next=NULL;

if(start==NULL)

{

start=newnode;

}

else

{

ptr=start;

while(ptr->next!=NULL)

{

ptr=ptr->next;

}

ptr->next=newnode;

}

}

return start;

}

void display(node \*start)

{

node \* ptr=start;

while(ptr!=NULL)

{

printf("\t%d-->",ptr->data);

ptr=ptr->next;

}

}

node \* insert\_beg(node \*start)

{

node \*new\_node;

int item;

printf("Enter data:");

scanf("%d",&item);

new\_node=(node \*)malloc(sizeof(node));

new\_node->data=item;

new\_node->next=start;

start=new\_node;

return start;

}

node \* insert\_end(node \*start)

{

node \*new\_node;

node \*ptr;

int item;

printf("Enter data:");

scanf("%d",&item);

new\_node=(node \*)malloc(sizeof(node));

new\_node->data=item;

ptr=start;

while(ptr->next!=NULL)

{

ptr=ptr->next;

}

ptr->next=new\_node;

new\_node->next=NULL;

return start;

}

node \* insert\_after(node \*start)

{

node \*new\_node;

node \*ptr;

node \*preptr;

int item,val;

printf("Enter data:");

scanf("%d",&item);

printf("\nEnter the value after which the data has to be inserted : ");

scanf("%d", &val);

new\_node=(node \*)malloc(sizeof(node));

new\_node->data=item;

ptr=start;

preptr=ptr;

while(preptr->data!=val)

{

preptr=ptr;

ptr=ptr->next;

}

preptr->next=new\_node;

new\_node->next=ptr;

return start;

}

node \* delete\_beg(node \*start)

{

node \*ptr;

ptr=start;

start=start->next;

free(ptr);

return start;

}

node \* delete\_end(node \*start)

{

node \*ptr,\*prptr;

ptr=start;

while(ptr->next!=NULL)

{

prptr=ptr;

ptr=ptr->next;

}

prptr->next=NULL;

free(ptr);

return start;

}

node \* delete\_node(node \*start)

{

node \*ptr;

node \*preptr,\*temp;

int val;

printf("\nEnter the value after which the data has to be deleted : ");

scanf("%d", &val);

ptr=start;

preptr=ptr;

while(preptr->data!=val)

{

preptr=ptr;

ptr=ptr->next;

}

temp=ptr;

preptr->next=ptr->next;

free(temp);

return start;

}

Output

