#include<stdio.h>

#include<conio.h>

#include<alloc.h>

struct node

{

int info;

struct node \*next;

};

typedef struct node node;

node\* create();

node\* insbeg(node\*);

node\* insmid(node\*);

node\* insend(node\*);

node\* delbig(node\*);

node\* delmid(node\*);

node\* delend(node\*);

int count(node\*);

void sort(node\*);

void search(node\*);

void display(node\*);

void main()

{

int choice;

node \*head;

head=NULL;

while(1)

{

clrscr();

printf("\n\n\t\tThis is the program of LINEAR LINKED LIST.");

printf("\n\t\t\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

printf("\n\n\n\n\t\tWhich operation you want to perform --");

printf("\n\n\t\t------------------------------------------");

printf(“\n\t\t 1. Create the list.”)

printf("\n\t\t 2. Insert element at the beginning OR");

printf("\n\t\t 3. Insert element at the middle OR");

printf("\n\t\t 4. Insert element at the end OR");

printf("\n\t\t 5. Delete the starting element OR");

printf("\n\t\t 6. Delete the element in between OR");

printf("\n\t\t 7. Delete the last element OR");

printf("\n\t\t 8. Count the number of elements OR");

printf("\n\t\t 9. Sort the elements of the list OR");

printf("\n\t\t 10. Search any particular element OR");

printf("\n\t\t 11. Display the list OR");

printf("\n\t\t 12. Wanna exit from the program.");

printf("\n\t\t------------------------------------------");

printf("\n\n\n\n\t\tEnter your choice = ");

scanf("%d",&choice);

switch(choice)

{

case 1: head = create();

continue;

case 2: head=insbeg(head);

continue;

case 3: head=insmid(head);

continue;

case 4: head=insend(head);

continue;

case 5: head=delbig(head);

continue;

case 6: head=delmid(head);

continue;

case 7: head=delend(head);

continue;

case 8: clrscr();

printf("\n\n\t\tThe list has %d elements.",count(head));

printf("\n\n\t\t\*\*Press any key to continue.\*\*");

getch();

continue;

case 9: sort(head);

continue;

case 10: search(head);

continue;

case 11:display(head);

continue;

case 12:printf("\n\n\n\n\t\t\*\*You have successfully terminated from the program.\*\*");

getch();

exit(0);

default:printf("\n\n\t\tYou entered a invalid choice!!!");

printf("\n\n\t\tPress any key to choose again.......");

getch();

}

}

}

node \* create()

{

node \*p, \*temp,\*head;

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

head->next=NULL;

printf(“\n\n\t Enter data to insert or -999 to stop”);

scanf(“%d”, &head->info);

p=head;

while(p->info!= -999)

{

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

temp->next=NULL;

scanf(“%d”,temp->info);

p->next=temp;

p=temp;

}

return(head);

}

node\* insbeg(node \*head)

{

node \*ins;

int num;

clrscr();

printf("\n\n\t\tEnter the number to insert at the beginning = ");

scanf("%d",&num);

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

ins->info=num;

ins->next=head;

printf("\n\n\t\t\*\*Your element has been successfully inserted.\*\*");

getch();

return ins;

}

node\* insmid(node \*head)

{

node \*tmp,\*ins;

int pos,cout,num,i;

cout=count(head);

while(1)

{

clrscr();

printf("\n\n\t\tAt which position you want to insert the element = ");

fflush(stdin);

scanf("%d",&pos);

if(pos>cout+1 || pos<1)

{

printf("\n\n\t\tYou entered a wrong position.");

printf("\n\n\t\tPress any key to choose any other position.");

getch();

continue;

}

else

{

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

printf("\n\n\n\n\t\tEnter the number to insert = ");

fflush(stdin);

scanf("%d",&num);

if(pos==1)

{

ins->info=num;

ins->next=head;

return ins;

}

else

{

tmp=head;

for(i=2;i<pos;i++,tmp=tmp->next);

ins->info=num;

ins->next=tmp->next;

tmp->next=ins;

return head;

}

}

}

}

node\* insend(node \*head)

{

node \*ins,\*tmp;

int num;

clrscr();

printf("\n\n\t\tEnter any number to insert at the end = ");

fflush(stdin);

scanf("%d",&num);

if(head==NULL)

{

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

head->info=num;

head->next=NULL;

}

else

{

for(tmp=head;tmp->next!=NULL;tmp=tmp->next);

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

tmp->next=ins;

ins->info=num;

ins->next=NULL;

}

printf("\n\n\t\t\*\*Your element has been successfully inserted at end.\*\*");

getch();

return head;

}

node\* delbig(node \*head)

{

clrscr();

if(head==NULL)

{

printf("\n\n\t\tUnderflow occur!!!");

printf("\n\n\t\tThere is no element in the list for deletion.");

getch();

return head;

}

else

{

printf("\n\n\t\t\*\*Starting element has been successfully deleted.\*\*");

getch();

return head->next;

}

}

node\* delmid(node \*head)

{

node \*tmp;

int pos,cout;

char ch;

while(1)

{

clrscr();

if(head==NULL)

{

printf("\n\n\t\tUnderflow occur!!!");

printf("\n\n\t\tThere is no element in the list for deletion.");

getch();

}

else

{

printf("\n\n\tEnter the position of the element you wanna to delete =");

scanf("%d",&pos);

cout=count(head);

if(pos<1 || pos>cout)

{

printf("\n\n\t\tYou entered a wrong position.");

printf("\n\n\t\tPress any key to choose any other position");

printf("\n\n\t\tOR press 'N' to go back on the main menu.");

if((ch=getch())=='n' || ch=='N')

return head;

continue;

}

else

if(pos==1)

head=head->next;

else

{

tmp=head;

for(cout=2;cout<pos;cout++,tmp=tmp->next);

tmp->next=tmp->next->next;

}

printf("\n\n\t\t\*\*Your element has been successfully deleted.\*\*");

getch();

}

return head;

}

}

node\* delend(node \*head)

{

node \*tmp;

clrscr();

tmp=head;

if(head==NULL)

{

printf("\n\n\t\tUnderflow occur!!!");

printf("\n\n\t\tThere is no element in the list for deletion.");

getch();

}

else

{

if(head->next==NULL)

head=NULL;

else

while(tmp->next!=NULL)

{

tmp=tmp->next;

if(tmp->next->next==NULL)

{

tmp->next=NULL;

break;

}

}

printf("\n\n\t\t\*\*Last element has been successfully deleted.\*\*");

}

getch();

return head;

}

int count(node \*head)

{

int count;

for(count=0;head!=NULL;count++,head=head->next);

return count;

}

void sort(node \*head)

{

node \*tmp1,\*tmp2,\*swap;

clrscr();

if(head==NULL)

{

printf("\n\n\t\t\*\*Lallu, sort karne k liye elements hone chahiye!!!\*\*");

getch();

return;

}

for(tmp1=head;tmp1->next!=NULL;tmp1=tmp1->next)

for(tmp2=tmp1->next;tmp2!=NULL;tmp2=tmp2->next)

if(tmp1->info > tmp2->info)

{

swap->info=tmp1->info;

tmp1->info=tmp2->info;

tmp2->info=swap->info;

}

printf("\n\n\t\t\*\*Your list has been sorted.\*\*");

getch();

}

void search(node \*head)

{

node \*tmp;

int item,flag=0;

tmp=head;

clrscr();

if(head==NULL)

{

printf("\n\n\t\tEmpty list ko search kar raha hai, akal nahi hai.");

printf("\n\n\t\tPlease inseart some elements first then try again.");

}

else

{

printf("\n\n\t\tEnter the item to search in the list = ");

scanf("%d",&item);

printf("\n\n\t\tYour result is as follows --\n");

while(tmp!=NULL)

{

if(tmp->info==item)

{

printf("\n\n\t\t[%d] -->found",tmp->info);

flag=1;

}

else

printf("\n\n\t\t%d",tmp->info);

tmp=tmp->next;

}

if(flag==0)

printf("\n\n\n\n\t\t\*\*Your item is not present in the whole list!!!\*\*");

else

printf("\n\n\n\n\t\t\*\*Your item found at the above locations.\*\*");

}

getch();

}

void display(node \*head)

{

node \*tmp;

tmp=head;

clrscr();

if(head==NULL)

{

printf("\n\n\t\tThere is no element in the linked list.");

printf("\n\n\t\tPlease inseart some elements first then try again.");

}

else

{

printf("\n\n\t\tYour list is as follows --\n");

while(tmp!=NULL)

{

printf("\n\t\t%d",tmp->info);

tmp=tmp->next;

}

}

getch();

}