Question:

Implement the following functions for a single linked list:

1. Insert at end
2. Delete from beginning
3. Delete from end

Solution:

#include<iostream>

using namespace std;

struct Node

{

int data;

struct Node \*next;

};

Node \* create(int);

Node \* insert\_begin(Node \*,int);

Node \* insert\_end(Node \*,int);

Node \* delete\_begin(Node \*);

Node \* delete\_end(Node \*);

void display(Node \*);

Node \* create(int data)

{

Node \*nptr=new Node;

nptr->data=data;

nptr->next=NULL;

return nptr;

}

Node \* insert\_begin(Node \*head,int data)

{

Node \*nptr=create(data);

if(head==NULL)

{

head=nptr;

nptr->next=NULL;

return head;

}

nptr->next=head;

head=nptr;

return head;

}

Node \* insert\_end(Node \*head,int data)

{

Node \*nptr=create(data);

if(head==NULL)

{

head=nptr;

return head;

}

Node \*temp=create(data);

temp=head;

while(temp->next!=NULL)

{

temp=temp->next;

}

temp->next=nptr;

return head;

}

Node \* delete\_begin(Node \*head)

{

if(head==NULL)

{

return head;

}

head=head->next;

return head;

}

Node \* delete\_end(Node \*head)

{

if(head==NULL)

{

cout<<"List is empty";

}

else if(head->next==NULL)

{

head=NULL;

}

else

{

Node \*temp=head;

while(temp->next->next!=NULL)

{

temp=temp->next;

}

temp->next=NULL;

}

return head;

}

void display(Node \*head)

{

Node \*temp=head;

if(head==NULL)

{

cout<<"List is empty\n";

return;

}

cout<<"List Elements are : ";

while(temp!=NULL)

{

cout<<temp->data<<" ";

temp=temp->next;

}

cout<<"\n";

}

int main()

{

Node \*head=new Node;

head=NULL;

int ch,data;

do

{

cout<<"1. Insert at beginning\n";

cout<<"2. Insert at end\n";

cout<<"3. Delete at beginning\n";

cout<<"4. Delete at end\n";

cout<<"5. Display the List\n";

cout<<"6. Exit\n";

cout<<"Enter your choice : \n";

cin>>ch;

switch(ch)

{

case 1:cout<<"Enter the data to be inserted : ";

cin>>data;

head=insert\_begin(head,data);

break;

case 2:cout<<"Enter the data to be inserted : ";

cin>>data;

head=insert\_end(head,data);

break;

case 3:head=delete\_begin(head);

break;

case 4:head=delete\_end(head);

break;

case 5:display(head);

break;

default:cout<<"Enter the correct choice";

break;

}

}while(ch!=6);

return 0;

}