**Assignment B18**

Write C++ program to store set of negative and positive numbers using linked list. Write functions to

a) Insert numbers

b) Delete nodes with negative numbers

c) Create two more linked lists using this list, one containing all positive numbers and other containing negative numbers

d) For two lists that are sorted; Merge these two lists into third resultant list that is sorted

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**#include** <iostream>

**#include**<cstdio>

**#include**<cstdlib>

**using** **namespace** std;

**struct** node

{

**int** info;

**struct** node\*next;

}\*start,\*start1,\*start2;

**class** single\_llist

{

**public**:

node\***create\_node**(**int**);

**void** **insert**();

**void** **delete\_negative**();

**void** **display**();

**void** **sort**();

**void** **split**();

**void** **merge**();

};

**int** **main**()

{

single\_llist s1;

start=NULL;

**int** choice;

**while**(1)

{

cout<<"\n1.Insert integer\n2.Display integer list\n3.Create two linklist\n4.Merge List\n5.Delete Integers\n6.Exit";

cout<<"\nEnter your choice";

cin>>choice;

**switch**(choice)

{

**case** 1:

s1.insert();

cout<<endl;

**break**;

**case** 2:

cout<<"\*\*\*\*Elements in list\*\*\*\*"<<endl;

s1.display();

cout<<endl;

**break**;

**case** 3:

s1.split();

cout<<endl;

**break**;

**case** 4:

s1.merge();

cout<<endl;

**break**;

**case** 5:

s1.delete\_negative();

cout<<endl;

**break**;

**case** 6:

exit(1);

**break**;

**default**:

cout<<"WRONG CHOICE...";

**return** 0;

}

}

}

node \***single\_llist::create\_node**(**int** value)

{

**struct** node \*temp;

temp=**new**(**struct** node);

**if**(temp==NULL)

{

cout<<"Memory not allowed"<<endl;

**return** 0;

}

**else**

{

temp->info=value;

temp->next=NULL;

**return** temp;

}

}

**void** **single\_llist::insert**()

{

**int** value,n;

**struct** node\*temp,\*q;

cout<<"Enter size of List"<<endl;

cin>>n;

cout<<"Enter +ve and -ve Integers"<<endl;

q=start;

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

{

cin>>value;

temp=create\_node(value);

**if**(start==NULL)

{

start=temp;

}

**else**

{

q=start;

**while**(q->next!=NULL)

{

q=q->next;

}

q->next=temp;

}

}

}

**void** **single\_llist::display**()

{

**struct** node\*temp;

**if**(start==NULL)

{

cout<<"The list is empty!!"<<endl;

**return** ;

}

temp=start;

**while**(temp!=NULL)

{

cout<<temp->info<<" ";

temp=temp->next;

}

}

**void** **single\_llist::sort**()

{

**struct** node \*q, \*s;

**int** value;

**if** (start == NULL)

{

cout<<"The List is empty"<<endl;

**return**;

}

q = start;

**while** (q != NULL)

{

s=q->next;

**while**(s!=NULL)

{

**if** (q->info > s->info)

{

value = q->info;

q->info = s->info;

s->info = value;

}

s=s->next;

}

q = q->next;

}

}

**void** **single\_llist::delete\_negative**()

{

**struct** node \*p;

sort();

p=start;

**while**(p->info<0)

{

start=p->next;

p=p->next;

}

display();

}

**void** **single\_llist::split**()

{

**struct** node \*ptr1,\*ptr2;

sort();

ptr1=start;

**while**(ptr1->info<0)

{

ptr2=ptr1;

ptr1=ptr1->next;

}

start1=start;

ptr2->next=NULL;

start2=ptr1;

cout<<"\nList of Negative Numbers :"<<endl;

start=start1;

display();

cout<<"\nList of Positive Number :"<<endl;

start=start2;

display();

}

**void** **single\_llist::merge**()

{

**struct** node\*p;

**for**(p=start1;p->next!=NULL;p=p->next)

{}

p->next=start2;

start=start1;

cout<<"\*\*\*\*Elements in merged list\*\*\*\*"<<endl;

display();

}

==========================================================================

1.Insert integer

2.Display integer list

3.Delete Integers

4.Create two link list

5.Merge List

6.Exit

Enter your choice1

Enter size of List

5

Enter +ve and -ve Integers

-1

-2

3

4

5

1.Insert integer

2.Display integer list

3.Delete Integers

4.Create two link list

5.Merge List

6.Exit

Enter your choice2

\*\*\*\*Elements in list\*\*\*\*

-1 -2 3 4 5

1.Insert integer

2.Display integer list

3.Delete Integers

4.Create two link list

5.Merge List

6.Exit

Enter your choice4

List of Negative Numbers :

-2 -1

List of Positive Number :

3 4 5

1.Insert integer

2.Display integer list

3.Delete Integers

4.Create two link list

5.Merge List

6.Exit

Enter your choice5

\*\*\*\*Elements in merged list\*\*\*\*

-2 -1 3 4 5

1.Insert integer

2.Display integer list

3.Delete Integers

4.Create two link list

5.Merge List

6.Exit

Enter your choice3

3 4 5

1.Insert integer

2.Display integer list

3.Delete Integers

4.Create two link list

5.Merge List

6.Exit

Enter your choice6