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**Roll No:28**

**Assignment No.:-4.5**

**Title:Implementation of program based on Quick Sort technique.**

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#include<iostream.h>

#include<conio.h>

#include<stdlib.h>

class LIST

{

int \*A,n;

public:

LIST(int);

void READ\_LIST\_028();

void SHOW\_LIST\_028();

void QUICK\_SORT\_ASC\_028(int,int);

void QUICK\_SORT\_DESC\_028(int,int);

int PARTITION\_ASC\_028(int,int);

int PARTITION\_DESC\_028(int,int);

};

LIST::LIST(int par)

{

n=par;

A=new int[n+2];

}

void LIST::READ\_LIST\_028()

{

cout<<endl<<"Enter Elements:";

for(int i=1;i<=n;i++)

{

//cin>>A[i];

A[i]=random(999);

}

A[i]=9999;//positive infinity

}

void LIST::SHOW\_LIST\_028()

{

cout<<endl;

for(int i=1;i<=n;i++)

{

cout<<A[i]<<" ";

}

}

void LIST::QUICK\_SORT\_ASC\_028(int p,int q)

{

if(p<q)

{

int j=q+1;

j=PARTITION\_ASC\_028(p,j);

QUICK\_SORT\_ASC\_028(p,j-1);

QUICK\_SORT\_DESC\_028(j+1,q);

}

}

void LIST::QUICK\_SORT\_DESC\_028(int p,int q)

{

if(p<q)

{

int j=q+1;

j=PARTITION\_DESC\_028(p,j);

QUICK\_SORT\_ASC\_028(p,j-1);

QUICK\_SORT\_DESC\_028(j+1,q);

}

}

int LIST::PARTITION\_ASC\_028(int m,int p)

{

int temp=A[m];

int i=m;

do

{

do

{

i=i+1;

}

while(A[i]<temp);

do

{

p=p-1;

}

while(A[p]>temp);

if(i<p)

{

int t=A[i];A[i]=A[p];A[p]=t;

}

else

break;

}

while(1);

A[m]=A[p];

A[p]=temp;

return p;

}

int LIST::PARTITION\_DESC\_028(int m,int p)

{

int temp=A[m];

int i=m;

do

{

do

{

i=i+1;

}

while(A[i]>temp);

do

{

p=p-1;

}

while(A[p]<temp);

if(i<p)

{

int t=A[i];A[i]=A[p];A[p]=t;

}

else

break;

}

while(1);

A[m]=A[p];

A[p]=temp;

return p;

}

void main()

{

int no;

clrscr();

cout<<endl<<"\n Enter no of Elements:";

cin>>no;

LIST obj(no);

obj.READ\_LIST\_028();

cout<<endl<<"List before Sorting:";

obj.SHOW\_LIST\_028();

obj.QUICK\_SORT\_ASC\_028(1,no);

// obj.QUICK\_SORT\_DESC\_028(1,no);

cout<<endl<<"List after Sorting:";

obj.SHOW\_LIST\_028();

getch();

}