Array based List Implementation

```
#include <iostream>
using namespace std;
#define MAX 10
class list
{
     private:
           int a[MAX];
          int last;
     public:
          int i,p,x ;

          void initialize()
{
    int n,c;
last=0;
cout<<"\n Enter the number of elements:";
cin>>n;
cout<<"\n Enter the list items:\n";
for(int i=1;i<=n;i++)
{
       cin>>a[i];
       last++;
}

}


void add (int x)
{
a[last+1]=x;
last++;
}

void insert(int x,int p)
{
for(int i=last;i>=p;i--)
a[i+1]=a[i];
a[p]=x;
last++;
}

void del(int p)
{
for(i=p;i<=last;i++)
          a[i]=a[i+1];
last--;
}
```

```
int locate(int x)
{
for(i=1;i<=last;i++)
{
if(a[i]==x)
return(i);
}
}


int retrieve(int p)
{
for(i=1;i<=last;i++)
{
if(i==p)
return(a[i]);
}
}

int end()
{
return(last+1);
}

void display()
{
for(int i=1;i<=last;i++)
        cout<<a[i]<<"\n";
}


};


int main()
{
   list l;
   int c,x,p;
   l.initialize();
do
{
cout<<"\n **********LIST OPERATIONS ********** \n";
cout<<"\n 1.Add";
cout<<"\n 2.Insert";
cout<<"\n 3.Delete";
cout<<"\n 4.Locate";
cout<<"\n 5.Retrieve";
cout<<"\n 6.End of list";
cout<<"\n 7.Display";
```

```
cout<<"\n 8.Exit";
cout<<"\n ********************************** \n";
cout<<"\n Enter your choice:";
cin>>c;
switch(c)
{
case 1:
cout<<"\nEnter the item to be added:";
cin>>x;
l.add(x);
break;

case 2:
cout<<"\nEnter the item and the position:";
cin>>x;
cin>>p;
while((p>MAX)||(p<1))
{
cout<<"\nNot possible due to size";
cout<<"\nEnter another possible position:";
cin>>p;
}
l.insert(x,p);
break;

case 3:
cout<<"\nEnter the position of the item:";
cin>>p;
while((p>MAX)||(p<1))
{
cout<<"\nNot possible due to size";
cout<<"\nEnter another possible position:";
cin>>p;
}
l.del(p);
break;

case 4:
cout<<"\nEnter the item:";
cin>>x;
cout<<"\nThe position of the item is:"<<l.locate(x);
break;

case 5:
cout<<"\nEnter the position of the item:";
cin>>p;
while((p>MAX)||(p<1))
{
cout<<"\nNot possible due to size";
cout<<"\nEnter another possible position:";
```

```
cin>>p;
}
cout<<"\nThe item is:"<<l.retrieve(p);
break;

case 6:
cout<<"\nThe end of the list is:"<<l.end();
break;

case 7:
cout<<"\nThe Complete list is: \n";
l.display();
break;

case 8:
exit(0);

default:
cout<<"\nEnter the correct choice:";
break;
}
}while((c>0)&&(c<=8));
}
```