CISP 430
Data Structures
Assignment 2

Stacks and Queues are data structures which may be implemented as Abstract Data Types - ADTs may be implemented as objects which promote reuse of the ADT.

List Abstract Data Type

```
Data:
 listItemType : record
     data: dataType
     implementation : implementationType
          //   implementation is any artifact reqd to  implement
               the listItemType within a target language
end record
ListItem : listItemType

Operations:
  Init()
  InsertIntoList(data)
     Insert(data,ATSTART)
     Insert(data,INTOMIDDLE)
     Insert(data,ATEND)
  Delete(dataKey)
  bool Search(dataKey)
  Sort(order)
     Sort(ASC | DESC)
  Iterate()
     start()
     dataType getNext()
     bool hasNext()
```

Stack Abstract Data Type

```
     Data: ListItemType
     Operations
       Init()
       push(data)
       dataType pop()
       bool isEmpty()
       bool isFull()
       dataType showTop()
```

Queue Abstract Data Type

```
     Data: ListItemType
     Operations
       Init()
       enqueue(data)
       dataType dequeue()
       bool isEmpty()
       bool isFull()
       sort()
          sort(ASC | DESC)
       bool search(dataKey)
```

Develop an object hierarchy which implements Stack and Queue ADTs as derivatives of a List ADT. Test your implementation via a stub program that declares "instances" of the stack and queue objects. Be certain to exercise all methods(constructors,etc) in your stub tests.

Submit the following items for review:

1) A copy of the class model for your design
2) a copy of all source code file(s).
3) a copy of all data file(s).
4) a copy of all reports generated by the stub tests.