1. (12 points) Given the class definition for a linked list variation (e.g., doubly linked, circular, dummy head node), write the implementation of a specific one of its member functions (e.g., insert, remove, find).

2. Given a description of an abstract data type representing a list with specific behavior when items are inserted and removed,…
   
   (a) (2 points) List the data members which would be required for a specific type of implementation (i.e., linked list or array-based) of this data type.
   
   (b) (5 points) Complete an implementation of a specific member function in this implementation.
   
   (c) (3 points) Explain the difficulties associated with the other type of implementation of this data type.
   
   (d) (12 points) Complete an implementation of another specific member function in the original implementation of the data type.

3. Given a program containing a recursive function…
   
   (a) (5 points) Specify the output of this program for a specific user input value.
   
   (b) (5 points) Check the description that best identifies the activity performed by the recursive function.

4. (12 points) Write a recursive function which performs a specific operation.

5. (10 points) Given the existence of a stack class, write a function for a driver program that deals with a stack parameter in a specific way.

6. Given a specific infix expression…
   
   (a) (5 points) Specify the corresponding postfix expression.
   
   (b) (5 points) Calculate the result of evaluating the infix expression from (a) by using a stack to resolve the postfix expression that you calculated.

7. (12 points) Given the class definition of a linked list-based queue, write an additional member function that performs a specific operation with respect to this type of queue.

8. (12 points) Given the class definition of an array-based queue, write an additional member function that performs a specific operation with respect to this type of queue.