New Beginnings – Summer 2018

C++ Programming - Linked List Practice

Here is a small set of practice problems which use Linked Lists. Each successive problem uses the solution from the previous(they build into a complete solution). It may be easier to do this way as opposed to trying to develop a complete Linked List from scratch. If you have already completed the Linked List from A4, this may still be of use – more practice.

1. Create a Link List with two classes:
    a. **class Node**
        i. Data members
            1. int data; // Payload
            2. Node * next; // Pointer to next node in the linked list
        ii. Member functions
            1. void display()
                a. Code:

```
void display()
{
   cout << data << endl;
}
```

    b. **class List**
        i. Data members
            1. head which is a pointer to a Node object;
                a. Node * head;
        ii. Member functions
            1. Constructor
                a. List::List();
                b. Sets the head pointer to NULL.
                    i. This identifies that the list is empty
            2. Add a new node
                a. void addNode(int);
                b. Creates a new Node object and inserts it into the list
                    i. Take care of the three cases
                        1. Empty list
                        2. Insert at beginning
                        3. Insert in middle or end
            3. Display the list
                a. void display()
                b. Here is the code for the display:

```
void display() {
  node * temp;
  temp = head;
  while(temp) {
      cout << temp->display() << endl;
      temp = temp->next;
  }
}
```

For the main() function:

1. Create the list
2. Add 5 nodes using the addNode function. (The values can be any integer – you choose.)
3. Print the list.