

CS 212 – Spring 2019 – Project 2

Assigned: 1 November 2019
Due: 13 November 2019
Cutoff: 18 November 2019

List of Candles

Create a class called *CandleNode* which has fields for the *data* (a *Candle*) and *next* (*CandleNode*) instance variables. Include a one-argument constructor which takes a *Candle* as a parameter. (For hints, see the PowerPoint on "Static vs. Dynamic Structures".)

```
public CandleNode (Candle c) { . . }
```

The instance variables should have protected access. There will not be any get and set methods for the two instance variables.

Create an abstract linked list class called *CandleList*. This should be a linked list with head node as described in lecture. Modify it so that the data type in the nodes is *Candle*. The no-argument constructor should create an empty list with *first* and *last* pointing to an empty head node, and *length* equal to zero. Include an append method in this class.

Create two more linked list classes that extend the abstract class *CandleList*: One called *UnsortedCandleList* and one called *SortedCandleList*, each with appropriate no-argument constructors. Each of these classes should have a method called *add(Candle)* that will add a new node to the list. In the case of the *UnsortedCandleList* it will add it to the end of the list by calling the append method in the super class. In the case of the *SortedCandleList* it will insert the node in the proper position to keep the list sorted.

Instantiate two linked lists, and for every *Candle* read from the file, add it to the unsorted and sorted lists using the *add* method. You will end up with the first list having the *Candles* from the input file in the order they were read, and in the second list the *Candles* will be in sorted order. Display the unsorted and sorted *Candles* in the GUI just as in project 1.

Submitting the Project.

You should now have the following files to submit for this project:

```
Project2.java  
Candle.java  
CandleGUI.java  
CandleNode.java  
CandleList.java  
UnsortedCandleList.java  
SortedCandleList.java
```

Submit a jar file.

Rather than upload all the files above separately, we will use Java's facility to create the equivalent of a zip file that is known as a **Java AR**chive file, or "jar" file.

Instructions on how to create a jar file using Eclipse are on Blackboard. Create a jar file called **Project2.jar** and submit that. Be sure the jar file contains *source* code, not classes.