

Project #3

1. Implement the class BST from figure 5.14 - 5.18 in section 5.4 p. 171-178 in your textbook. Use this implementation to create a city database as a BST according to specifications on question 5.3 p.200 in the textbook.
2. Implement the class MaxHeap from figure 5.19 in section 5.5 p.180 in your textbook. Use this implementation to create a priority queue based on the MaxHeap class according to specifications on question 5.5 p.200 in the textbook.
3. Complete the implementation of the Huffman coding tree fig 5.27-5.29 p.190-191 in section 5.6 in your textbook, according to specifications of question 5.7 on p.201 in textbook.
4. **Optional-Extra credit** Write a simple **line editor** as a console application. The internal copy of the file is maintained as a double linked list of lines, i. e. one line of text for each node. Start the program with entering the command *"myEdit myFile"* after which a prompt appears on screen along with the line number. If the letter I is entered with a number *n* following it , then insert the text to be followed before line *n*. If I is not followed by a number, then insert the text before the current line. If D is entered with two numbers *n* and *m*, one number *n*, or no number following it , delete the lines *n* through *m* , line *n* or the current line. Do the same with the command L, which stands for listing lines. If A is entered, then append the text to the existing lines. Entry E signifies exit and save the text in a file. Here is an example:

```
MyEdit myFile
1>The first line
2>
3> Add another line
4> I 3
3> The second line
4> One more line
5> L
1> The first line
2>
3> The second line
4> One more line
5> Add another line
5> E
```

This is a team project. Get in touch with the members of you team right away, get together and promptly make all the decisions about how you are going to work. In particular, you have to make it fair in regard to work responsibilities; schedule your team meetings in the computer lab and set clear deadlines and responsibilities. Remember that in the end you will all share the same grade on this particular project. Talk to each other and make sure you explain to other team members your work and in turn understand what was done by others. While you may work together or share tasks on coding, each of you has to test the whole project and understand is as a whole. Make sure you understand how each program works, in detail, and talk to each other about all problems you encounter. Work out any problem your team may have since excuses based on trying to blame others for non-cooperation are unacceptable. To get credit for your work you need to *submit on Canvas a group folder with all names, printouts of all the source programs and any program outputs* Include your remarks as a team and your individual remarks. The project is due **week 12 2020**

Test all programs using your own test data and data on Canvas handout for this project.