CSC148 - Introduction to Assignment 2: Autocompleters!

This worksheet is going to be a bit different than usual. Rather than learning about a new topic, we’re going to go through a guided introduction to Assignment 2, to make sure that everyone is able to make a great start to the assignment.

1. On the Assignment 2 handout, read through the introduction and The Autocompleter ADT section.

   (a) What are the operations supported by the Autocompleter ADT?

   (b) The autocomplete operation has an optional argument limit. Why is this argument optional? What happens if it is not passed to a call to autocomplete?

   (c) How would we call the remove operation to delete all values stored in an Autocompleter?
2. On the A2 handout, continue reading with the section *The prefix tree data structure* up to the end of *Example simple prefix tree*. To make sure you understand the idea, in the space below draw a simple prefix tree containing the strings 'csc', 'mat', 'chm', 'soc', 'chat'. Use the same format as the example given on the handout.

3. Finish reading the provided A2 handout to learn about the *SimplePrefixTree* class. Write down the *name* and *type* of each attribute we’ve described for this class in the handout. (Remember: an autocomplete can store values of any type.)

4. Consider the example simple prefix tree from Question 2. Suppose the values have these weights:
   - 'csc' has weight 2.5.
   - 'chat' has weight 2.0.
   - The other strings have weight 1.0.

   (a) Suppose we use the *sum* to aggregate weights in our prefix tree. On your diagram above, write down the weight of each node in the prefix tree. (Start at the leaves and work your way up.)

   (b) Suppose we run an *autocomplete* operation on this tree with prefix ['c'] and limit 1. What string would be returned?

   (c) Repeat the previous two parts using the *average* to aggregate weights in our prefix tree (this is “Option 2”). How do your calculations change?