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Steps

First I implemented a node class to handle the different node type, as well as a Leaf class and an InternalNode class to help better handle special cases and more easily access other classes. Then I made two helper classes for input and output, to more easily. Then I started the encoding algorithm for encoding the letters into binary representations, to help with the compression class. The compression class takes the input from a file and reads it in and makes a tree based on frequencies to merge together until there is one tree with all of the relative frequencies. I also made a code tree class to help with the implementation of the tree itself and seemed easier to do this in its own class instead of another. There were a few problems along the way especially when dealing with the generics of some of the objects but these problems were overcome.

I learned a lot about compression with this project and how different ways of storing data can be better especially when it comes to a fixed amount of space. I also found this very interesting and will probably follow up with more research on the subject of compression in the futures since the idea is very interesting to me.

This project was very educational, and interesting. It taught how to graphically look at different things like letters being stored in memory and helped me to better understand the need for more space efficient algorithms.