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Report

The data structure I used to store the information for synset.txt was two HashMaps. I chose this symbol table because the time is constant to retrieve a value stored inside it. This is important when using these two files because the first step is to convert each noun to an iterable integer that corresponds to a line inside synset.txt and the second step is to convert the shortest ancestor's integer to the first noun that corresponds to the synset.txt. These two steps required HashMaps.

`The hypernyms.txt was stored in the data structure that digraph.java uses. The data structure digraph.java uses is an adjacency list and this is effective to use because it creates a way to traverse the elements in a directed manner.

The worst case running time for the algorithm to compute SAP is O(E + V) because the BreadthFirstDirectedPath computes in this time and the for loop used goes through all vertices. So E + V + E + V + V where E is the edges and V is the vertexes is still O(E + V). The first two E + V are from the first two calls to BreadthFirstDirectedPath and the last V is from the for loop that checks through all vertexes. The best case running time is when there are no edges and one vertex and this results in O(1).