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Project4 report

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I used Hashtable to store the information in synsets.txt because we need to match the id and string, and the fastest and easiest, and stable way to store them by key and value structure was hashtable. I used bfs to store the information in hypernyms.txt because it helps to find the shortest path to find length and ancestor by knowing ids.

In SAP, I mostly used bfs, and found shortest length and ancestor by checking v and w if there are path and their distance coincidentally.

Both Worst and best running time as a function of the structure of the graph is $6V+4E$ because I use 4 bfs for getting length and ancestor so $4O(V+E)$, and I loop V for each length and ancestor method. Bfs has always $O(\text{Vertices}+\text{edges})$ because it always run thru all nodes that it contains. (dfs is also same).