Lab 3 Report

In This lab we had to complete Sequential and Binary search algorithm.

Sequential Algorithm:

A screen shot of a computer code

Description automatically generated with low confidence

The sequential search has an efficiency class of O(n), meaning its runtime grows linearly with the size of the input. In our code, the sequential search implementation has a nested loop, resulting in an overall efficiency of O(n^2) since it compares each word in the test data with every word in the word list.

Binary Search:

We needed to use a linear compare of 2 sorted words.

A picture containing text, screenshot, font

Description automatically generated

The binary search algorithm is generally faster than the sequential search algorithm for sorted arrays. The binary search has an efficiency class of O(log n), which means its runtime grows logarithmically with the size of the input. The binary search implementation, although using a loop, performs a binary search on the sorted word list, resulting in an overall efficiency of O(n log n), as it performs a logarithmic number of comparisons for each word in the test data.

Output:

A screenshot of a computer

Description automatically generated with medium confidence

In the end, in terms of efficiency, the binary search algorithm is more efficient than the sequential search algorithm.