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CS 32

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Project 4 Report

1. I believe there are no bugs in my program, it should be fully functional.

2. I meet the Big O for all functions.

3. My Trie’s find method was implemented recursively, so I wrote a helper method called findHelp to do the recursive heavy lifting for the function. My find function calls the find helper, which puts found items into the vector. My find function then checks if there are any values in the vector and returns true if there are.

Here is my pseudocode for the findhelper:

if the first letter of string matches the label

if we have reached last letter of word

put values into vector

else

move past first letter

call findHelper for all of the currentNode’s children

else if exactMatch is False

set exactMatch to true

if we have reached last letter of word

put values into vector

else

move past first letter

call findHelper for all of the currentNode’s children

else

return

My findGenomesWithDNA() function uses the matches found in trie to look through a map of Genomes to see if there are matches. Then, loop through the the hits and compare characters one by one, and if we find the longest run, add to a map. Loop through final map and add to vector.

Pseudocode:

Loop through all hits:

Use map to find the Genome

Extract from genome and compare the first three letters

If letters don’t match, mark Mistake bool to true

Loop through extracted string

Compare characters one by one

if char does not match

if mistake is true stop looping

else mark mistake as true

If this is the longest one found, add it to the second map

Loop through map

If we found a saved length and position

Add to vector

If vector is empty return false, else return true