# Trie's find() method

initialize an empty vector of ValueType named result

call the findHelper with the key to be key, !exactMatchOnly to be canBeWrong, m\_root to be p, result to be result, in which:

if p is nullptr return

if key is empty

for everything in m\_value, push it back to result

return

for every child pointer in this node

if the corresponding label equals the current character in key

recursively call the findHelper function with the new key (move on from the old key by 1 character), the same canBeWrong value, the current child pointer and vecter result

else if we can be wrong at this point and the current pointer p is not m\_root

recursively call the function with the new key (move on from the old key by 1 character), set canBeWrong to false, the current child pointer and vecter result

# GenomeMatcher's findGenomesWithThisDNA() method

if fragment’s length is smaller than minimum length

return false

if minimum length is smaller than minimum search length

return false

use trie’s find method and fragment’s first minimumSearchlength character to get a search result

for all search results:

use findHelper to get the total length with current search result’s genome’s name index, in which:

get current’s gen’s previousFragment (start with pos and have minimumSearchLength)

if the previousFragment are already a snip

set exactMatchOnly to be true

start with i equals m\_minimumSearchLength, and for every position index we are going to compare in gen and fragment

use gen’s extract method to get the current character

if the current character does not equal fragment’s corresponding character

if exactMatchOnly is true

return i

set exactMatchOnly to true

return i

if the current totallength is smaller than minimumlength

ignore this and continue

check if such search result’s genome’s name is already in the tempMatches

if so, update the tempMatches with the longer total length

if not, insert the new search result’s genome name and total length and position to the tempMatches

set found to be true

if not found

return false

push back all the items in the unordered\_map tempMatches to vector matches

return true