CPSC 535 Advanced Algorithms
Project 2: Cumulative frequencies
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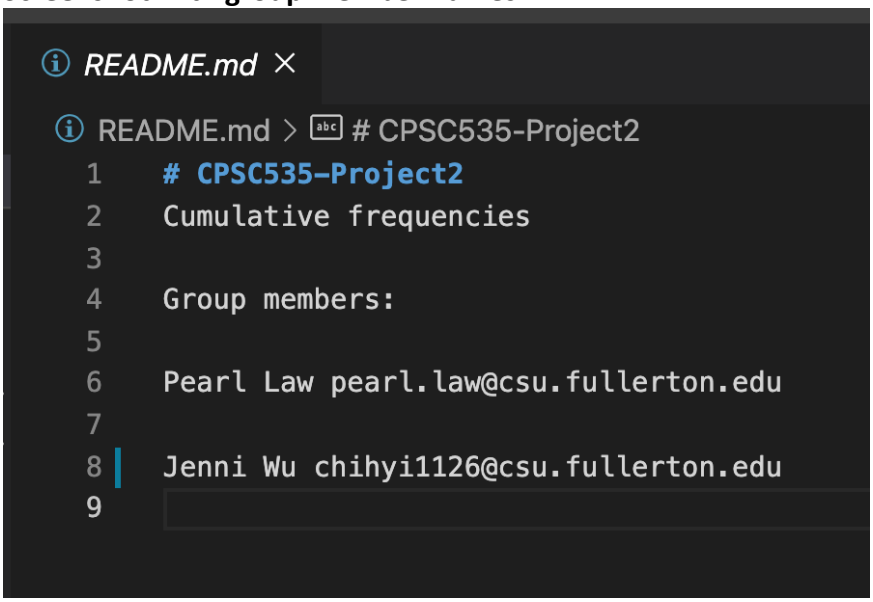
Screenshot with group member names:



Pseudocode:
Input: text S, length n
- word + frequency list
- list of pairs of similar words

Output: list of cumulative frequency of each set of similar words in S
Linear time O(n)

```
def combine_unique_strs(set<str_pair> &syn)
{
   str_set.push_back((*(syn.begin())).first);
   str_set.push_back((*(syn.begin())).second);

   int idxcount = 2;
   int currentidx = 0;

   while (currentidx < idxcount) do
      while( (it = find_if(syn.begin(), syn.end(), pair_equal(str_set[currentidx]))) != syn.end() ) do
         // found next string connected to str_set
         new_str = (str_set[currentidx] == (*it).first ? (*it).second : (*it).first);
         // if string is not already present, insert it into components
         if (find(str_set.begin(), str_set.end(), new_str) == str_set.end()) do
            str_set.push_back(new_str);
```

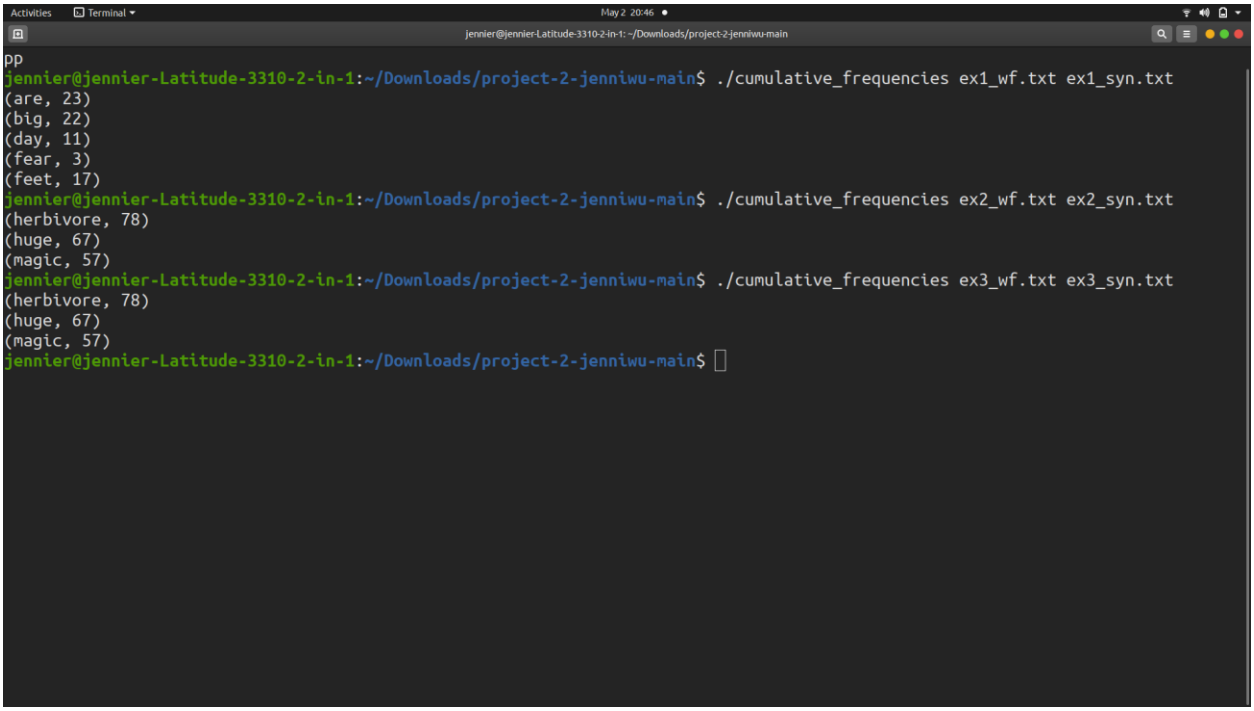
```
            idxcount++;
          endif
          syn.erase(it);
       endwhile
       currentidx++;
   endwhile

   return set<string>(str_set.begin(), str_set.end());
}

def cumulative_word_frequency(map<string, int> wf, set<str_pair> syn)
{
   vector<set<string>> common_words;
   // Merge pairs with common elements together
   while (!syn.empty() do
         common_words.push_back(combine_unique_strs(syn);
   endwhile

   // Create set of cumulative frequency pairs
   set cf;
   for (words = 0 to (common_words.sixe()-1)) do
      sum = 0;
      for (s = 0 to (words.size()-1)) do           // Calculate sum of frequencies in each set
         sum += wf[s];
      endfor
      cf.insert(make_pair((*words.begin()), sum));          // Push in pair with first element of each
set and its calculated sum
   endfor

   return cf;
}
```

Brief description of how to run code:

g++ -o cumulative_frequencies cumulative_frequencies.cpp -std=c++11

./cumulative_frequencies ex1_wf.txt ex1_syn.txt

Screenshots of code executing for examples:


Activities
Terminal
May 2 20:46
jennier@jennier-Latitude-3310-2-in-1: ~/Downloads/project-2-jenniwu-main
pp
jennier@jennier-Latitude-3310-2-in-1:~/Downloads/project-2-jenniwu-main$ ./cumulative_frequencies ex1_wf.txt ex1_syn.txt
(are, 23)
(big, 22)
(day, 11)
(fear, 3)
(feet, 17)
jennier@jennier-Latitude-3310-2-in-1:~/Downloads/project-2-jenniwu-main$ ./cumulative_frequencies ex2_wf.txt ex2_syn.txt
(herbivore, 78)
(huge, 67)
(magic, 57)
jennier@jennier-Latitude-3310-2-in-1:~/Downloads/project-2-jenniwu-main$ ./cumulative_frequencies ex3_wf.txt ex3_syn.txt
(herbivore, 78)
(huge, 67)
(magic, 57)
jennier@jennier-Latitude-3310-2-in-1:~/Downloads/project-2-jenniwu-main$