CIS 1.5 Fall 2008 Lab 4, Part 2

Instructions

- This is the second part of the third homework/lab assignment for CIS 1.5. Read the first part of the assignment for complete instructions, due date and submission details.

1 Read some more strings

- The file `dna.txt` holds four strings.
- Write a program that reads in all four strings.
- The program should concatenate the first, second and third strings, and call the result `dna1`.
- The program should concatenate the second, third and fourth strings, and call the result `dna2`.
- The program should print out `dna1` and `dna2`.

  (1 point)

2 A function that complements

- Write a function called `complementary` which takes as its argument a string and an integer that gives the length of the string, and returns the complement of that string.
- `complementary` can do this by using the function `complement` that you wrote for Lab 4, Part 1 — `complementary` can call `complement` on each element of the string in turn.
- Your program should call `complementary` to compute the complement of `dna2`, and assign this value to the string `dna3`.
- Your program should print `dna3`

  (2 points)

3 A function that counts

- Write a function `countTheTs` that takes as its argument a string, and returns an integer that gives the number of `t`s in that string.
- Your program should use `countTheTs` to calculate the number of `t`s in the complement of `dna1`.
- Print out this number.

  (2 points)

4 Now hand it in

Save your working program as **hw4-2.cpp** and send it to me along with the program that you wrote for Lab4, Part 1.

(Turn over for extra credit question)

5 Extra credit question

- Write a function that searches `dna1` and `dna2` for a sequence that starts with gag and ends with gcg.
- If the function finds such a sequence, it should return the characters between gag and gcg.
- Your function should use string member functions.

  (1 point)
- Now write another function that does the same work, but does it by treating the strings as arrays of characters.

  (1 point)