

CIS 1.5 Fall 2008 Lab 4, Part 1

Instructions

- This is the first part of the fourth homework/lab assignment for CIS 1.5.
- The entire assignment will be worth 10 points.
- The first part is worth 5 points and will be distributed and worked on in class on Wednesday November 5th
- The second part is worth 5 points and will be distributed and worked on in class on Monday November 10th
- **Both parts together are due on Sunday November 16th** and must be submitted by email (as below).
- **Follow these emailing instructions:**
 1. Create a mail message addressed to *parsons@sci.brooklyn.cuny.edu* with the subject line **CIS 1.5 HW4**.
 2. Attach **ONLY** the **.cpp** files for each part, as outlined below.
DO NOT ATTACH THE **.cbp** (CodeBlocks Project) files!
 3. Failure to follow these instructions will result in points being taken away from your grade. The number of points will be in proportion to the extent to which you did not follow instructions... (which can make it a lot harder for me to grade your work — grrrr!)

1 Loading and printing strings

Write a program that:

1. Prompts the user to enter a string, and then reads that string in.
2. Reads two strings in from the file `dna.txt` which Professor Parsons will give you, or which you can download from the class website (it is on the page for Unit IV).
3. Prints all three strings.
4. Prints the two strings from the file in reverse (they are both 10 characters long).

(2 points)

2 A function to test part of a string

1. Now extend your program to contain a function `isItT` which tests if a character is the letter `t`. That is, the function should take a character as an argument, and return `true` if that character is a `t` and `false` otherwise.
2. Use `isItT` to print:

```
The third character is a t
```

if the third character of the second string that the program reads from `dna.txt` is a `t`

(1 points)

3 Calculate the complement of a string

The two strings you read from `dna.txt` are representations of short lengths of DNA, with the letters t, a, c and g representing the four building blocks from which DNA is constructed.

These building blocks have special properties, among which are the fact that a is the *complement* of t, and g is the complement of c.

1. Use this fact to write a function `complement` that computes the complement of each of the four letters in a string. This is a function that takes a character as a parameter, and returns a character. Thus:

`complement(c)` will return g

`complement(t)` will return a

and so on.

2. Now, get your program to concatenate the two strings from `dna.txt`, and then print out the result of this concatenation, and the complement of this concatenation.

(2 points)

4 Now hand it in

Save the (working) program that you have written as **hw4-1.cpp** and send it to me along with the answers to Lab 4 Part 2.

Lab 4, part 2

... will be distributed in class on Monday November 10th. You should try to finish this work before then.