



Lab 2: Always a Smarter Way

The purpose of this assignment is to become familiar with the idea of solving a problem in a different way so that its solution is much faster.

Step 1. Using online research, find out who Jean-Dominique Bauby was. Write a short paragraph using a word processor, explaining who he was, and what his most awesome accomplishment was. [As with everything in this class, the paragraph *must be your own work* – not cut/pasted from some online document.]

Step 2. Explain in a short paragraph how letter frequency in French was used in his accomplishment.

E S A R I N T U L O M D F B V H G J Q Z Y X K W

Step 3. Using online research, find out the letter frequency order for English, and give it.

Step 4. Now suppose you have to write a sentence in English by blinking your eye. You would prefer frequency order to the usual ABCDEF ... order, too. We want to see how the two compare. Using the sentence:

My name is <first name><last name> I take CSP and my mind takes flight like a butterfly

figure out how many letters your assistant would have to try to figure out the sentence, first using normal alphabetical order, and then using English's frequency order. Later, we may write a program for this problem, but today we do it manually by counting letters. [Wow, we're going to be eager to learn how to program!!!] An easy way to do this problem manually is as follows. List the sentence down the page, and then figure the position for each letter. For my name I would write

	abc	freq	
L	12	11	<i>that is, L is the 12th letter in alpha ordering, the 11th in freq</i>
A	1	3	
R	18	9	
R	18	9	
Y	25	17	

Sum 74 49 so frequency is better than alphabetic in this case by $74/49 = 1.5$.

Note. If, while doing this problem, you figure out one or more ways to make the work easier, explain what your improvement is, and how it speeds the solution. If no improvement occurs to you, and you solve it by counting it out on your fingers, that's fine, too. No worries. Finding how much better one is than another is the question.

Hand In. Turn in your work – the paragraphs and calculations – to the Lab 2 drop box.