CS16 Section 10 Mini-Assignment

Due in your section the week of:

4/22 - 4/24

Problem 1: Functional Programming warmup

In class we talked about two higher order functions called `map` and `reduce` (it is up to you to decide whiche one is appropriate for the problem). The functions you pass into `map` and `reduce` should be anonymous functions. You might have to think about each one for a few minutes, but the solutions are a single line each. You may pseudocode these, but they should be easily convertible to a working python program. You may assume for each of these that you have a variable `list` as your input.

Part 1: Length of each string in list

Write code for the `string_length` function, which takes in a list of strings and returns a list of their leghths

Example

`string_length(["cat", "a", "square"])` → `[3,1,6]`

Part 2: Max string length in list

Write code for the `max_string_length` function, which takes in a list of strings and returns the length of the longest string in the list.

Example

`max_string_length(["cat", "a", "orange","square"])` → `6`

Problem 2: Online Algorithms and Complexity

We also went through online algorithms and complexity during lecture. Answer the following questions in a sentence or two.

1. In comparing an online algorithm to its offline counterpart, we see that the biggest difference in their costs occurs when the former has a cost of 300 units and the latter has a cost of 100 units. What is the competitve ratio in this case?
2. What are the definitions of tractable and intractable problems?