Announcements

Academic integrity policy description finalized: be sure to read the new version.
http://www.cs.cornell.edu/courses/cs1110/2014sp/about/integrity.php

The aspect students are most likely to not realize: To not acknowledge the contributions of others is fraudulent. Therefore, to us, the acknowledgment part of your submissions is really important to get right: "At the top of your assignment, you must list the names of the authors (the students who are submitting the work for course credit) and of every person or other source that contributed to the submission." You don't have to credit course materials or course staff; those resources are understood.

Lecture 16: More recursion, including A3

Example: Palindromes

- String with \(\geq 2\) characters is a palindrome if:
  - its first and last characters are the same, and
  - the rest of the characters form a palindrome

- All strings with fewer than 2 characters are palindromes

Practical application: RNA secondary structure: loops form because of "antepalindromes" (G/C and A/U)

Code skeleton

```python
def is_palindrome(s):
    """Returns: True if string s is a palindrome, False otherwise"""
    # base case

    # recursive case
```
RNA structure and "antepalindromes"

Distant influence in A3 trial structures

Let n1 be a converted node. How might we compute whether another node oldone was an influencer, direct or indirect?

Recursive formulation: oldone is an influencer if it is a direct influencer (i.e., in n1's contacted_by list), or if oldone is an influencer of at least one of n1's direct influences (again, the nodes in n1's contacted_by list.)

Code skeleton

```python
def is5Ahairpin(s):
    # Assumes: True if string s represents a hairpin RNA sequence with a loop consisting of 5 As, False otherwise.
    Pre: s is a (possibly empty) string of As, Cs, Gs, and Us.
    # Assume we have access to function iscomplement(x,y)
```

Distant influence in A3 trial structures

Let n1 be a converted node. How might we compute whether another node oldone was an influencer, direct or indirect?

Recursive formulation: oldone is an influencer if it is a direct influencer (i.e., in n1's contacted_by list), or if oldone is an influencer of at least one of n1's direct influences (again, the nodes in n1's contacted_by list.)

Code skeleton

```python
def is5Ahairpin(s):
    # Assumes: True if string s represents a hairpin RNA sequence with a loop consisting of 5 As, False otherwise.
    Pre: s is a (possibly empty) string of As, Cs, Gs, and Us.
    # Assume we have access to function iscomplement(x,y)
```