
Assignment Weight: 1.0

1. Complete the function body.

```
def greatest_difference(nums1, nums2):
    """ (list of number, list of number) -> number

    Precondition: len(nums1) == len(nums2) and nums1 != []

    Return the greatest absolute difference between numbers at corresponding
    positions in nums1 and nums2.

    >>> greatest_difference([1, 2, 3], [6, 8, 10])
    7
    >>> greatest_difference([1, -2, 3], [-6, 8, 10])
    10

    """
```

2. Complete the function body.

```
def can_pay_with_two_coins(denoms, amount):
    """ (list of int, int) -> bool

    Return True if and only if it is possible to form amount, which is a
    number of cents, using exactly two coins, which can be of any of the
    denominations in denoms.

    >>> can_pay_with_two_coins([1, 5, 10, 25], 35)
    True
    >>> can_pay_with_two_coins([1, 5, 10, 25], 20)
    True
    >>> can_pay_with_two_coins([1, 5, 10, 25], 12)
    False

    """
```

3. Complete the function body.

```
def all_fluffy(s):
    """ (str) -> bool

    Return True iff every character in s is fluffy. Fluffy characters are
    those that appear in the word 'fluffy'.
    >>> all_fluffy('fullfly')
    True
    >>> all_fluffy('firefly')
    False

    """
```

4. Complete the function body.

```
def digital_sum(nums_list):
    """ (list of str) -> int

    Precondition: s.isdigit() holds for each string s in nums_list.

    Return the sum of all the digits in all strings in nums_list.

    >>> digital_sum(['64', '128', '256'])
    34
    >>> digital_sum(['12', '3'])
    6

    """
```

5. In math, the Collatz conjecture states that starting from any positive integer, you will eventually reach the number 1 by repeatedly applying the following two rules:

- if the number is even, divide it by 2 to get the next number in the sequence
- if the number is odd, multiply by 3 and add 1 to get the next number in the sequence

Repeatedly applying the rules generates a sequence of numbers. The Collatz step count is the number of applications of the rules required before the sequence reaches 1. For example, there are 8 Collatz steps in the Collatz sequence:

$n = 6 \rightarrow n = 3 \rightarrow n = 10 \rightarrow n = 5 \rightarrow n = 16 \rightarrow n = 8 \rightarrow n = 4 \rightarrow n = 2 \rightarrow n = 1$

Complete this function to count the Collatz steps for a particular number n .

```
def count_collatz_steps(n):
    """ (int) -> int

    Precondition:  n >= 1

    Return the number of steps it takes to reach 1 by applying the two
    rules of the Collatz conjecture beginning from the positive integer n.

    >>> count_collatz_steps(6)
    8
    """
```

Before 11:59:59 p.m., Friday, 16 April 2021 (2nd Friday), you must upload a `hw1.py` file with all your solutions of the above questions to the course Blackboard assignment for Homework 1.