Lists

COSC 101: Intro to Computing I
October 4, 2017
Write a function `find_min` that takes a list of numbers and returns the smallest number. Do not use `min()` or list functions.

```python
def find_min(L):
    '''(list of int) -> int
    Given a list of numbers L, return the smallest number.
    >>> find_min([12, 9, 10])
    9
    >>> find_min([12, 9, 10, 9])
    9
    >>> find_min([-12, 9, 10, -12, -12])
    -12
    '''
    min_value = L[0]  # initialize w/ first value in L
    for i in range(len(L)):
        if L[i] < min_value:
            min_value = L[i]
    return min_value
```
Write a function `index_of_min` that takes a list of numbers and returns the first index of the smallest number. (You cannot use `min()` or any list functions.)

```python
def index_of_min(L):
    '''(list of int) -> int
    Given a list of numbers L, return index of the smallest number.
    >>> index_of_min([12, 9, 10])
    1
    >>> index_of_min([12, 9, 10, -7])
    3
    >>> index_of_min([-12, 9, 10, -12, -12])
    0
    ...
    min_idx = 0
    for i in range(len(L)):
        if L[i] < L[min_idx]:
            min_idx = i
    return min_idx
```
Write a function `indexes_of_min` that takes a list of numbers and returns a list containing the indexes of all occurrences of the smallest number. (You cannot use `min()` or any list functions.)

```python
def indexes_of_min(L):
    '''(list of int) -> list of int
    Given a list of numbers L, return a list of the indexes of the smallest number.
    >>> indexes_of_min([12, 9, 10])
    [1]
    >>> indexes_of_min([12, 9, 10, 9])
    [1, 3]
    >>> indexes_of_min([-12, 9, 10, -12, -12])
    [0, 3, 4]
    '''
```

def indexes_of_min(L):
    '''(list of int) -> list of int
    Given a list of numbers L, return a list of the
    indexes of the smallest number.
    >>> indexes_of_min([12, 9, 10])
    [1]
    >>> indexes_of_min([12, 9, 10, 9])
    [1, 3]
    >>> indexes_of_min([-12, 9, 10, -12, -12])
    [0, 3, 4]
    '''

    min_indexes = []
    min_value = L[0]  # initialize w/ first value in L
    for i in range(len(L)):
        if L[i] < min_value:
            min_indexes = [i]
            min_value = L[i]
        elif L[i] == min_value:
            min_indexes += [i]
    return min_indexes