

**22C:16 Quiz 7**  
**Date: Mar 20th, 2012**

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1. [5 points] What does each of the following expression evaluate to? Assume that `isPrime` is a boolean function that takes one argument and returns `True` if that argument is a *prime number*; otherwise the function returns `False`. Assume that `concat` is a function that takes two arguments `a` and `b` and returns `a + b`.

(a) `map(range, range(5))` Ans. `[ [], [0], [0,1], [0,1,2], [0,1,2,3] ]`

(b) `len(filter(isPrime, range(20)))` Ans. `8`

(c) `reduce(concat, map(str, range(1, 15, 3)))` Ans. `'1471013'`

(d) `reduce(concat, range(1, 10, 2))` Ans. `25`

(e) `reduce(concat, map(range, range(5)))` Ans. `[0, 0, 1, 0, 1, 2, 0, 1, 2, 3]`

**Turn over for Problem 2.**

2. [5 points] Here is a partially completed function called `secondMax` that takes a list of numbers as a parameter and returns the number that is second largest in the list. For example, if the given list is `[-1, 11, 3, 8, 1, 7]` then the function would return `8`. If the given list is `[-1, 11, 3, 11, 1, 7]` then the function would return `11`. Using the built-in Python functions and methods, we can solve this problem in 3 lines of code. The idea is to find the maximum element `m`, then find the index (position) of `m`, and then find the maximum element in the list obtained by excluding `m`. Your task is to supply the two missing lines of code.

```
def secondMax(L):  
    m = max(L)  
  
    k = L[0:L.index(m)] + L[L.index(m)+1: ]  
  
    return max(k)
```

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