Take aways from Assignment 4

Here are some of my takeaways from Assignment 4:

**1. List Comprehensions are awesome!**

The ``zip`` function is great and functionally beautiful but I found that List Comprehensions are way more intuitive at least to me. The syntactic breakup is akin to the way sets are described.  For example:

set notation.

Is the same as:

s = [ 2 \* x for x in range( 1000 ) if x <= 10 ]

Or more generally,

[ output input\_set predicate ]

I used list comprehensions almost everywhere I could in this homework.

**2. Tuple Unpacking**

For the problem 3 where ordered pairs had to be generated, I almost exclusively used Tuple unpacking to extract out the n and c components. In general, if you have a list something like:

x = [ (1,1), (2,1) ]

I found iterating over the list in the following manner super helpful:

for n,e in x:

print( "n = {0}; c = {1}".format( round(n, 2), round(c,2))

Combining that with List Comprehensions and things are great!

x = [ c for c,\_ in some\_list ]

y = [ n for \_,c in some\_list ]

**3. Numpy is your friend**

There are so many awesome things numpy does so efficiently that it's a usually the best option for basic numerical computation. The function that came in super handy for me was ``np.cumsum``. The documentation of which is awesome as [well.](https://docs.scipy.org/doc/numpy-1.13.0/reference/generated/numpy.cumsum.html)

**4. Printing Formats for Zero Padding**

You can forcefully display numerics in the string formatting with certain number of 0s padded by doing something like:

print( "{0:02d}".format( 2 ))

This line will print out 02.