Iterators and Generators Homework

Problem 1

Create a generator that generates the squares of numbers up to some number N.

In [1]:

```
def gensquares(N):

    pass
```

In [2]:

```
for x in gensquares(10):
    print(x)
```

```
0
1
4
9
16
25
36
49
64
81
```

Problem 2

Create a generator that yields "n" random numbers between a low and high number (that are inputs).
Note: Use the random library. For example:

In [3]:

```
import random

random.randint(1,10)
```

Out[3]:

```
9
```

In [4]:

```
def rand_num(low,high,n):

    pass
```

In [5]:

```
for num in rand_num(1,10,12):
    print(num)
```

```
6
1
10
5
8
2
8
5
4
5
1
4
```

Problem 3

Use the iter() function to convert the string below into an iterator:

In [ ]:

```
s = 'hello'

#code here
```

Problem 4

Explain a use case for a generator using a yield statement where you would not want to use a normal function with a return statement.

Extra Credit!

Can you explain what *gencomp* is in the code below? (Note: We never covered this in lecture! You will have to do some Googling/Stack Overflowing!)

In [6]:

```
my_list = [1,2,3,4,5]

gencomp = (item for item in my_list if item > 3)

for item in gencomp:
    print(item)
```

```
4
5
```

Hint: Google *generator comprehension*!

Great Job!