Lecture 6

0 Queries

Lazy Import (in 1st section)

There's another way of imported.

```
from math import sqrt
```

Upside: less typing, downside: pollute namespace

1 For Loops

For loops are another kind of Python loop. They are great if we know in advance how many times we want to do things.

```
for count in range(10):
    print(count)
```

Let's revisit problems 1 and 2 from the loops worksheet.

```
num = int(input("Enter a number: ")) # Number 1
for x in range(1, num + 1):
    print(x)

num = int(input("Enter a number: ")) # Number 2
for x in range(num, -1, -1):
    print(x)
```

Numbers 3 and 4 are not a good fit for a for loop; why? But number 5 is! Try it on your own! Come show me in office hours!

2 Nested Loops

We can have loops inside other loops! Let's look at a few and see if we can figure out what they do.

String Operations

We can add strings! We can multiply strings and ints!

3 Default Values

Let's write a distance function! (Then modify it to default to distance from origin!)

```
from math import sqrt

def distance(x1, y1, x2=0, y2=0):
    return sqrt((x1 - x2) ** 2 + (y1 - y2) ** 2)
```

```
import unittest
from funcs import distance

class Tests(unittest.TestCase):
   def test_distance1(self):
      self.assertEqual(distance(1, 2, 4, 6), 5)

   def test_distance2(self):
      self.assertEqual(distance(-5, 12), 13)


if __name__ == '__main__':
   unittest.main()
```

Lists

```
my_list = [2, 3, 7.1, "hi"]
my_list
my_list[0]
my_list[3]
my_list[4]
my_list[100] # Guesses???
my_list[-2] # Guesses???

my_list[2] = -45.1 # Lists are mutable!!!
my_list
my_list.append(9) # we can add more stuff to the end!

list2 = [8, 0]
my_list + list2
my_list
list2
my_list = my_list + list2
my_list
my_list * 2
my_list
my_list *= 2
```