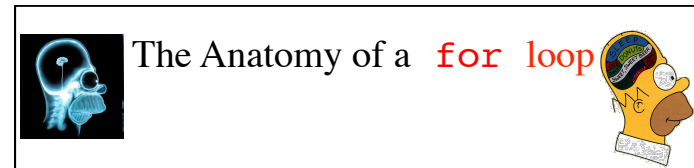


```

#include <iostream>
using namespace std;
int main( )
{
    int count;
    for (count = 0; count < 500; count++)
        cout << "I will not throw paper airplanes in class." << endl;
    return 0;
}
    
```

CSE 111 Bio: Program Design I
Lecture 13: more loops

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The Anatomy of a **for loop**

for myVariable in myList:
 | **Do all the stuff that's**
 | **Indented beneath the for loop**

Stuff at this level of indentation
is done afterwards!

Factorial...

Goal: Take an integer n as input and return n!

```

def factorial(n):
    ''' Returns the factorial of n '''
    
```

Factorial...

Goal: Take an integer n as input and return n!

```

def factorial(n):
    ''' Returns the factorial of n '''
    product = 1
    for factor in range(1, n+1):
        product = product * factor
    return product
    
```

Approximating e...

Goal: Take a value n as input and return
 $1 + 1/1! + 1/2! + \dots + 1/n!$

```
def e(n):
    '''Returns 1 + 1/1! + 1/2! + ... 1/n!
    Assume that factorial(n) is available '''
```

Approximating e...

Goal: Take a value n as input and return
 $1 + 1/1! + 1/2! + \dots + 1/n!$

```
def e(n):
    '''Returns 1 + 1/1! + 1/2! + ... 1/n!
    Assume that factorial(n) is available '''
    sum = 1 # Why 1?
    for denominator in range(1, n+1):
        sum = sum + 1.0/factorial(denominator)
    return sum
```

Why need to initialize ?

Note the float

Can use the function that already defined

A mystery...

```
def mystery(n):
    for d in range(2, n):
        if n % d == 0:
            return False
    return True
```



mystery(6) returns:

- A. False
- B. True
- C. False False True True
- D. True True False False
- E. False False True True False
- F. True True False False True
- G. No clue

A mystery...

```
def mystery(n):
    for d in range(2, n):
        if n % d == 0:
            return False
    return True
```



What if you don't want to exit?

Print, not return

What if you want to return the list of all the results of the if test?

A mystery...returning a list

```
def mystery1(n):  
    myList = []  
    for d in range(2, n):  
        if n % d == 0:  
            myList = myList+[False]  
        else:  
            myList = myList+[True]  
    return myList
```



A mystery...returning a list

Take 2

```
def testNum(d)  
    if n % d == 0:  
        return False  
    else:  
        return True  
  
def mystery2(n):  
    return map(testNum, range(2,n))
```

