

Python Recursion

Recursion

- function call itself

Iterative vs Recursive call

```
In [10]: def multiply (a,b):  
         res=0  
         for i in range(b):  
             res+=a  
         return res  
multiply(2,3)
```

Out[10]: 6

```
In [16]: # Factorial of a number  
def factorial(n):  
    if n==0:  
        return 1  
    return n*factorial(n-1)  
factorial(5)
```

Out[16]: 120

```
In [24]: # palindrome of a string  
def palindrome(string):  
    if len(string)==1:  
        print( "palindrome")  
    elif string[0]!=string[-1]:  
        print("not palindrome")
```

```
else:  
    palindrome(string[1:-1])
```

```
In [28]: palindrome("nama")
```

not palindrome

The rabbit problem : if 2 new rabbits are put in a pen, how many rabbits will be in the pen after 1 year?

- always produce one male and one female offspring
- can produce once every month
- can reproduce once they are one month old

```
In [31]: def fibo(n):  
        if n<=1:  
            return 1  
        return fibo(n-1)+fibo(n-2)
```

```
In [33]: fibo(12)
```

```
Out[33]: 233
```

END