```
def memoization(f):
  def wrapper(*args):
    if not args in wrapper.cache:
      wrapper.cache[args] = f(*args)
    else:
      print("### cached value for {0} --> {1}". \
                    format(args, wrapper.cache[args]))
    return wrapper.cache[args]
  wrapper.cache = dict()
  return wrapper

@memoization
def fact(n):
  return 1 if (n<=1) else n*fact(n-1)

@memoization
def fibo(n):
  return n if n<=1 else fibo(n-1)+fibo(n-2)

@memoization
def sum(n, m):
  return n if m==0 else sum(n+1, m-1)
```