Recursive version

- An alternative is to think of this computation as:

$$a * b = \underbrace{a + a + \ldots + a}_{\text{b copies}}$$

$$= a + \underbrace{a + \ldots + a}_{\text{b-1 copies}}$$

$$= a + a * (b - 1)$$

Recursion

- This is an instance of a **recursive** algorithm
  - Reduce a problem to a simpler (or smaller) version of the same problem, plus some simple computations
    - **Recursive step**
  - Keep reducing until reach a simple case that can be solved directly
    - **Base case**
- a * b = a; if b = 1 (Base case)
- a * b = a + a * (b-1); otherwise (Recursive case)

```
def recurMul(a, b):
    if b == 1:
        return a
    else:
        return a + recurMul(a, b-1)
```

Base case

Recursive step