The “classic” recursive problem

- Factorial

  $n! = n * (n-1) * \ldots * 1$

  $$= \begin{cases} n * (n-1)! & \text{if } n > 1 \\ 1 & \text{if } n = 1 \end{cases}$$

```
def factI(n):
    """assumes that n is
  an int > 0
      returns n!"""
    res = 1
    while n > 1:
        res = res * n
        n -= 1
    return res
```

```
def factR(n):
    """assumes that n is
  an int > 0
      returns n!"""
    if n == 1:
        return n
    return n*factR(n-1)
```