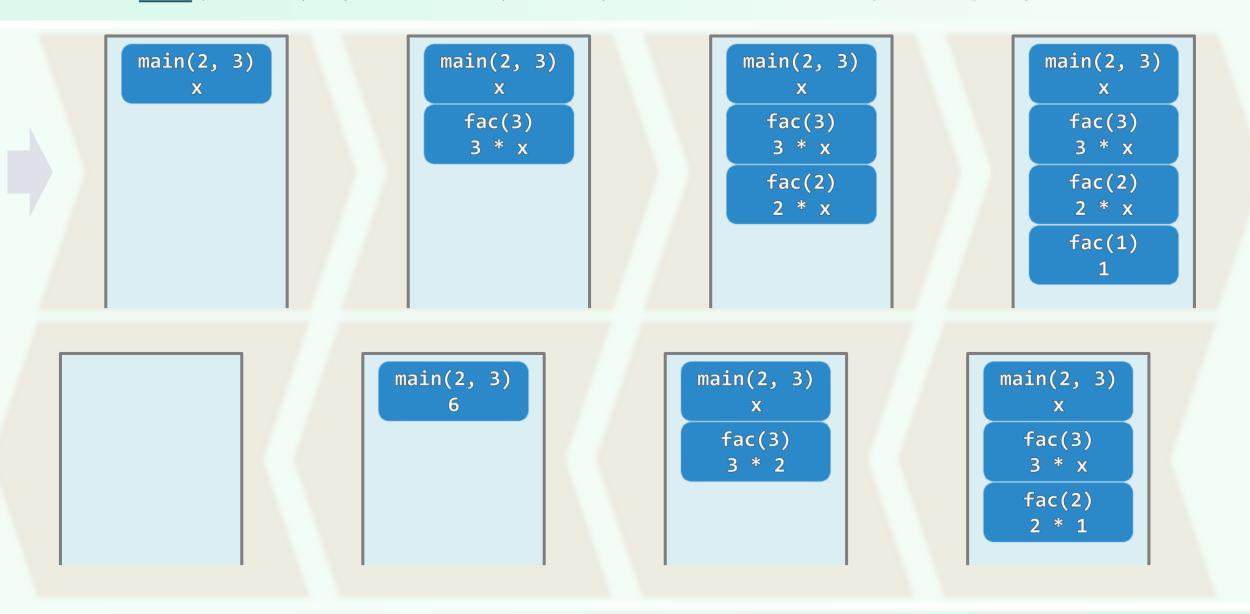
栈与队列

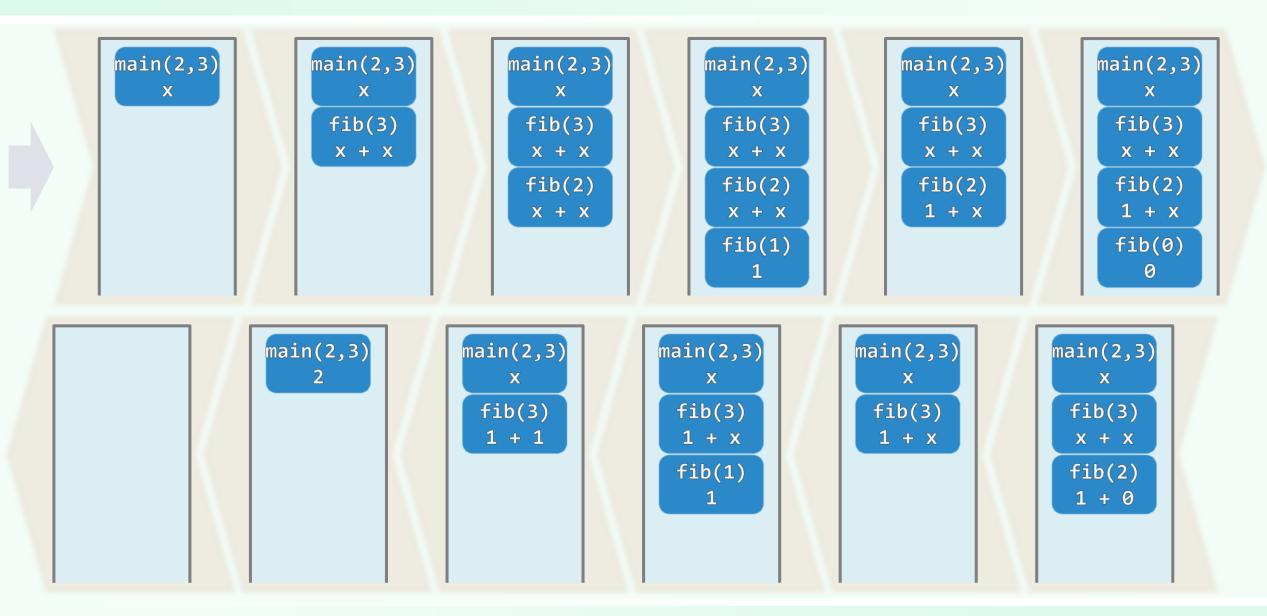
调用栈: 实例

邓俊辉 deng@tsinghua.edu.cn

int fac(int n) { return (n < 2) ? 1 : n * fac(n - 1); }</pre>



int fib(int n) { return (n < 2) ? n : fib(n - 1) + fib(n - 2); }



空间复杂度

```
❖ hailstone(int n) {
    if (1 < n)
       n % 2 ? odd( n ) : even( n );
 even( int n ) { hailstone( n / 2 ); }
 odd( int n ) { hailstone( 3*n + 1 ); }
❖ main( int argc, char* argv[] )
 { hailstone( atoi( argv[1] ) ); }
❖ 可见, 递归算法所需的空间
 主要取决于递归深度,而非递归实例总数
```

```
call stack
main(2, 10)
hailstone(10)
  even(10)
hailstone(5)
   odd(5)
hailstone(16)
  even(16)
hailstone(8)
   even(8)
hailstone(4)
   even(4)
hailstone(2)
   even(2)
hailstone(1)
```

```
call stack
 main(2, 27)
hailstone(27)
   odd(27)
hailstone(82)
  even(82)
hailstone(41)
   odd(41)
hailstone(124)
  even(124)
hailstone(62)
  even(62)
hailstone(31)
   odd(31)
hailstone(94)
```