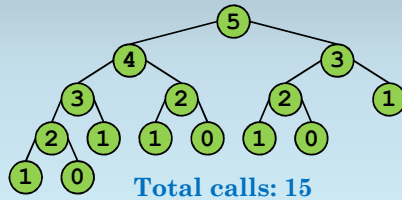


## Recursive Fibonacci Does Too Much Work



There is a closed form solution...

And iteration is not hard.

## A Brief Iterative Implementation of Fibonacci

```

int32_t fib (int32_t N)
{
    int32_t i, j, k, t;
    for (i = j = k = 1; N > k;
         t = j, j = j + i, i = t,
         k++) { }
    return j;
}
  
```

## Linear Recursive Fibonacci Using a **static** Variable

```

int32_t fib (int32_t N)
{
    static int32_t fibval;
    int32_t pred, result;
    if (2 > N) {
        fibval = 1;
        return 1;
    }
    pred = fib (N - 1);
    result = pred + fibval;
    fibval = pred;
    return result;
}
  
```

## Binary Search Can Also Be Written Recursively

We can also write binary search recursively...

```

int32_t binary_search
(int32_t array[],
 int32_t low,
 int32_t high,
 int32_t value)
{
  
```

the array to search

the part of the array in which to look

the value to find