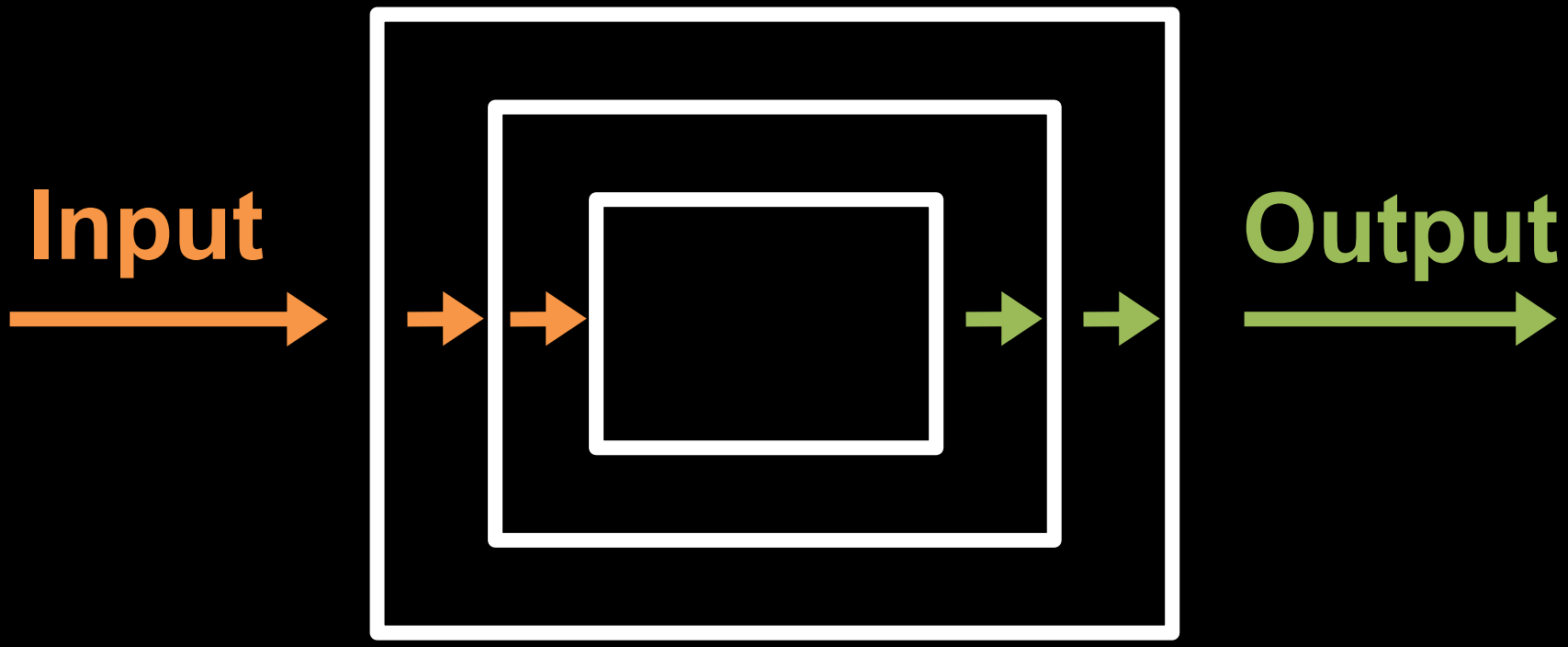
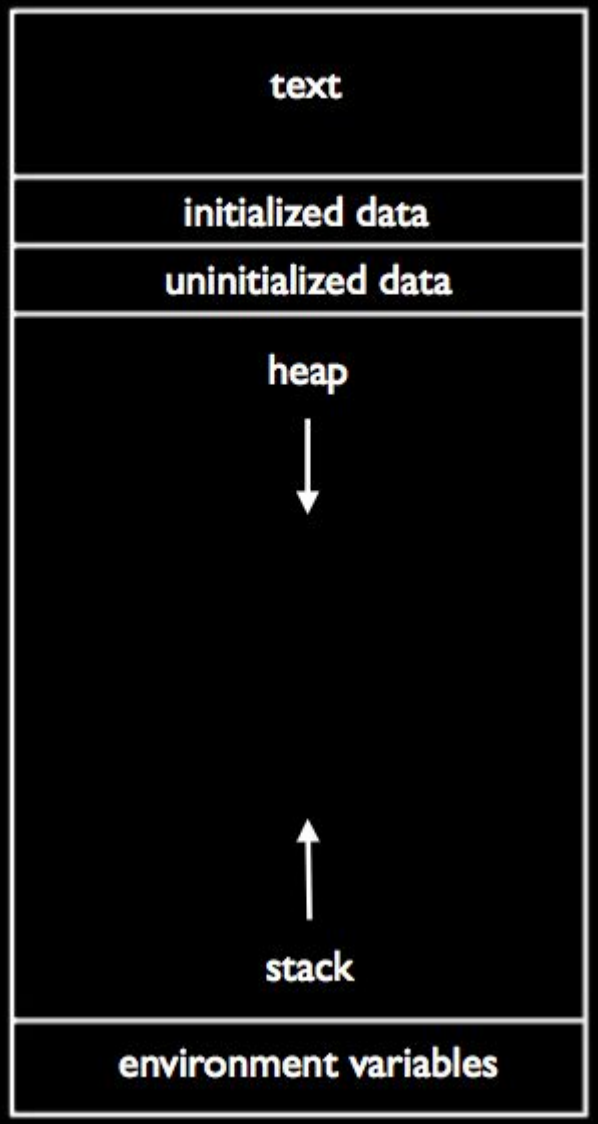
Recursion



Recursion w/out a Base Case

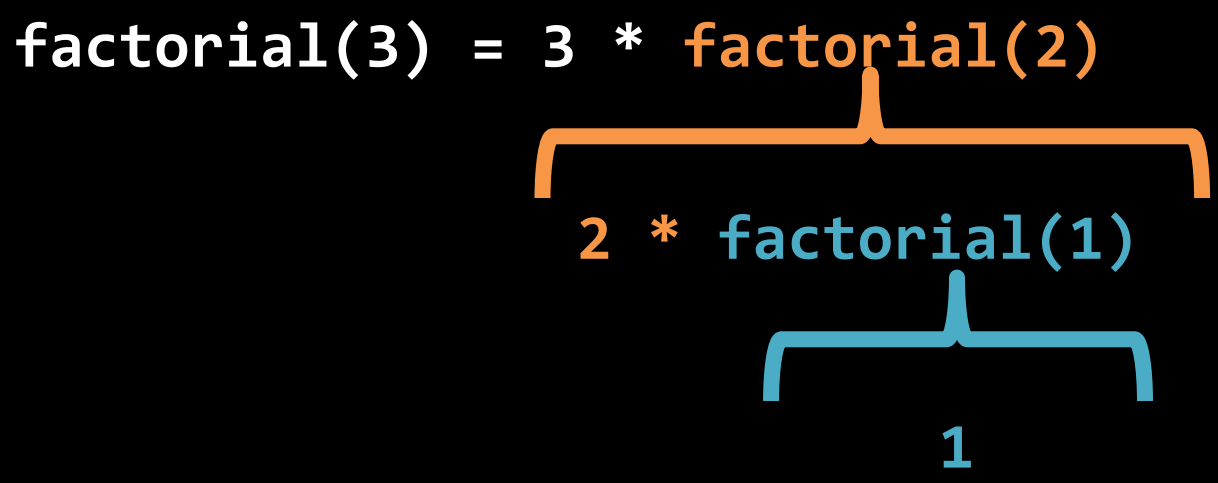
```
void foo(string str)
{
    printf("%s\n", str);
    foo(str);
}
```

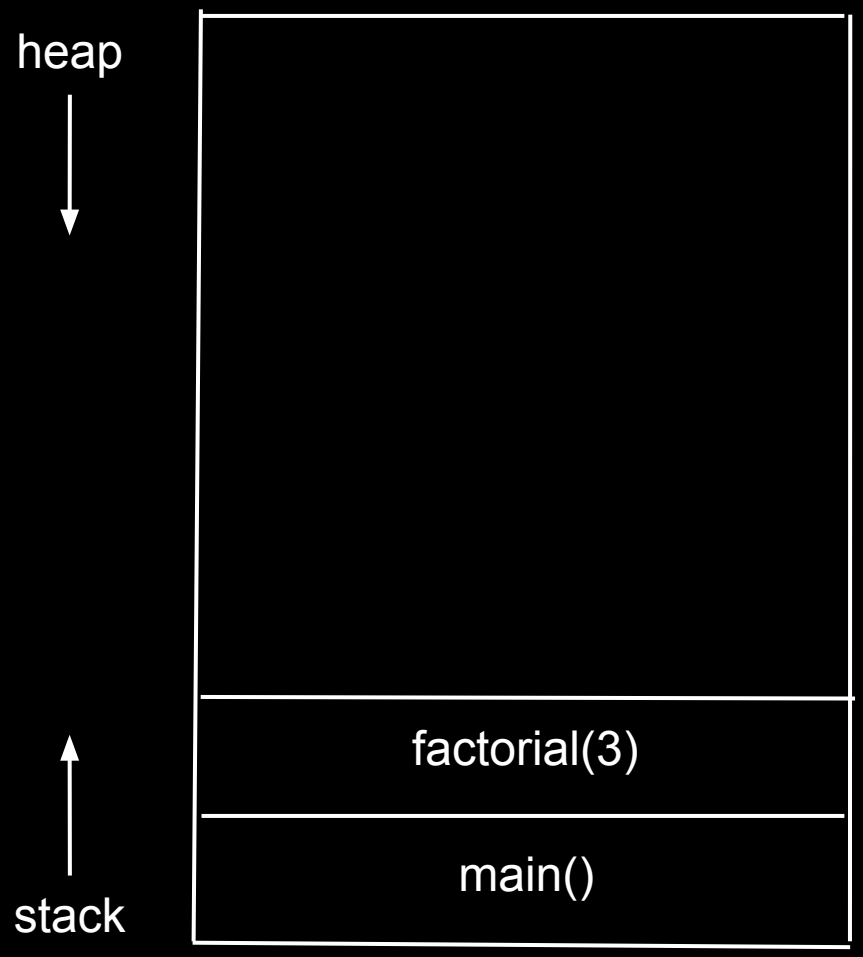


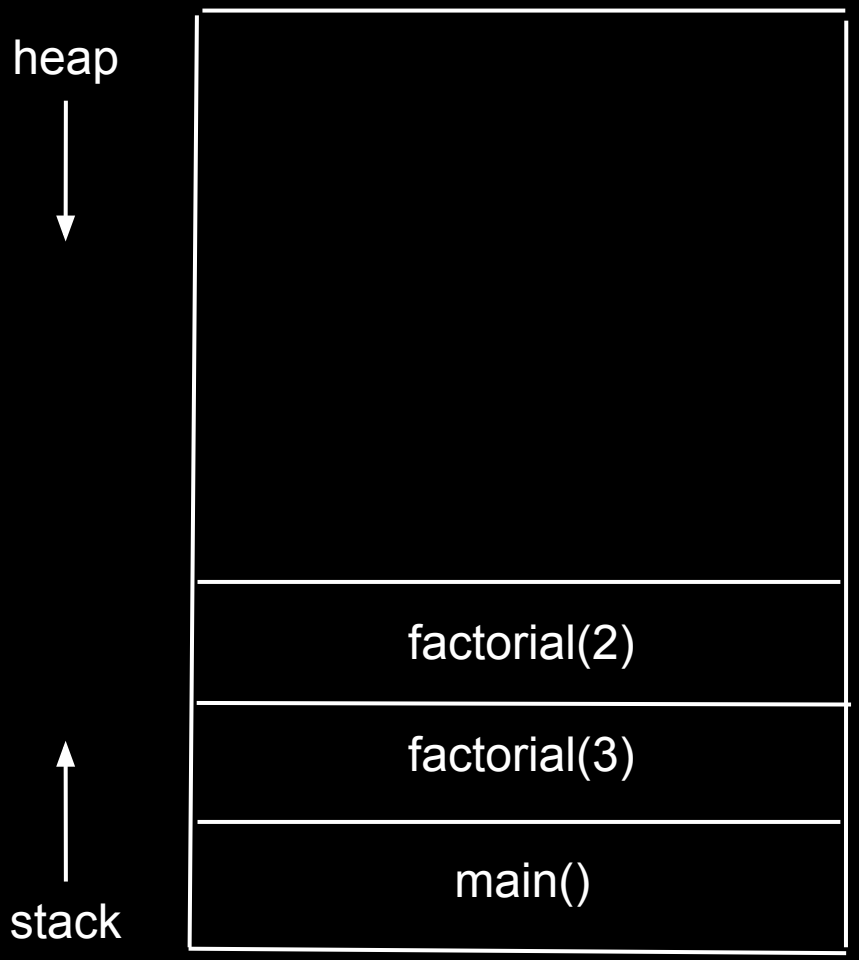
Factorial

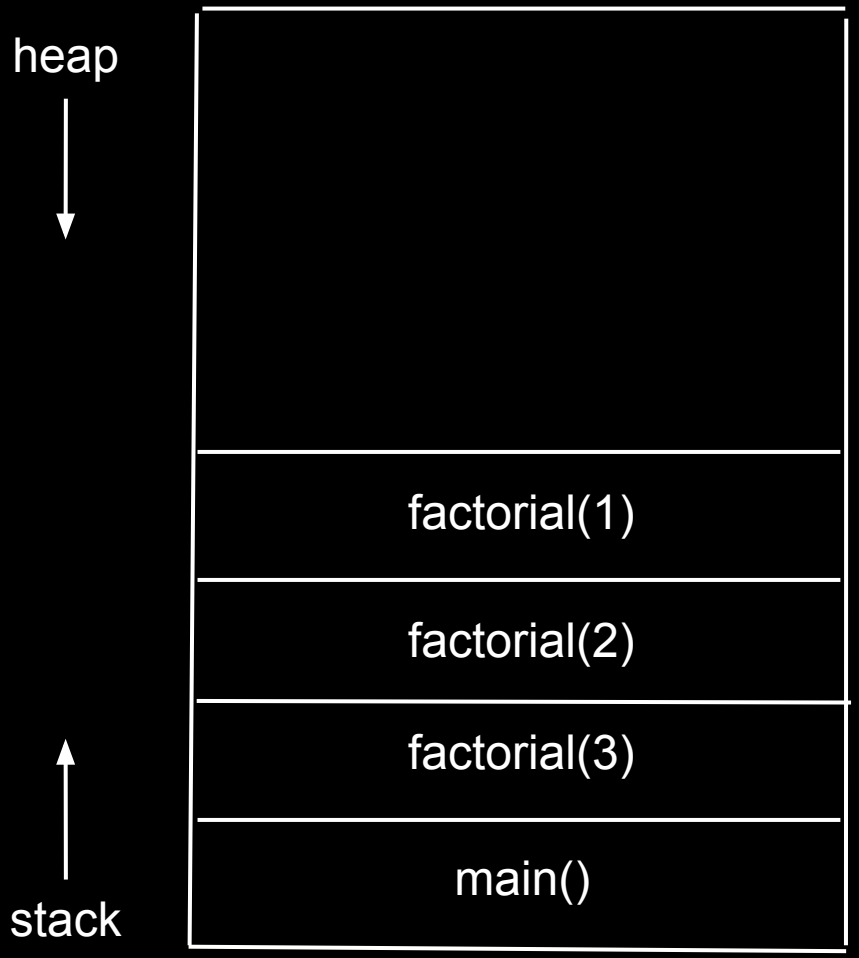
$$n! = n * (n - 1) * (n - 2) * \ldots * 1$$

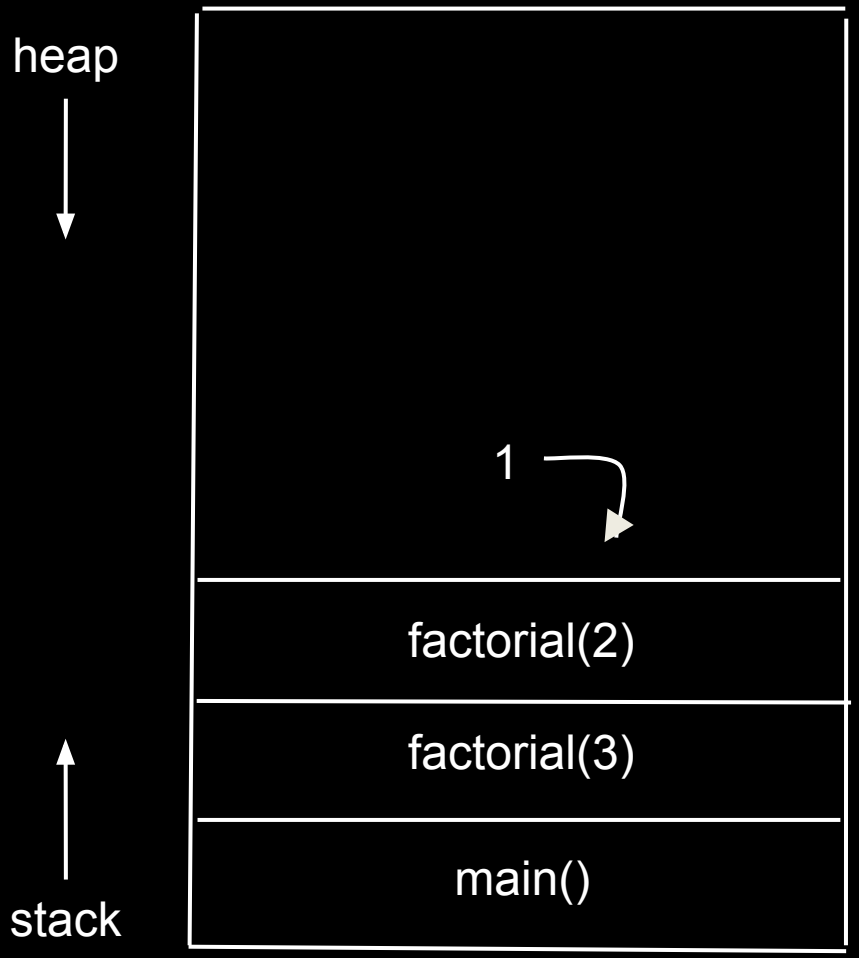
```
unsigned int factorial(unsigned int n)
{
    if (n <= 1)
    {
        return 1;
    }
    else
    {
        return n * factorial(n - 1);
    }
}
```

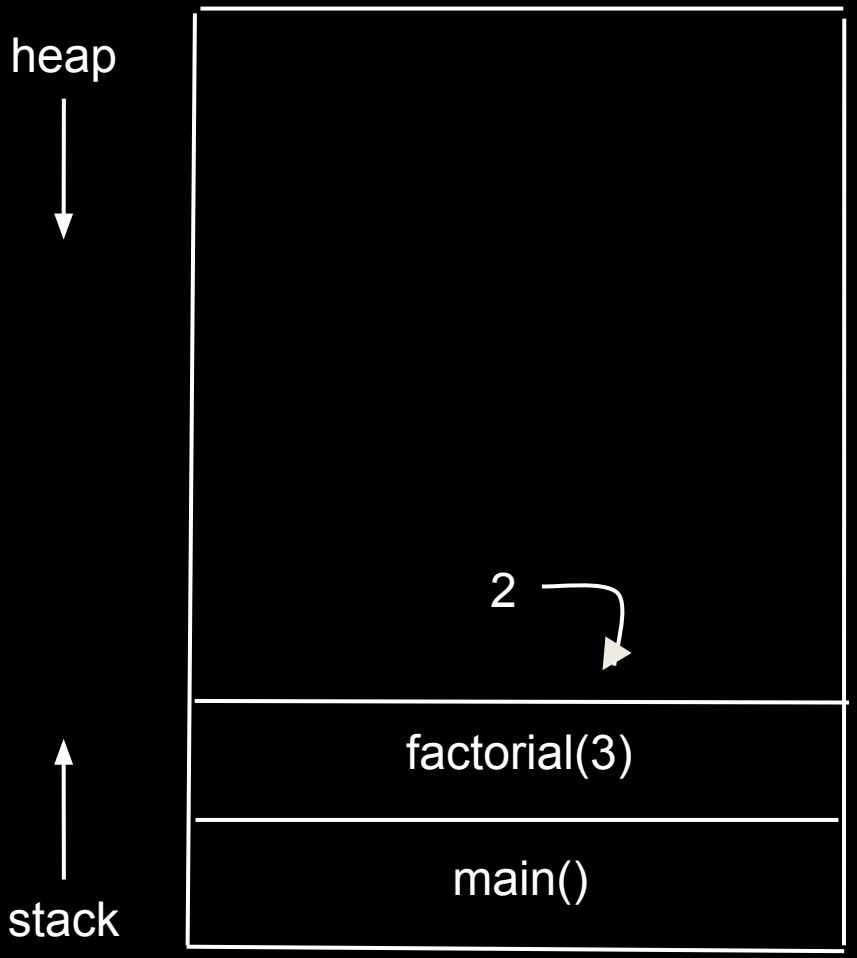

factorial(3) = 3 * factorial(2)
2 * factorial(1)
1

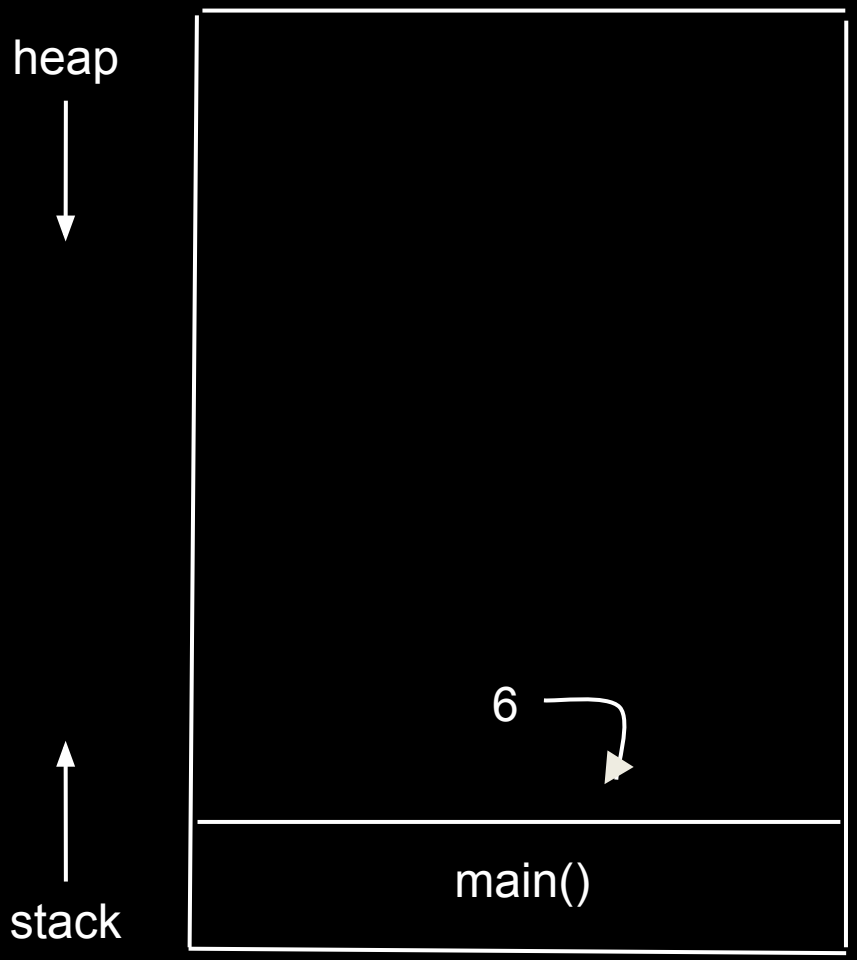

heap
factorial(3)
main()
stack


heap
factorial(2)
factorial(3)
main()
stack


heap
factorial(1)
factorial(2)
factorial(3)
main()
stack


heap
1
factorial(2)
factorial(3)
main()
stack


heap
2
factorial(3)
main()
stack


heap
6
main()
stack