

Call Stack

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- When you call a function, the system sets aside space in memory for that function to do its necessary work.
 - We frequently call such chunks of memory **stack frames** or **function frames**.
- More than one function's stack frame may exist in memory at a given time. If `main()` calls `move()`, which then calls `direction()`, all three functions have open frames.

Call Stack

- These frames are arranged in a **stack**. The frame for the most-recently called function is always on the top of the stack.
- When a new function is called, a new frame is **pushed** onto the top of the stack and becomes the active frame.
- When a function finishes its work, its frame is **popped** off of the stack, and the frame immediately below it becomes the new, active, function on the top of the stack. This function picks up immediately where it left off.

Call Stack

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int fact(int n)
{
    if (n == 1)
        return 1;
    else
        return n * fact(n-1);
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```
int main(void)
{
    printf("%i\n", fact(5));
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main()

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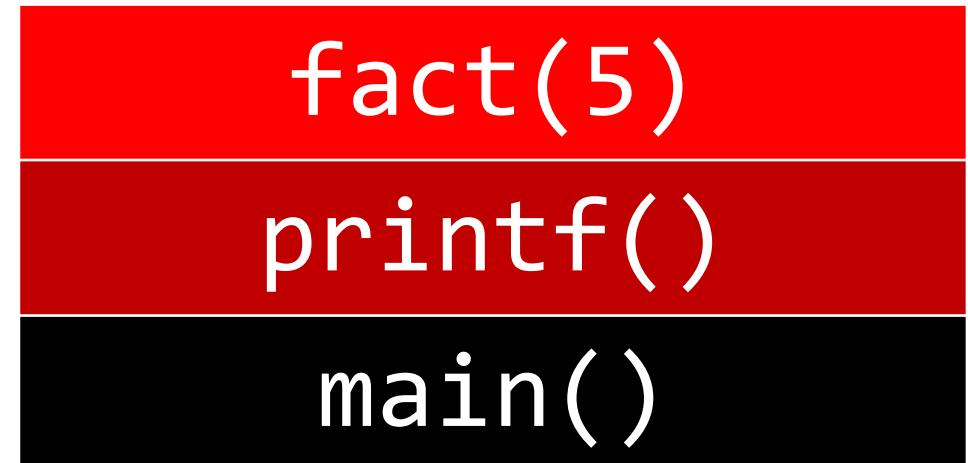
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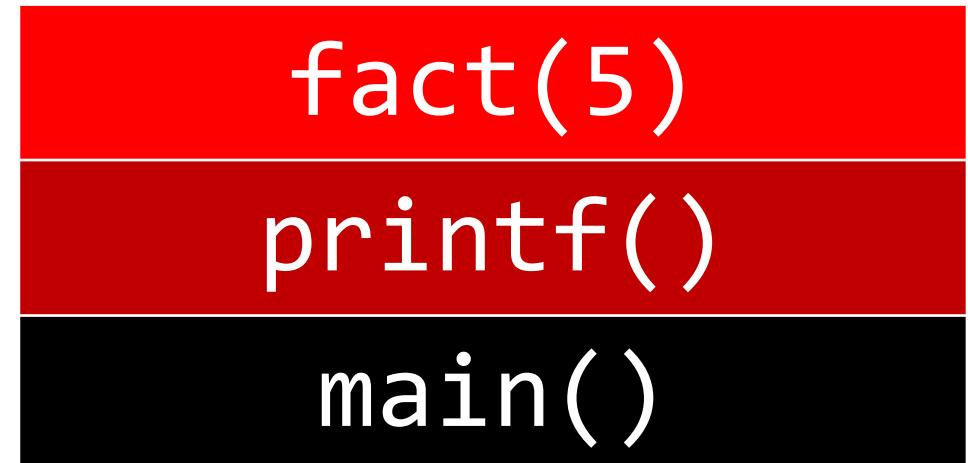
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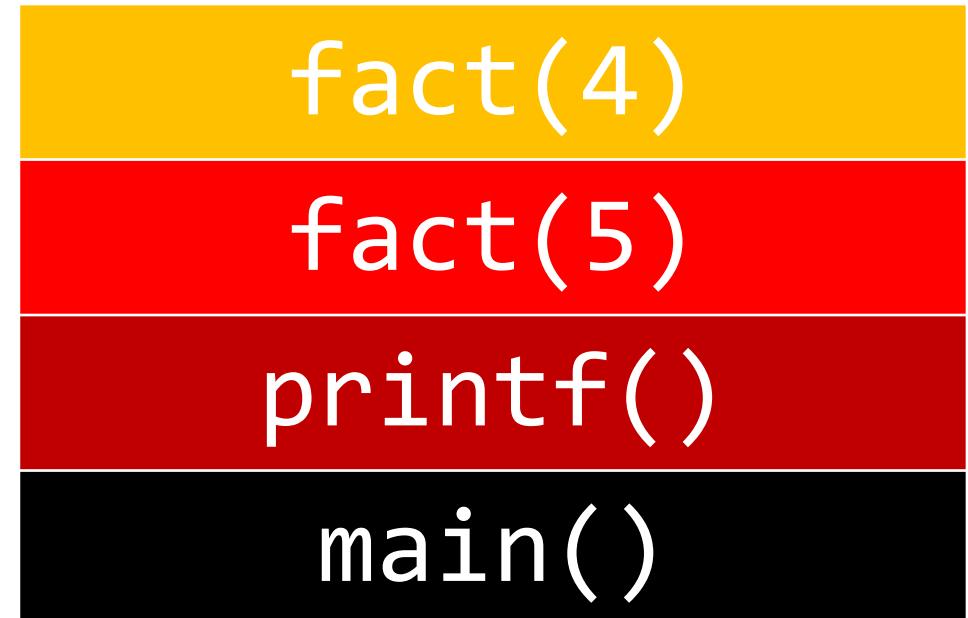
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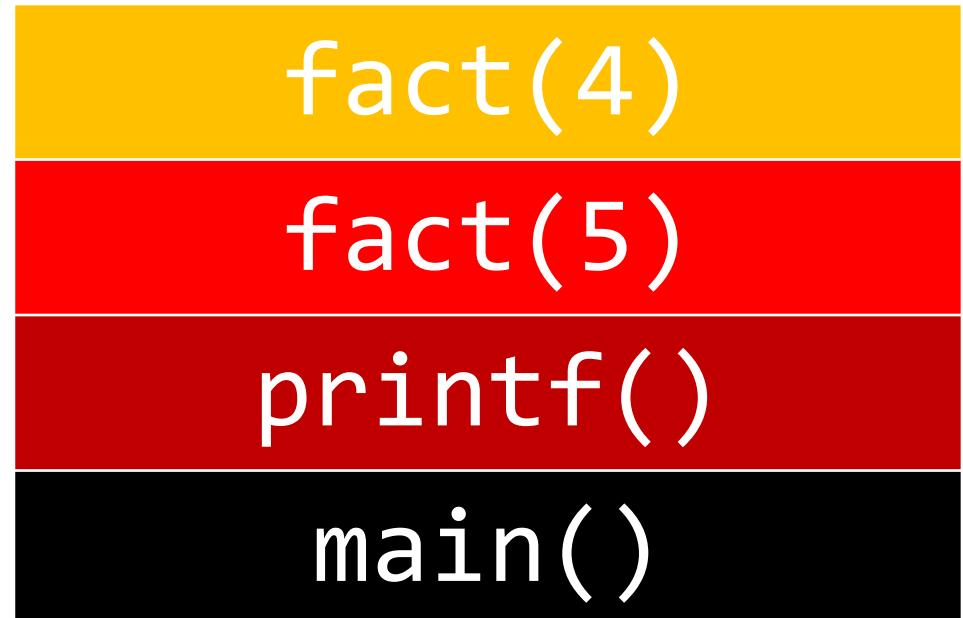
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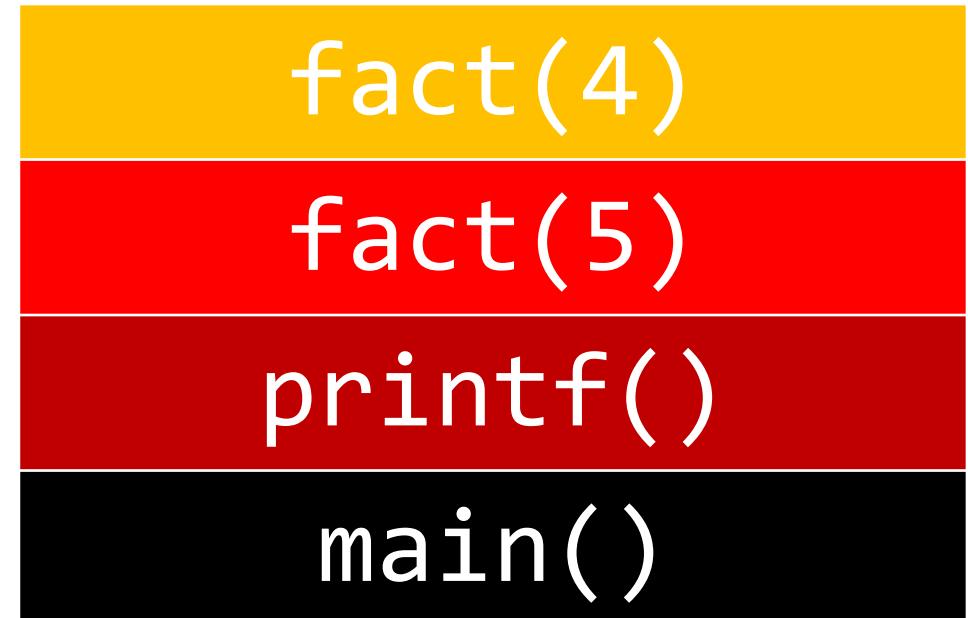
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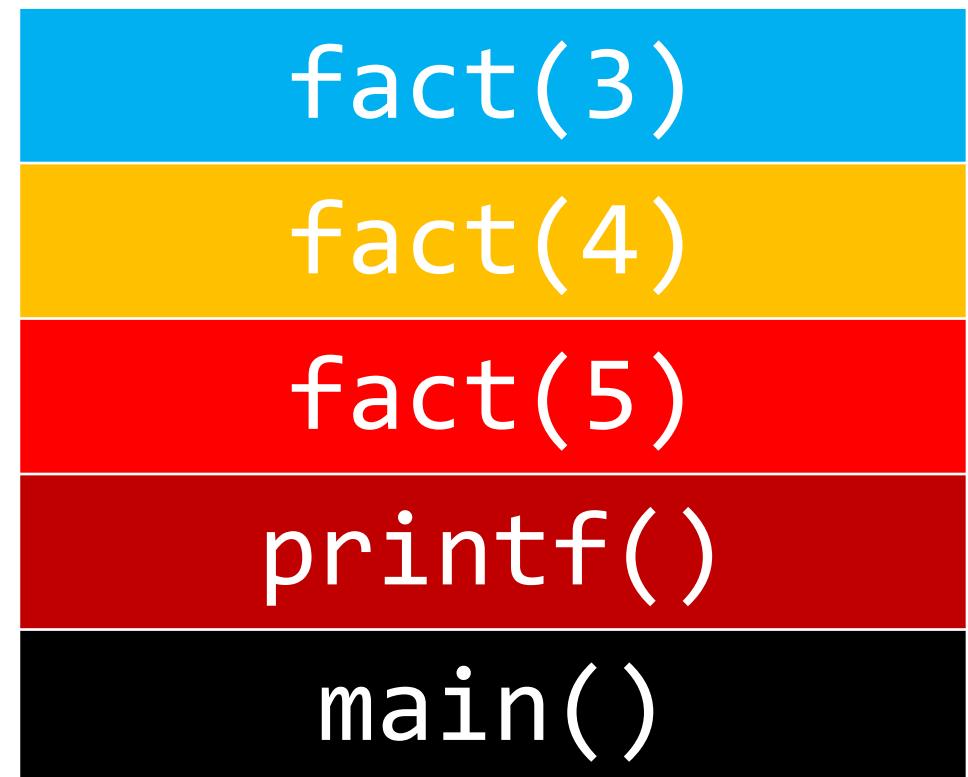
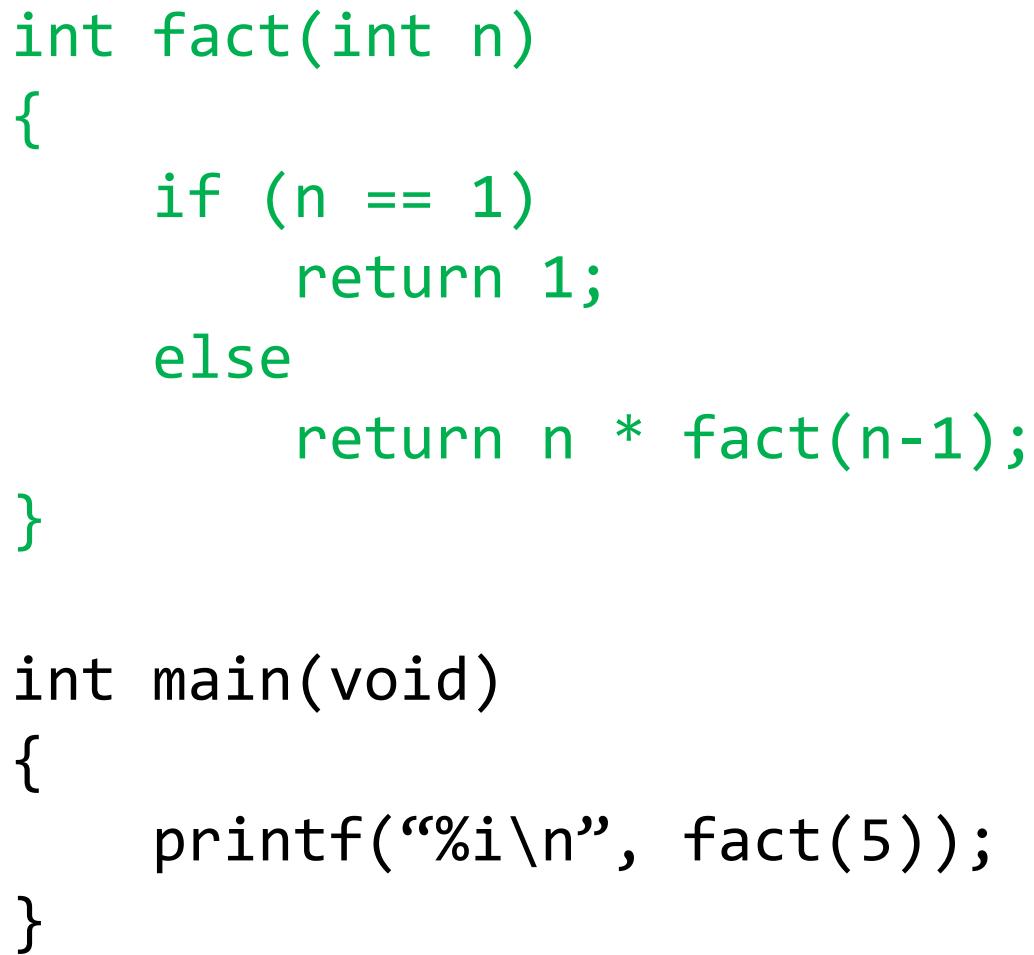
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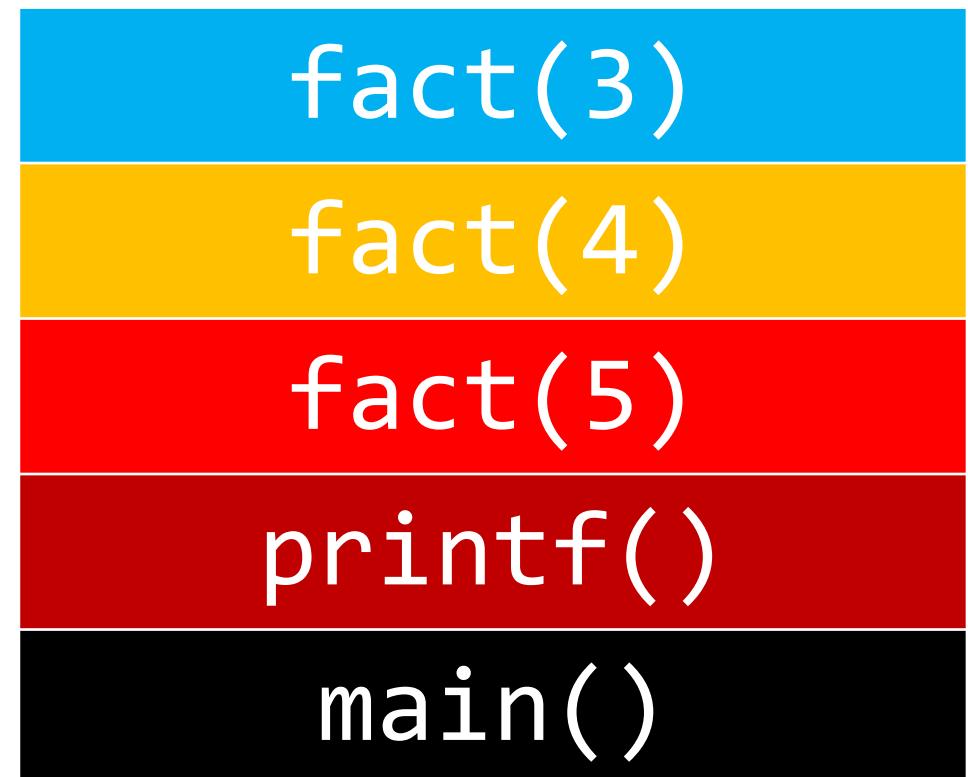
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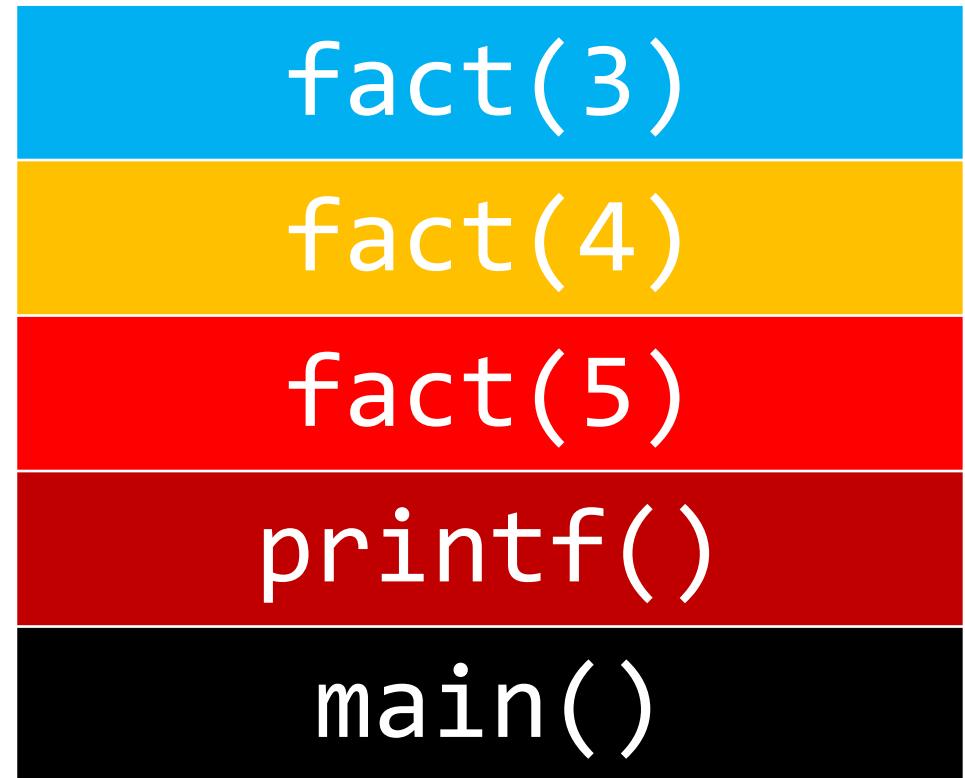
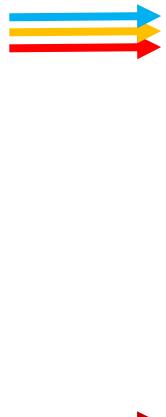
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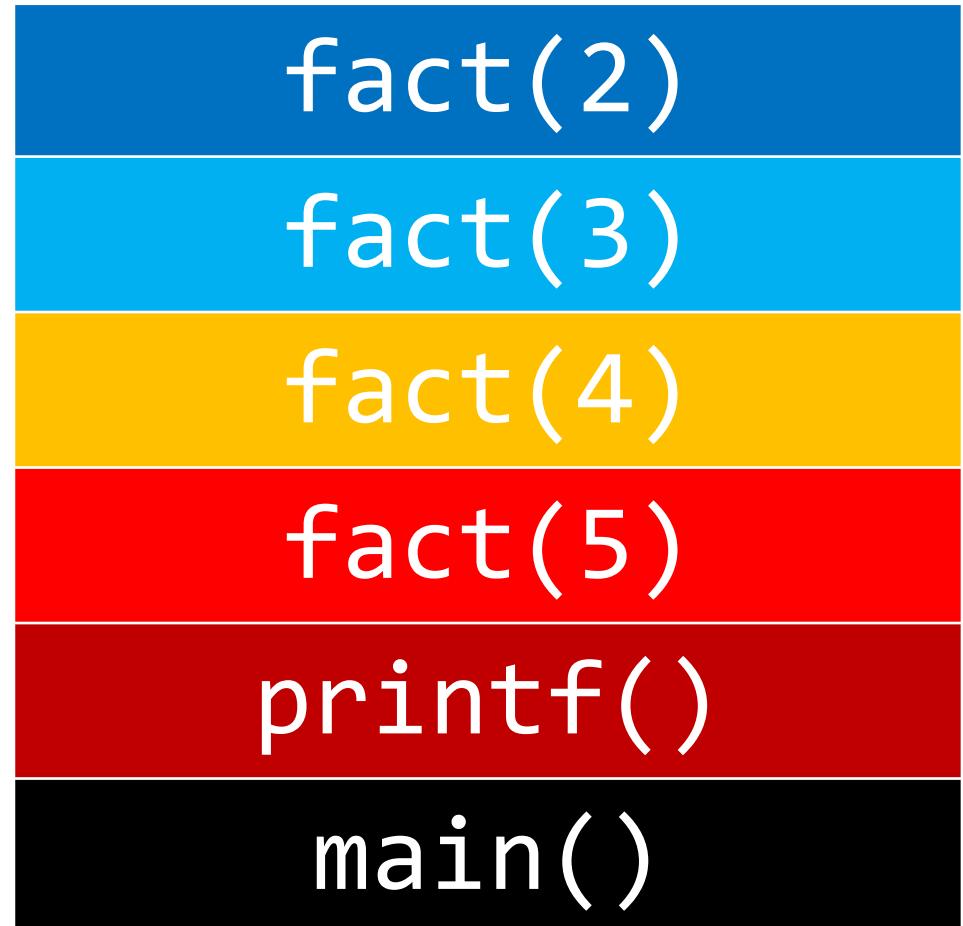
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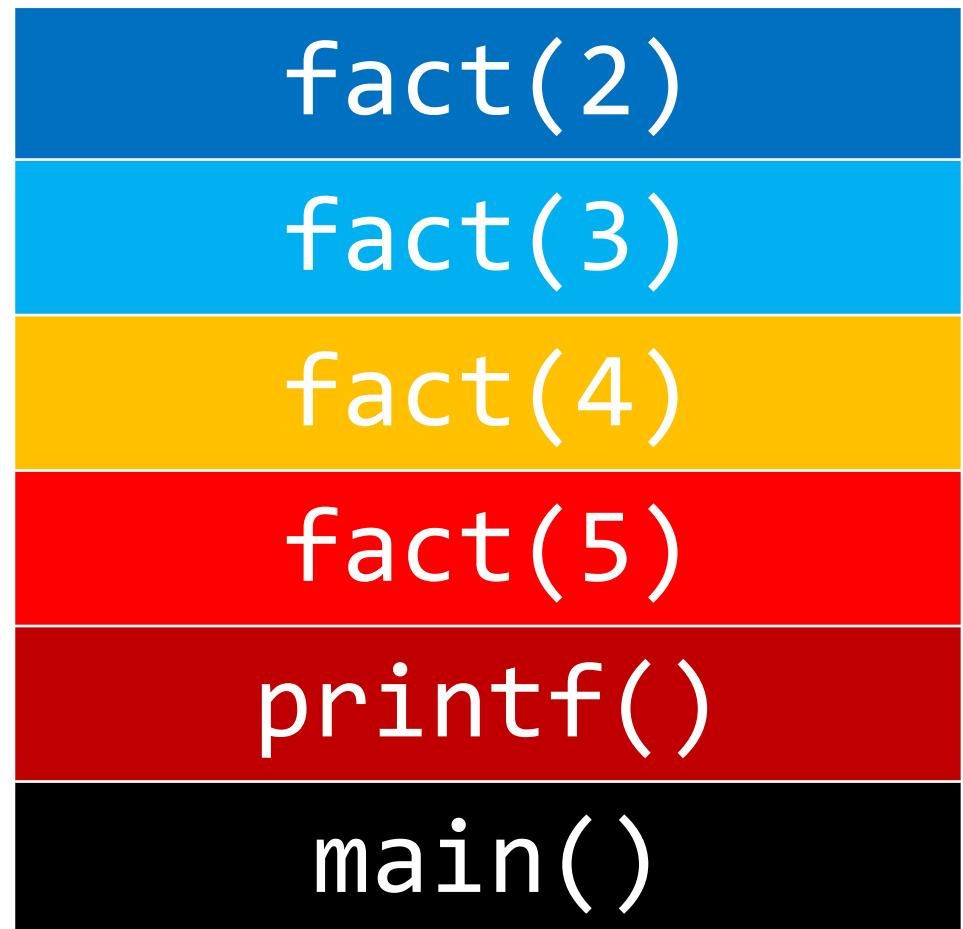
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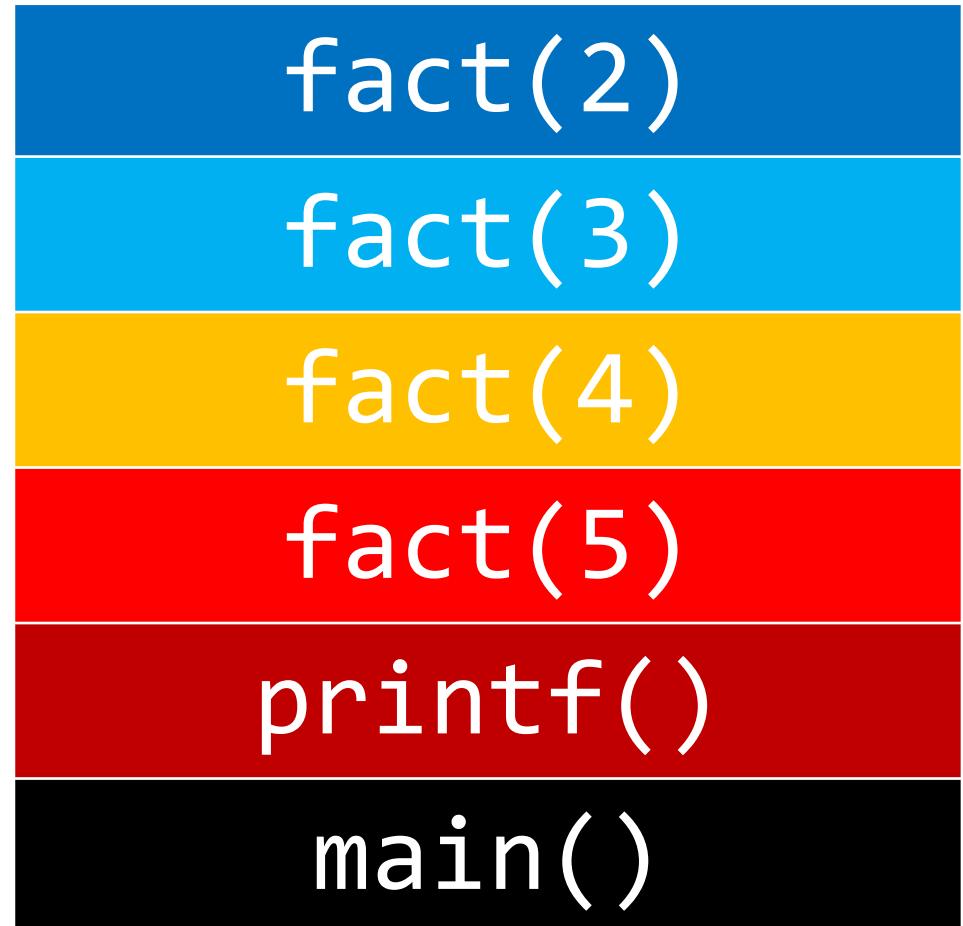
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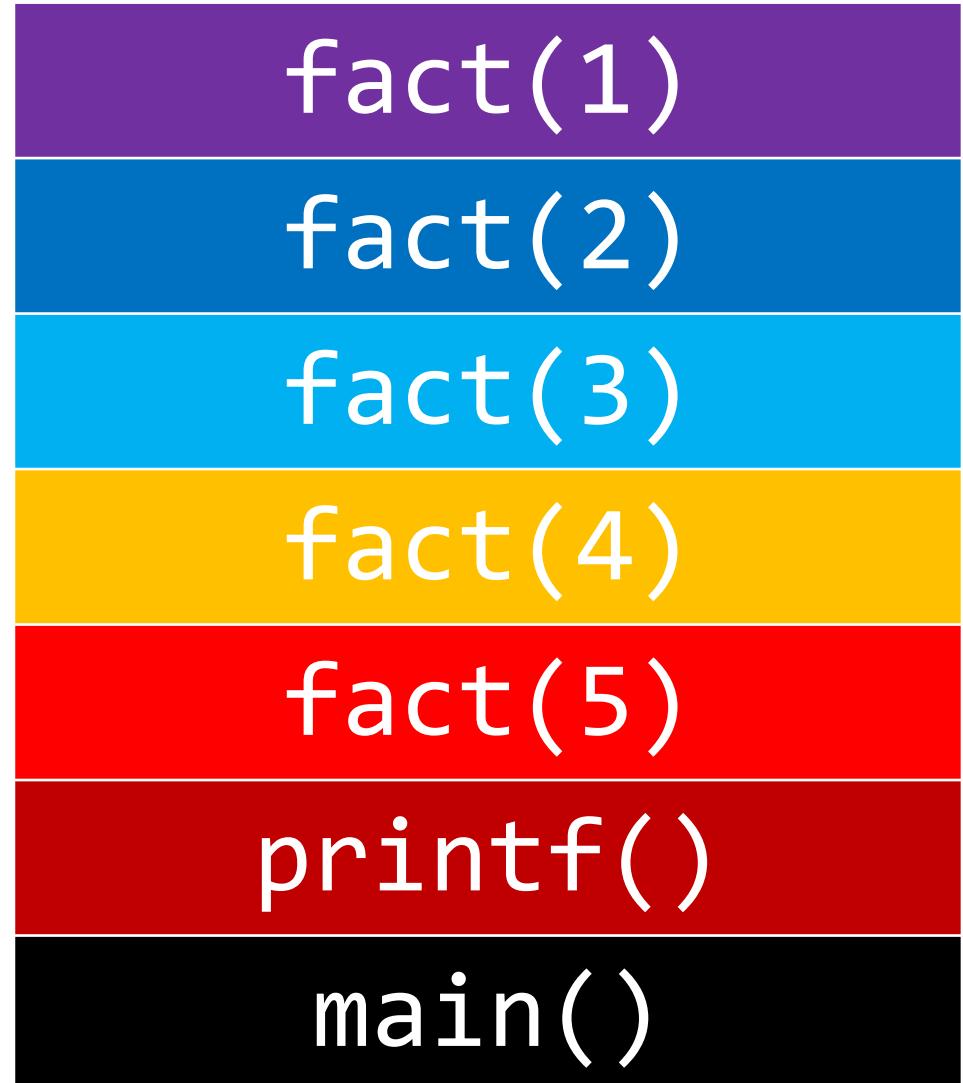
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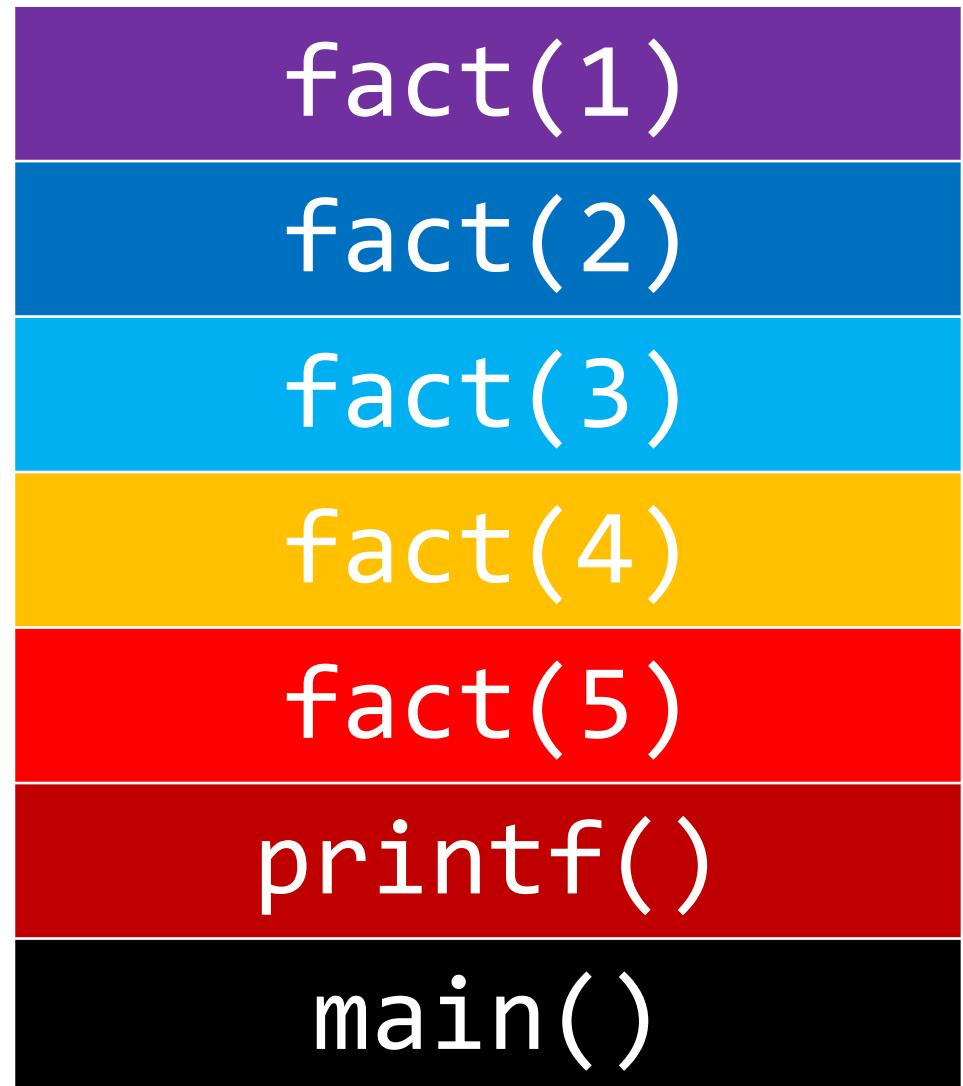
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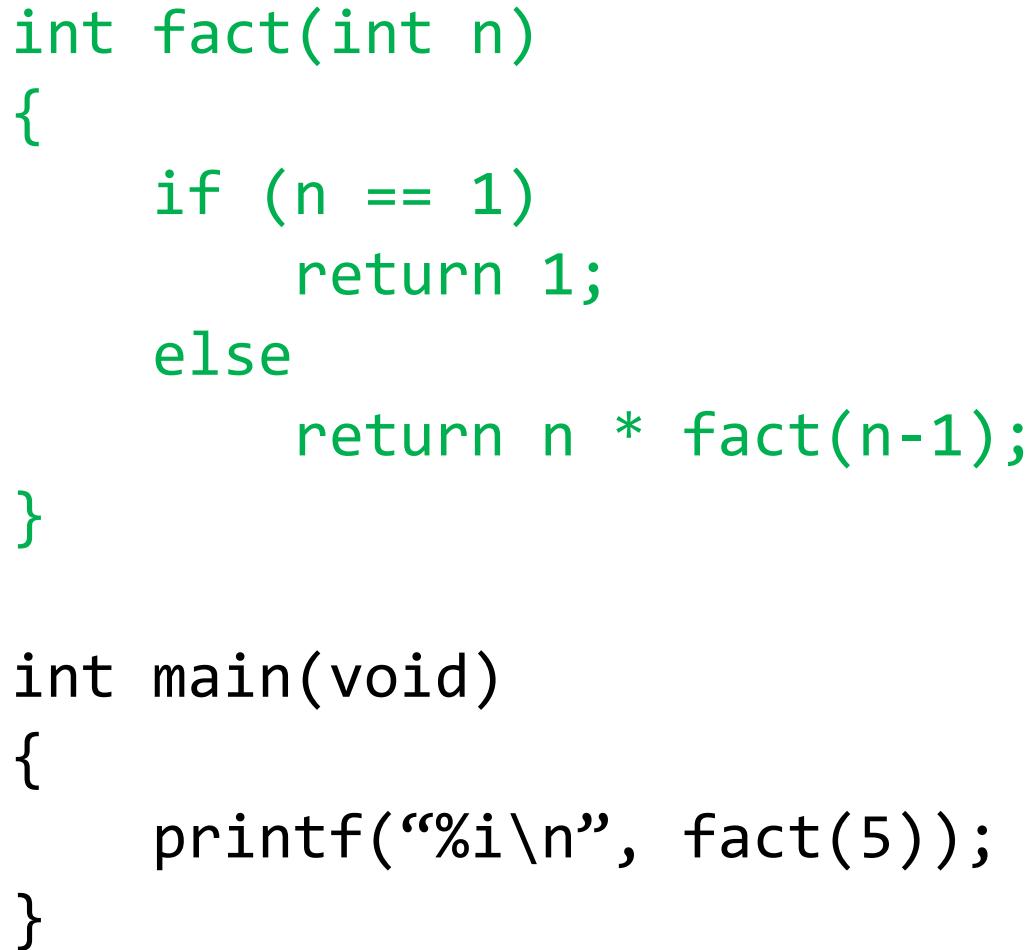
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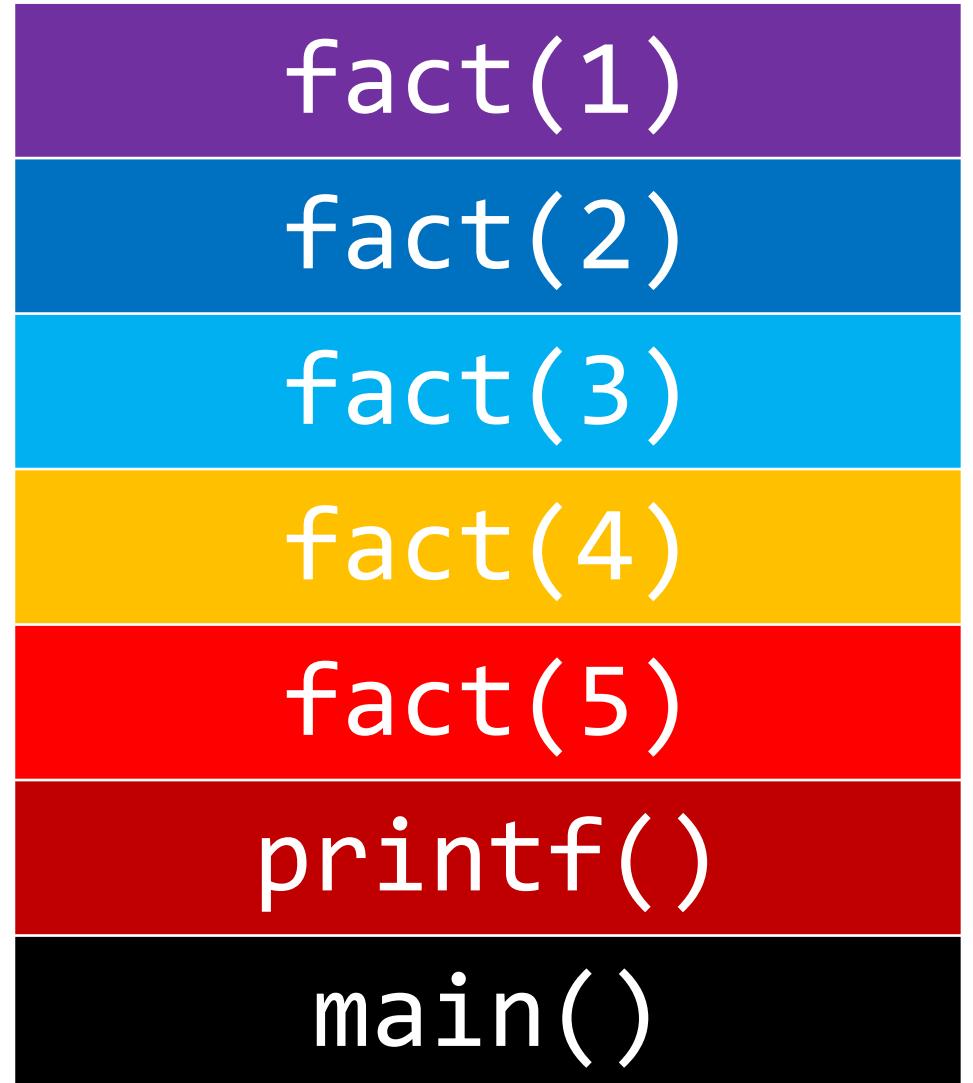
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The code defines a recursive factorial function and a main function that prints the result of fact(5). The call stack diagram shows the sequence of function calls from bottom to top: main() calls printf(), which then calls fact(5), fact(4), fact(3), fact(2), and finally fact(1) at the top.



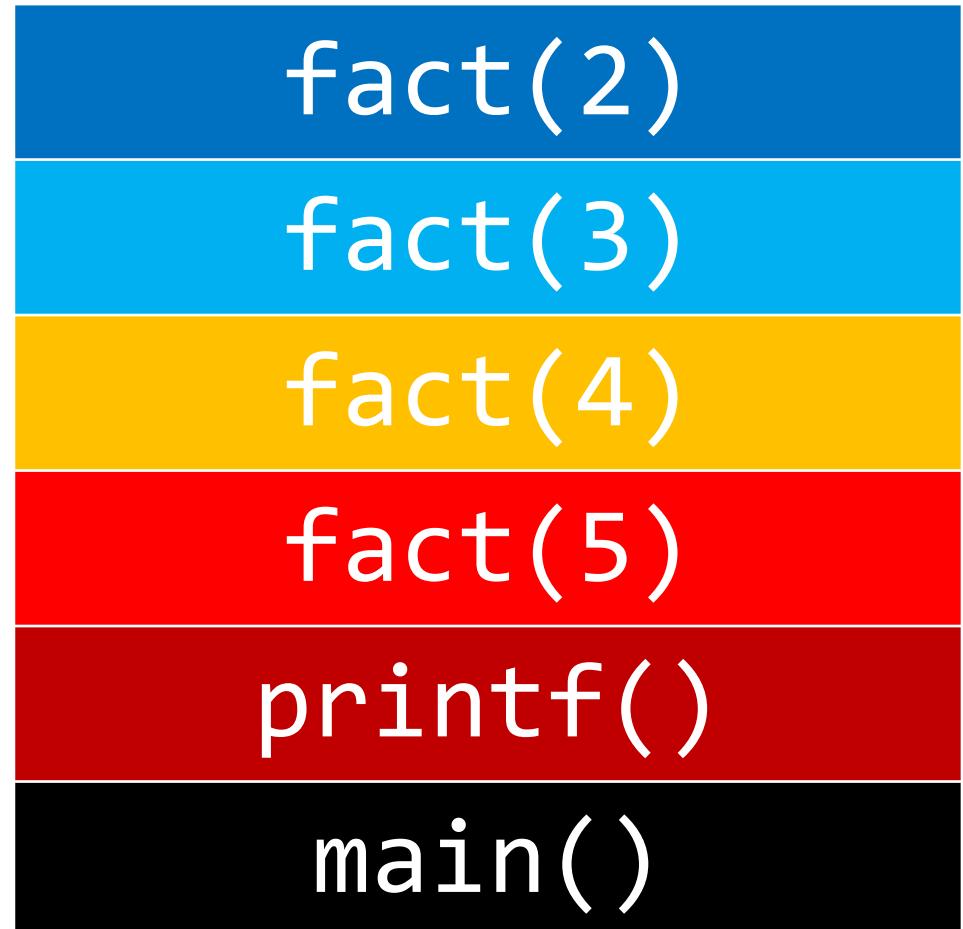
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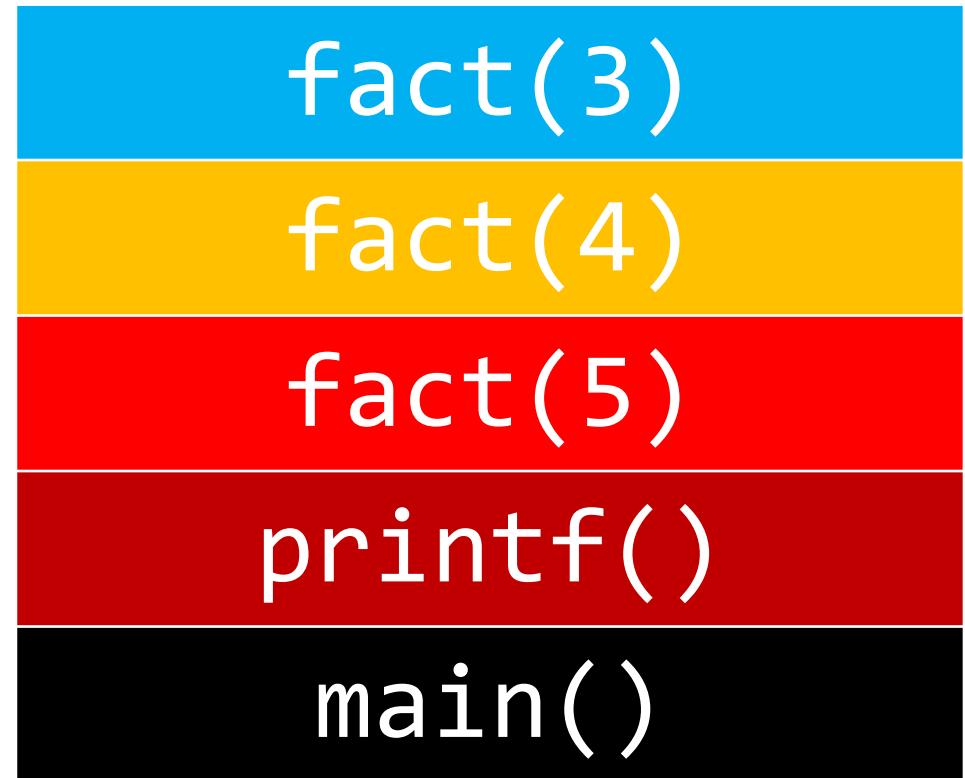
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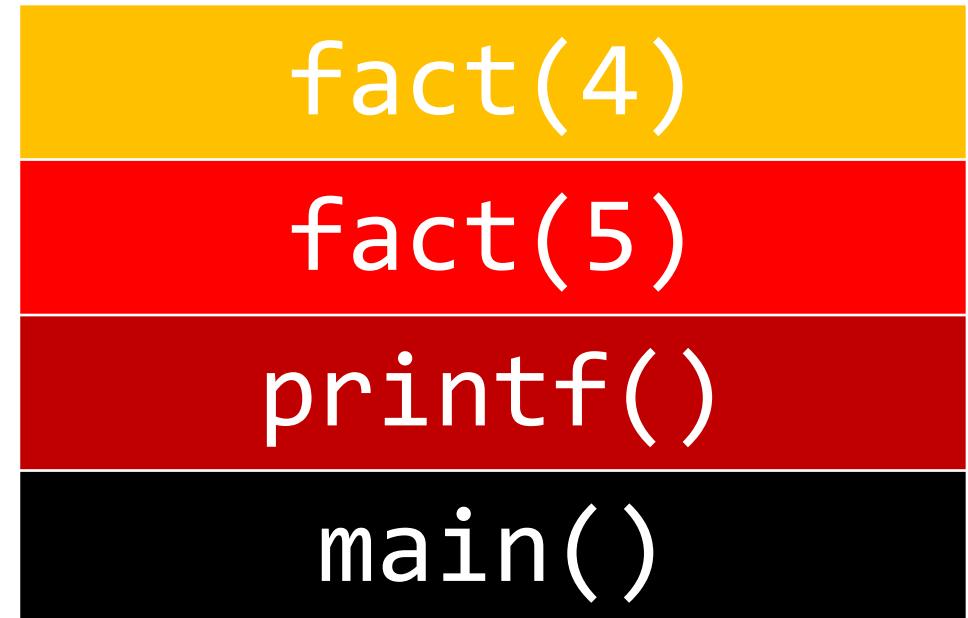
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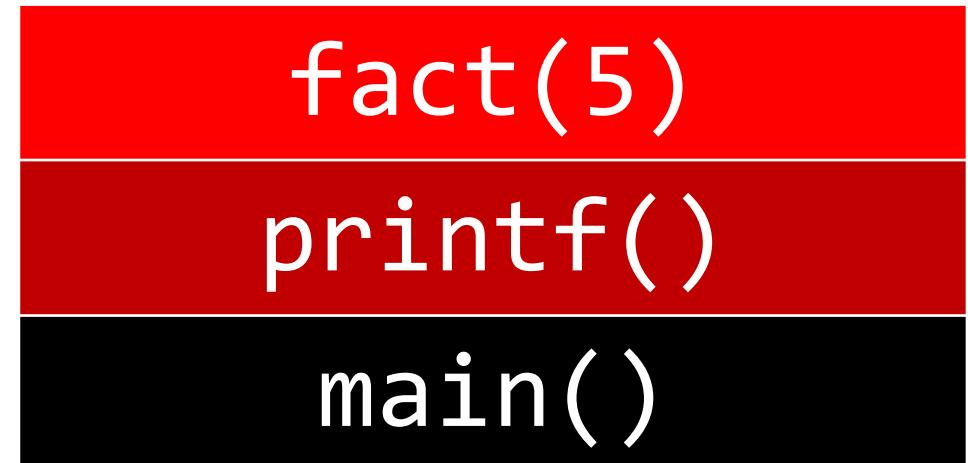
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