Higher-Order Functions

Announcements

Example: Prime Factorization

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9  = 3 * 3
10 = 2 * 5
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...
```

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                    858
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One approach: Find the smallest prime factor of n, then divide by it

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858  = 2 * 429
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(Demo)

Example: Iteration

The Fibonacci Sequence

The Fibonacci Sequence

The Fibonacci Sequence

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987

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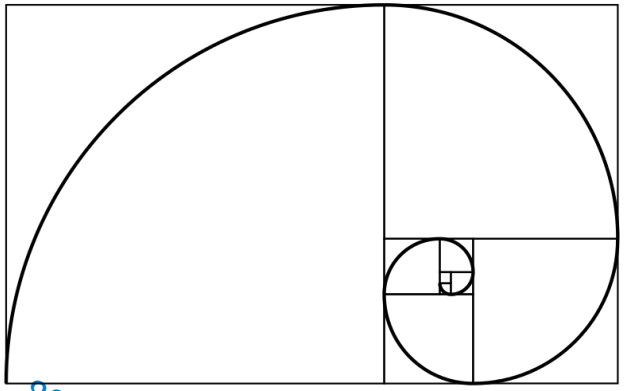

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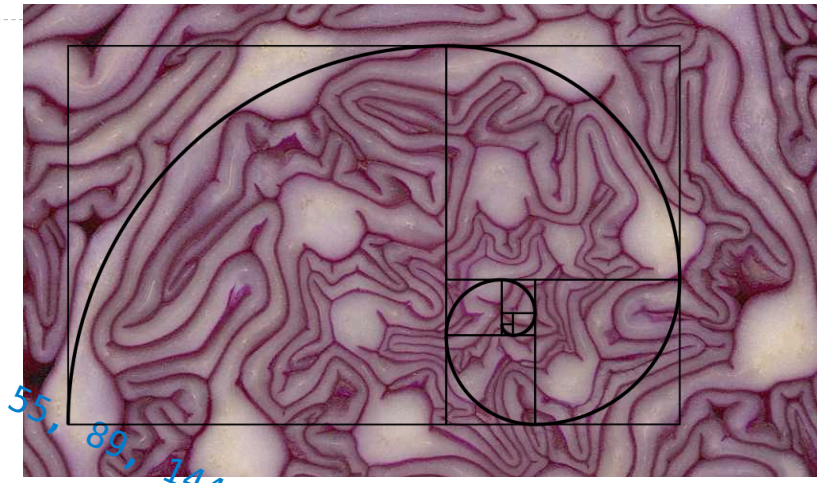

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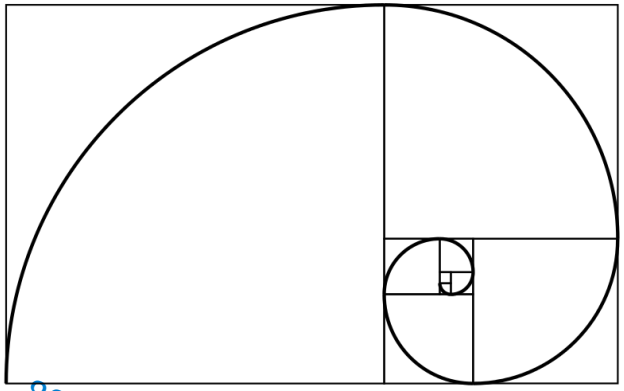

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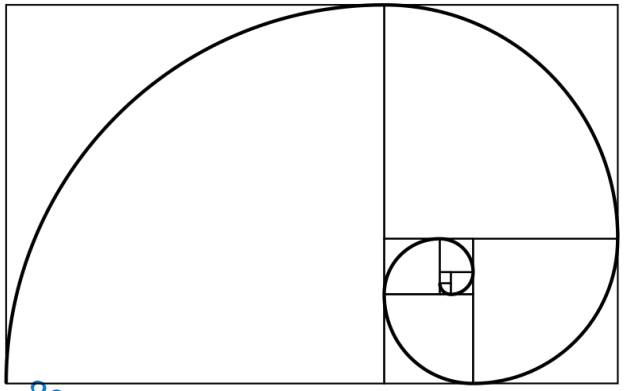

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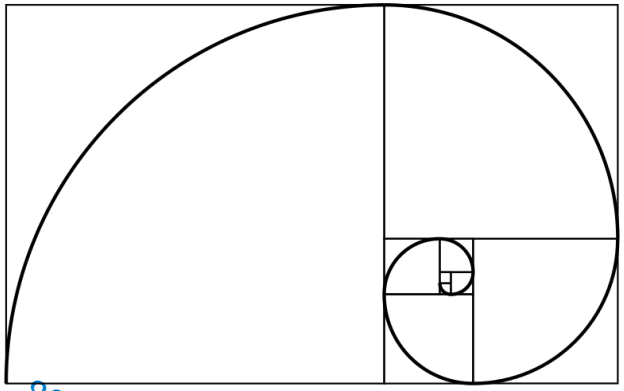

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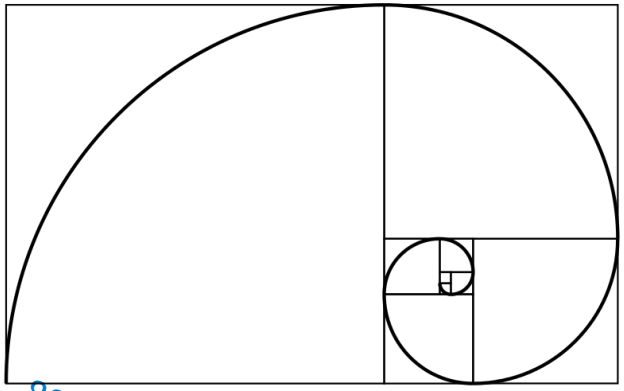

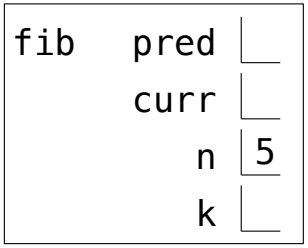


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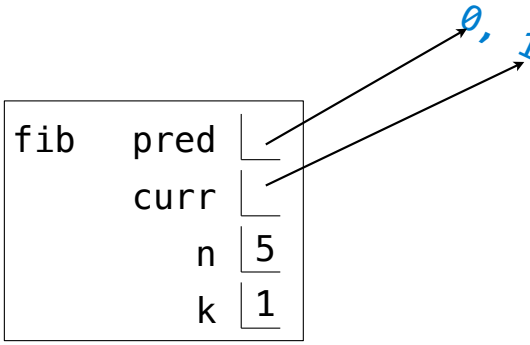

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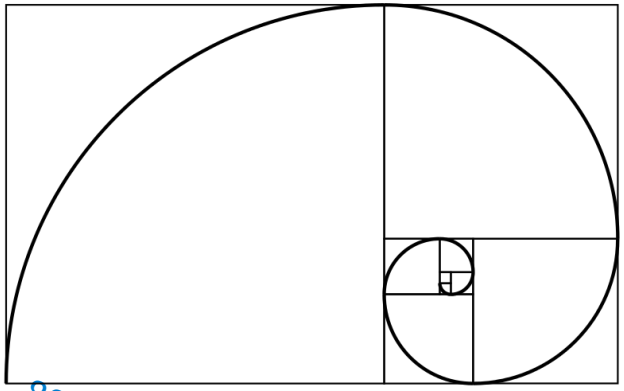

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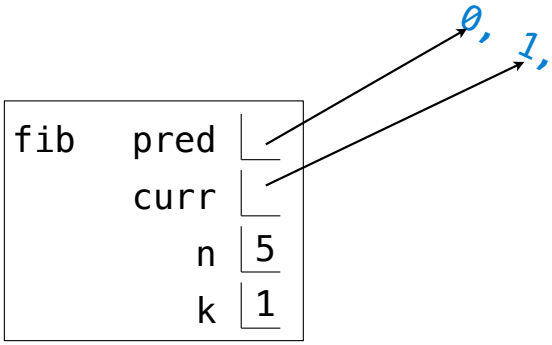

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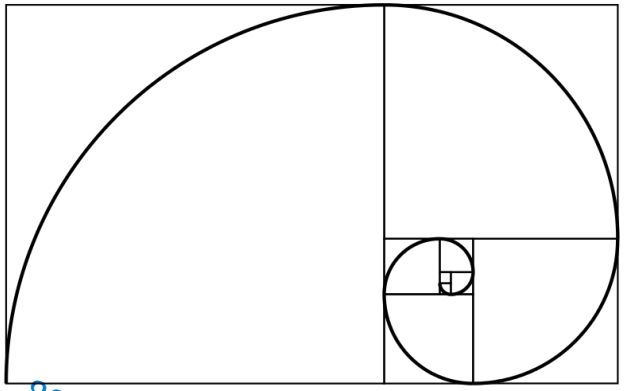

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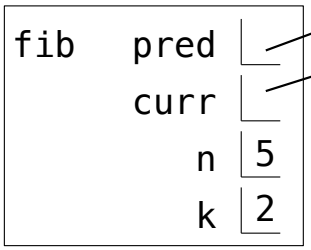

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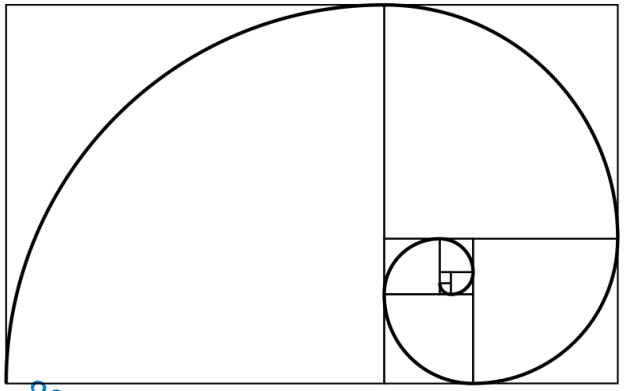

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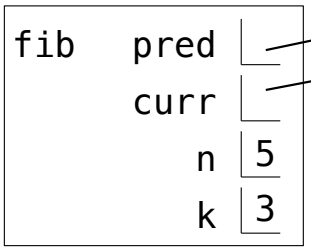

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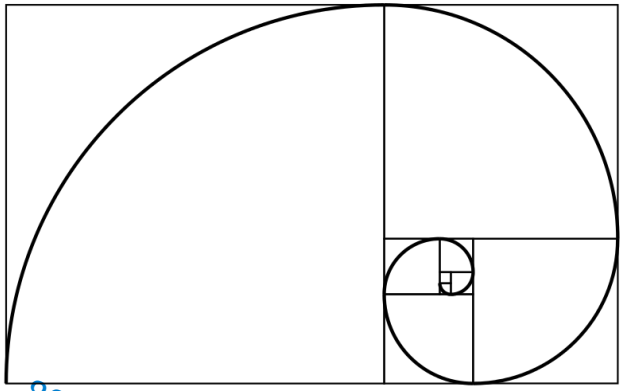

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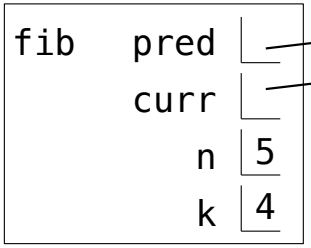

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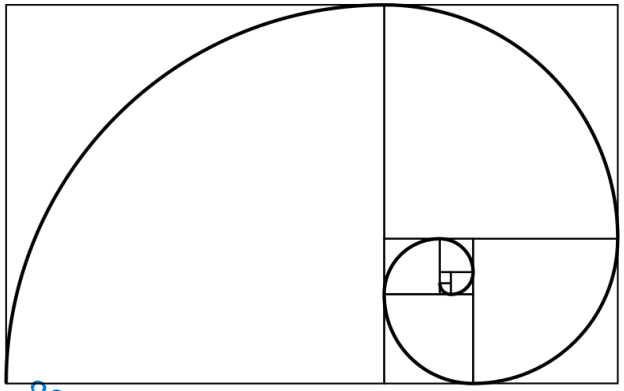

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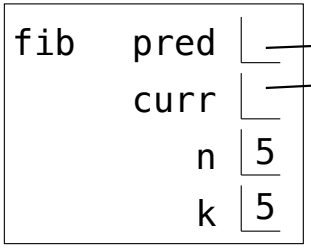

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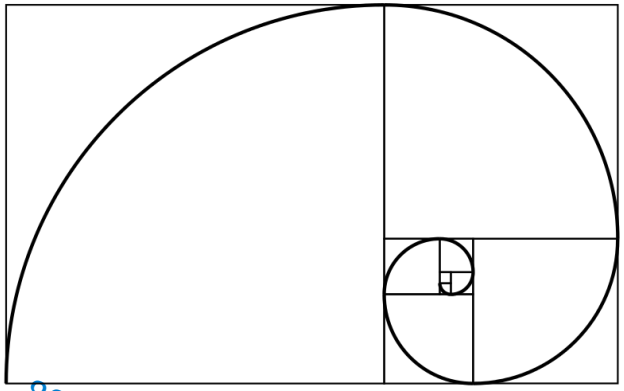

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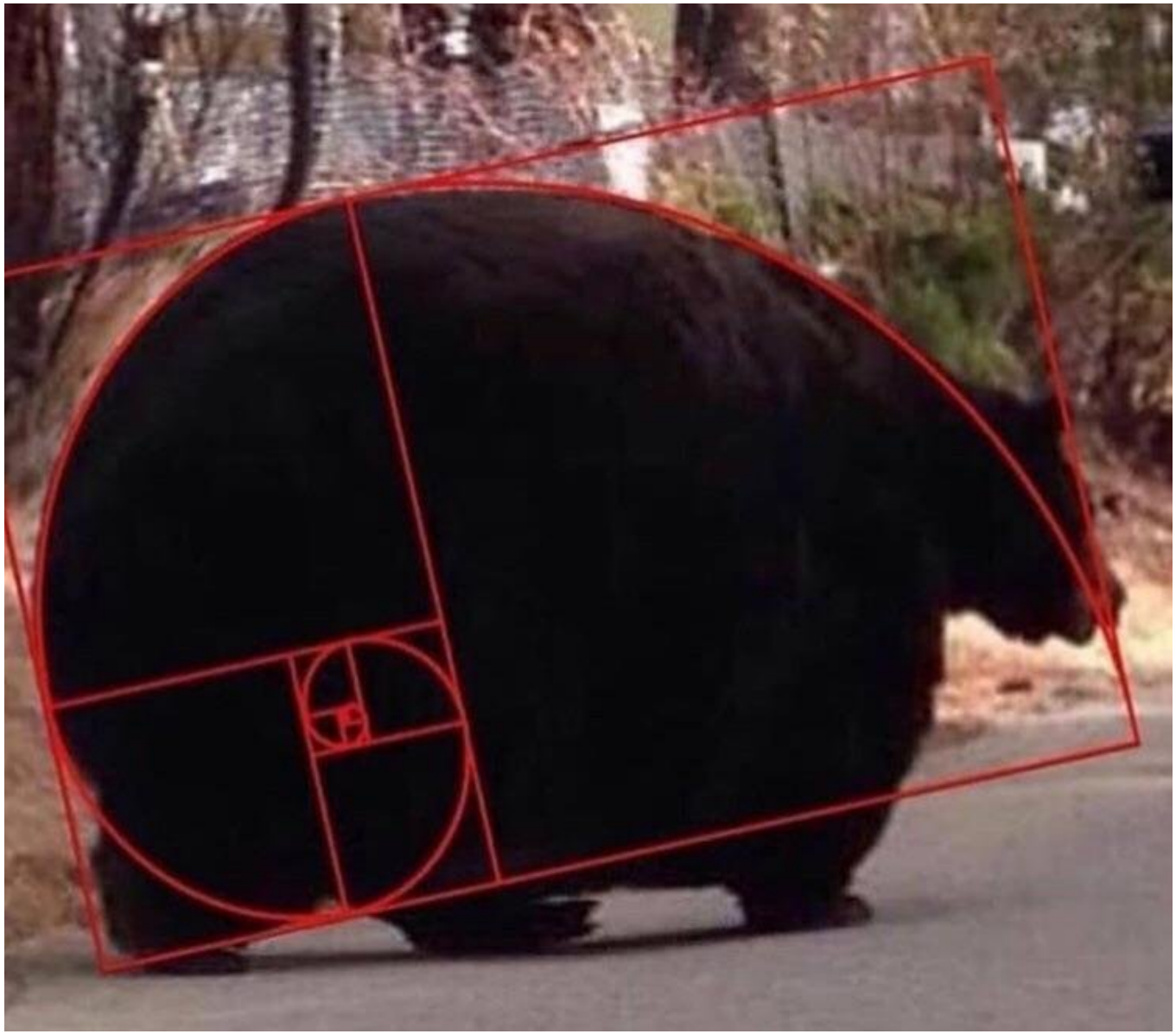
Go Bears!



Control

Boolean Contexts

George Boole

```
def absolute_value(x):
    """Return the absolute value of x."""
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        return -x
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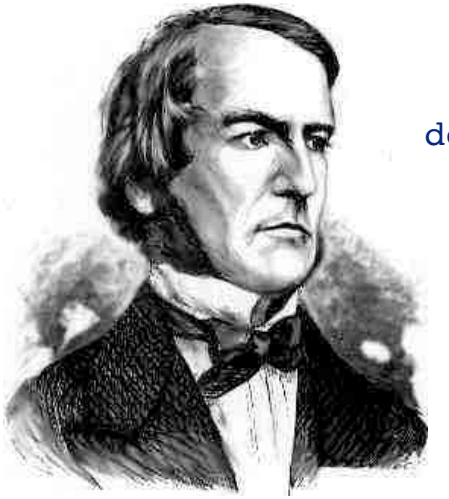

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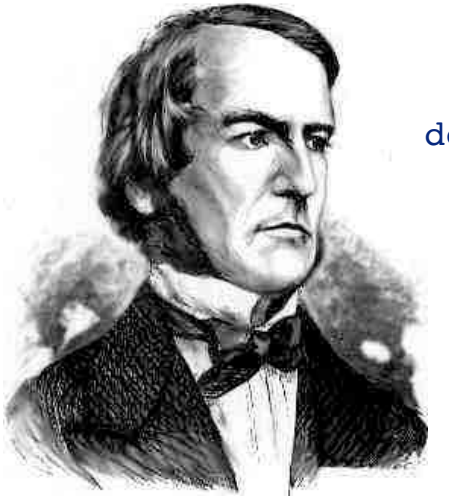

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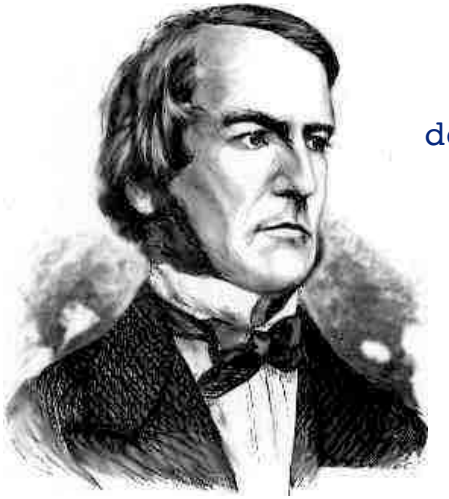

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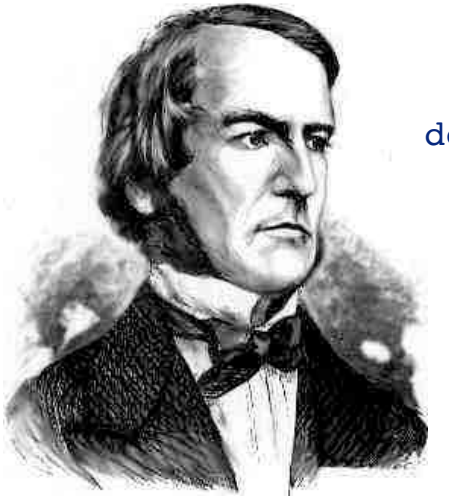

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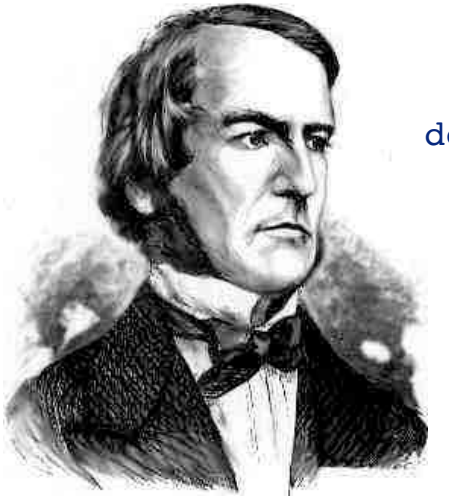

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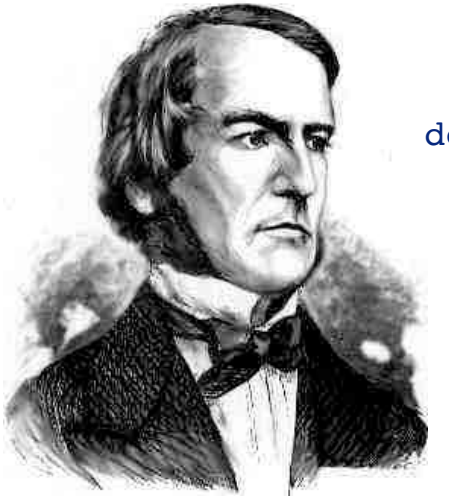

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(Demo)

If Statements and Call Expressions

Let's try to write a function that does the same thing as an if statement.

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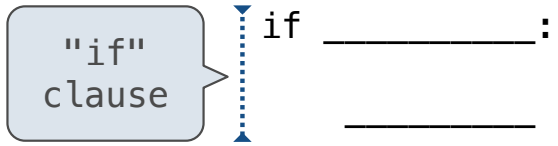

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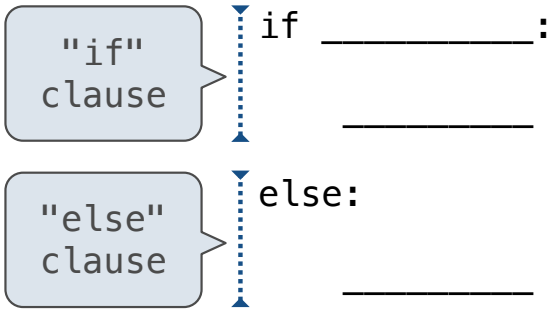

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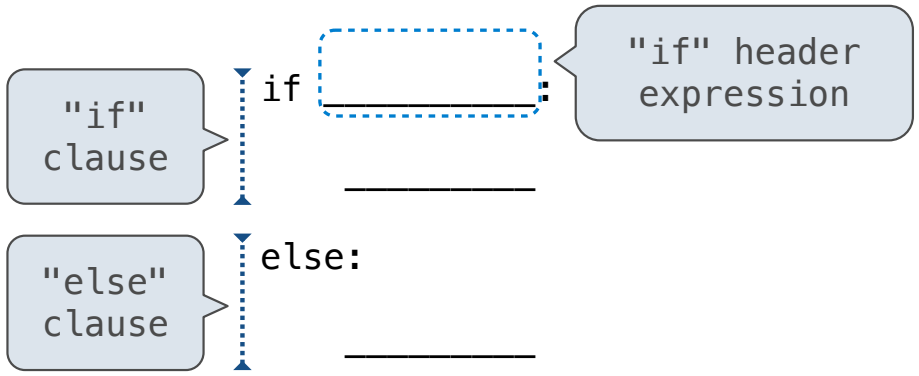

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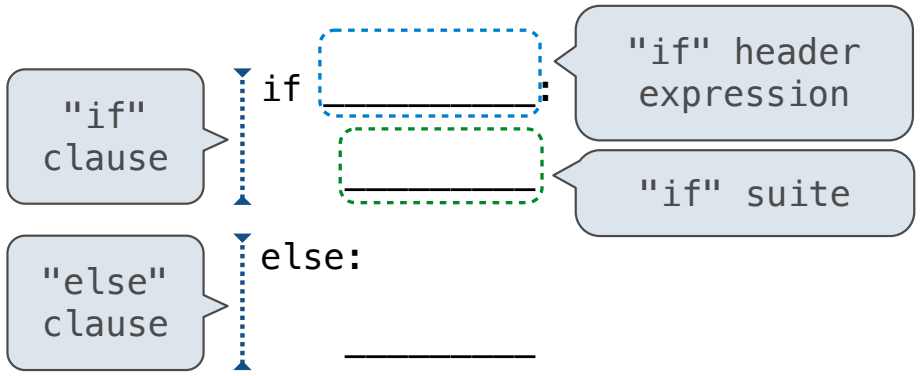

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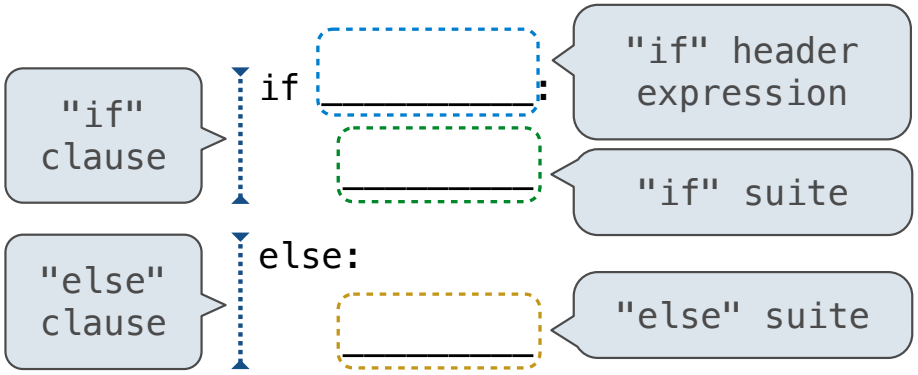

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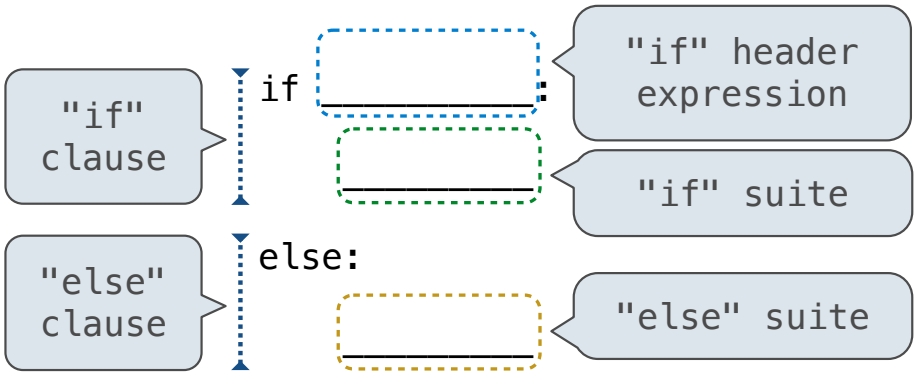

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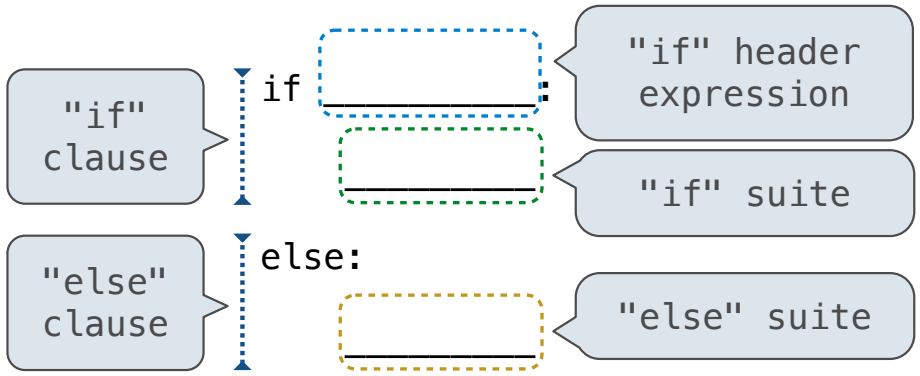

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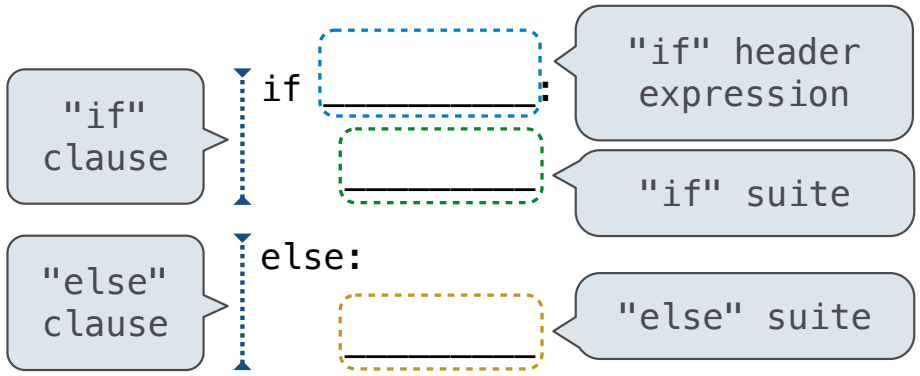

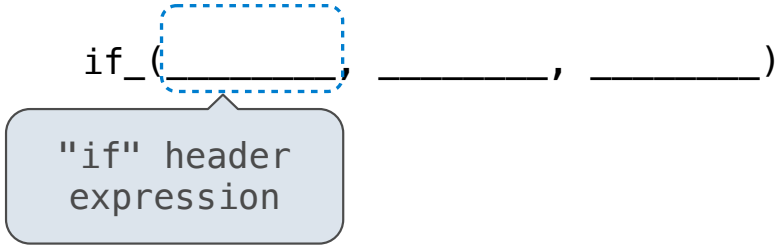

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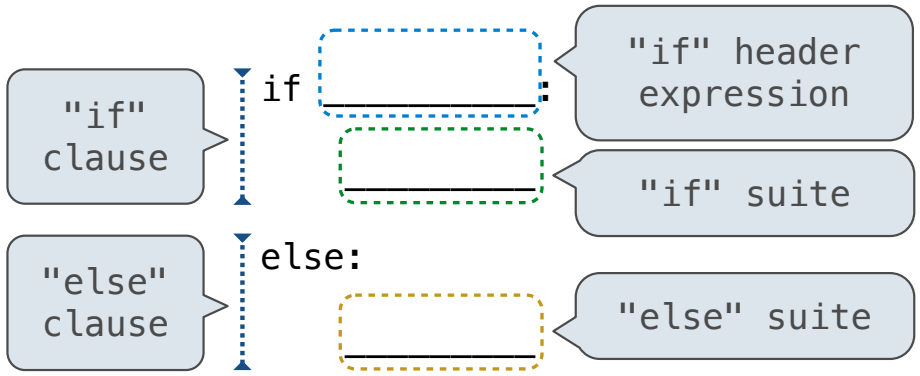

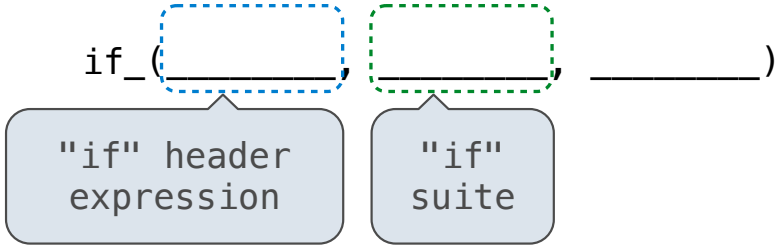

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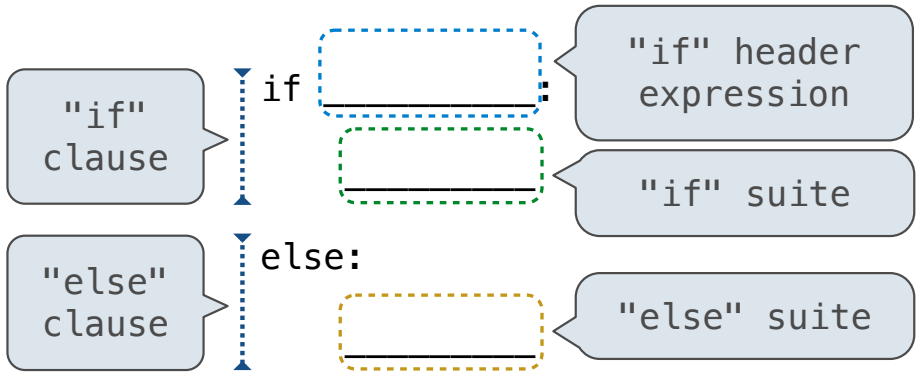

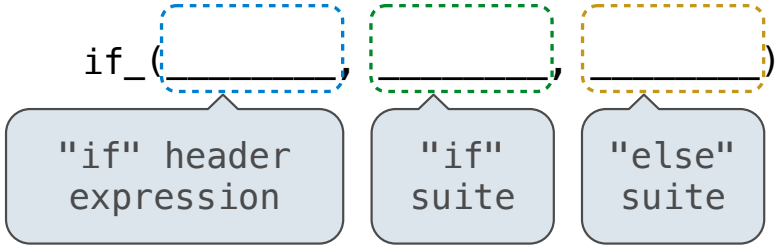

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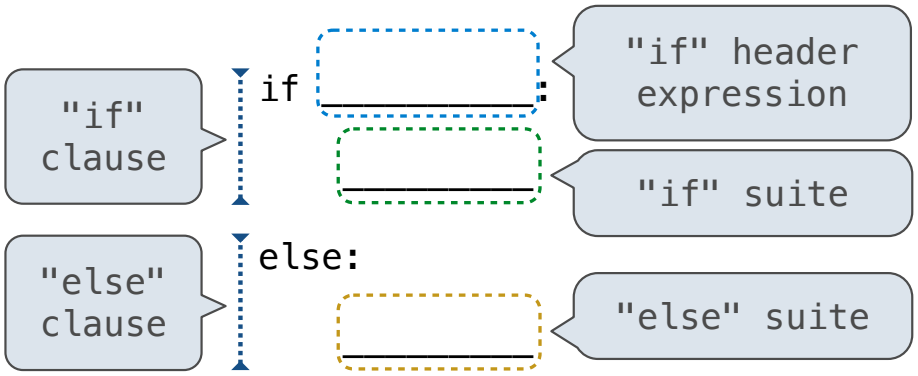

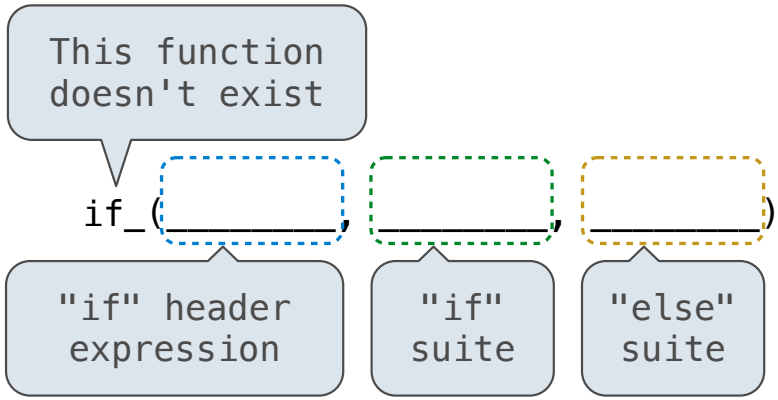

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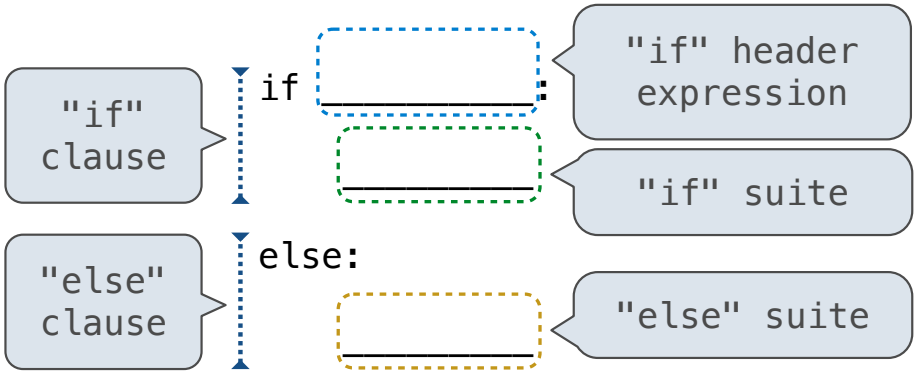

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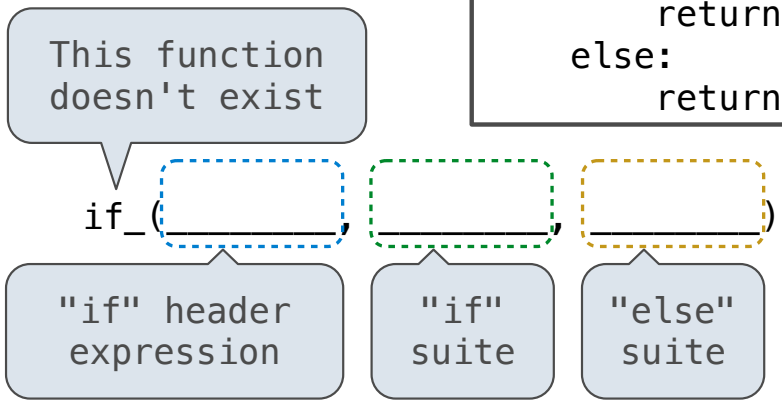

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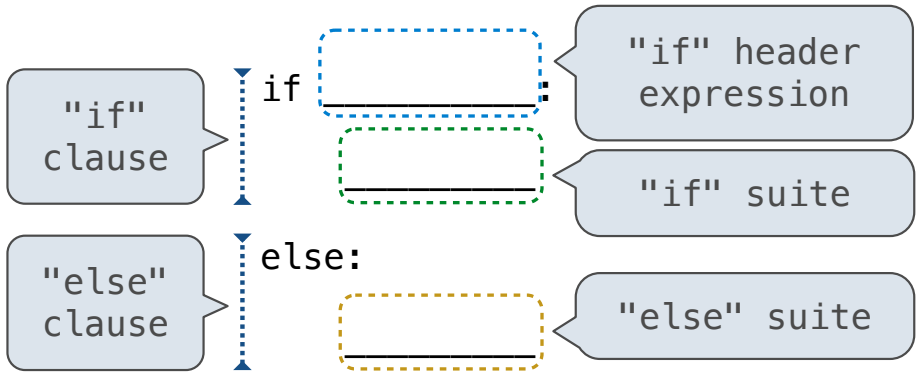

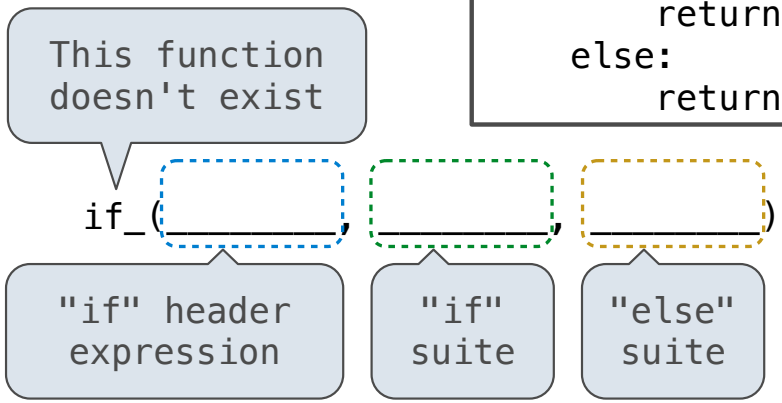

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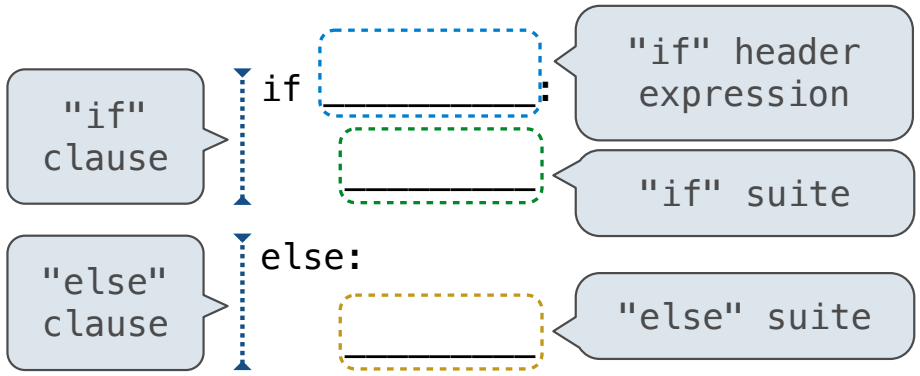

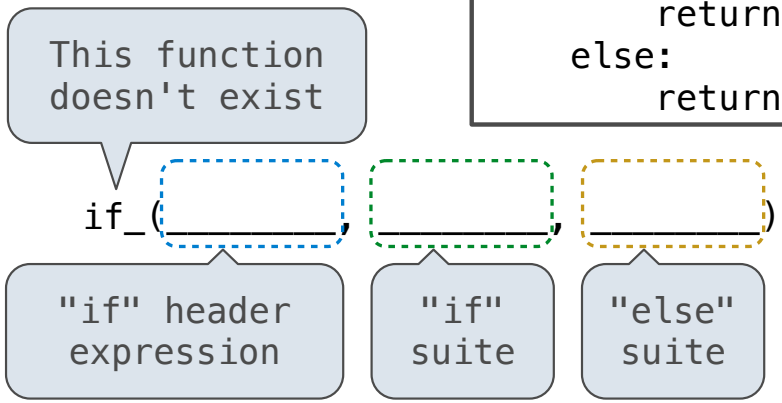

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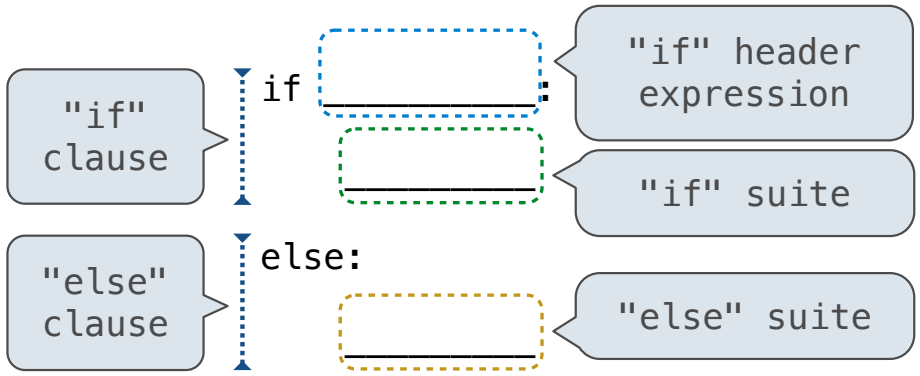

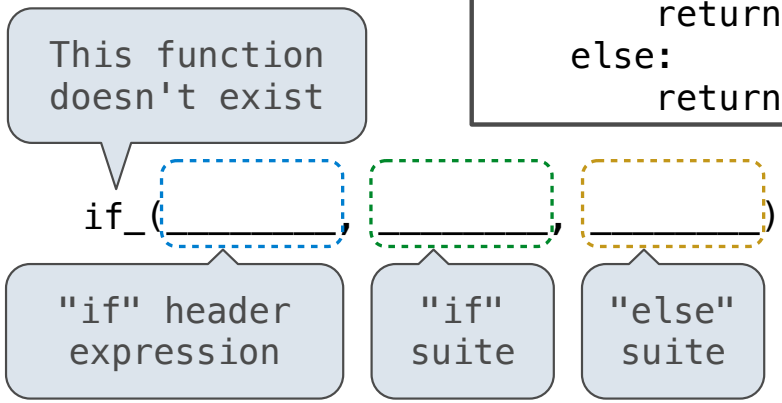

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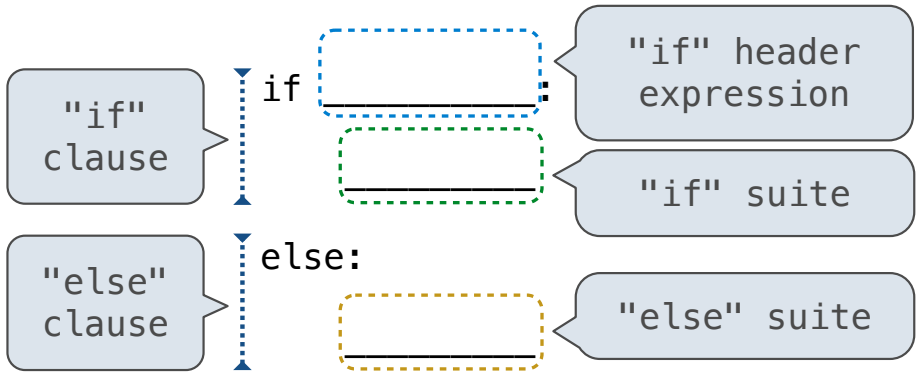

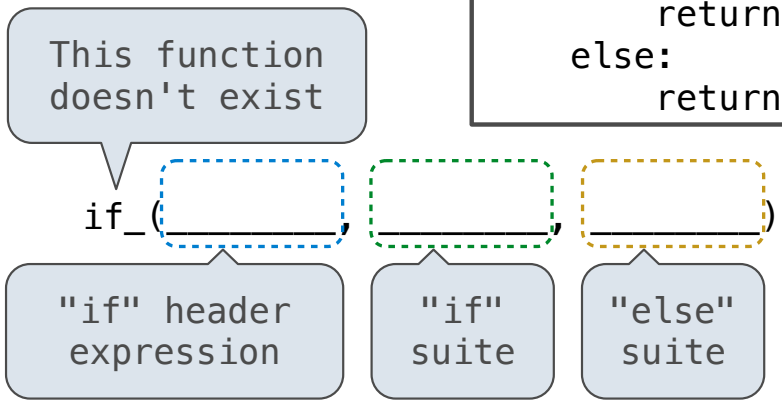

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(Demo)

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Short-Circuiting Expressions

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Higher-Order Functions

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    >>> summation(5, cube)
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