Iteration

Announcements

Return

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def end(n, d):
    """Print the final digits of N in reverse order until D is found.

    >>> end(34567, 5)
    7
    6
    5
    """
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    """
    while n > 0:
        last, n = n % 10, n // 10
        print(last)
```

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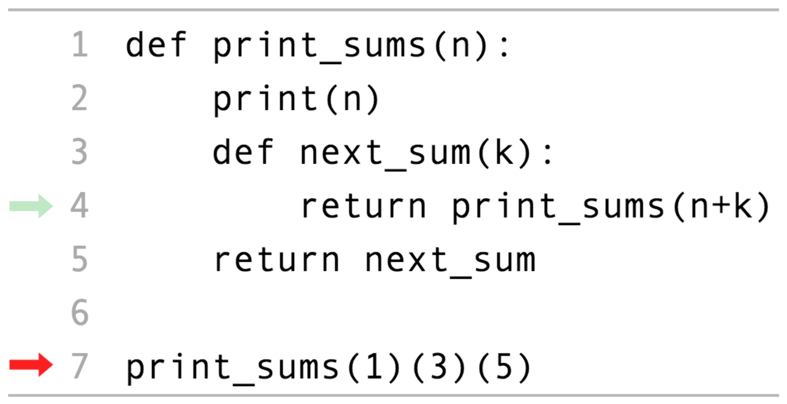
```

(Demo)

Self-Reference

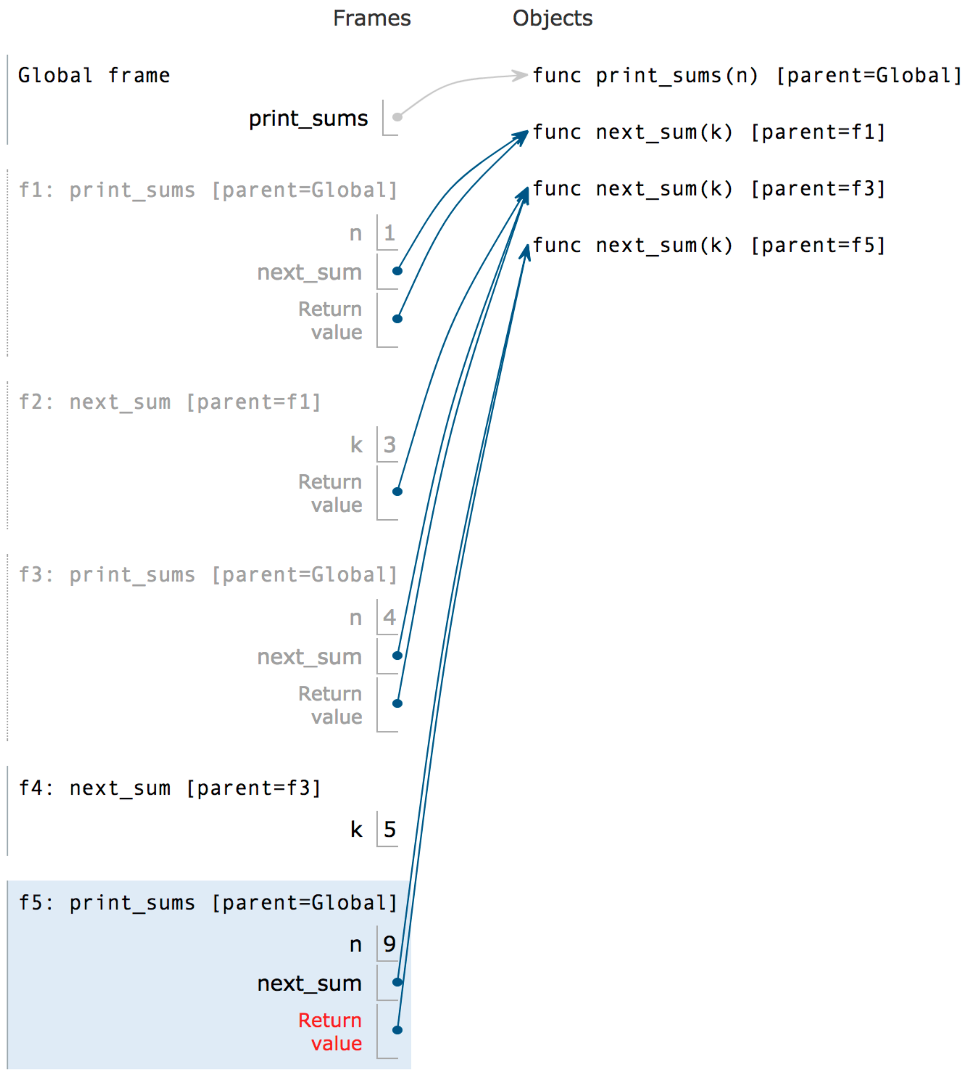
(Demo)

Returning a Function Using Its Own Name



```
def print_sums(n):
    print(n)
    def next_sum(k):
        return print_sums(n+k)
    return next_sum

print_sums(1)(3)(5)
```



Frames
Objects
Global frame
print_sums
func print_sums(n) [parent=Global]
func next_sum(k) [parent=f1]
func next_sum(k) [parent=f3]
func next_sum(k) [parent=f5]
f1: print_sums [parent=Global]
n 1
next_sum
Return value
f2: next_sum [parent=f1]
k 3
Return value
f3: print_sums [parent=Global]
n 4
next_sum
Return value
f4: next_sum [parent=f3]
k 5
f5: print_sums [parent=Global]
n 9
next_sum
Return value

http://pythontutor.com/composingprograms.html#code=def%20print_all%28k%29%3A%0A%20%20%20%20print%28k%29%0A%20%20%20%20return%20print_all%0A%20%20%20%20%0Aprint_all%281%29%283%29%285%29&cumulative=true&curInstr=0&mode=display&origin=composingprograms.js&py=3&rawInputLstJSON=%5B%5D

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Control

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if __________:

    _________

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```

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If Statements and Call Expressions

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Execution Rule for Conditional Statements:

Each clause is considered in order.

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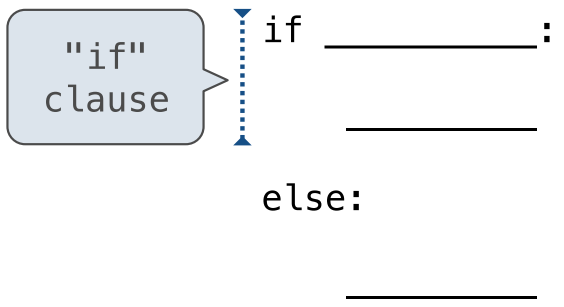

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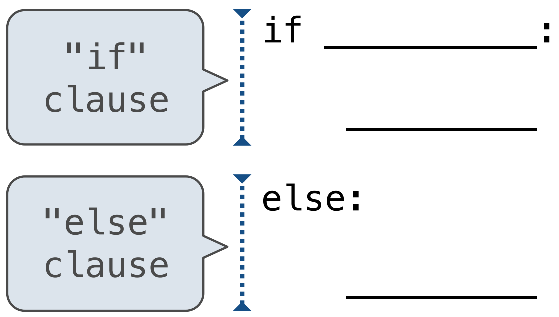

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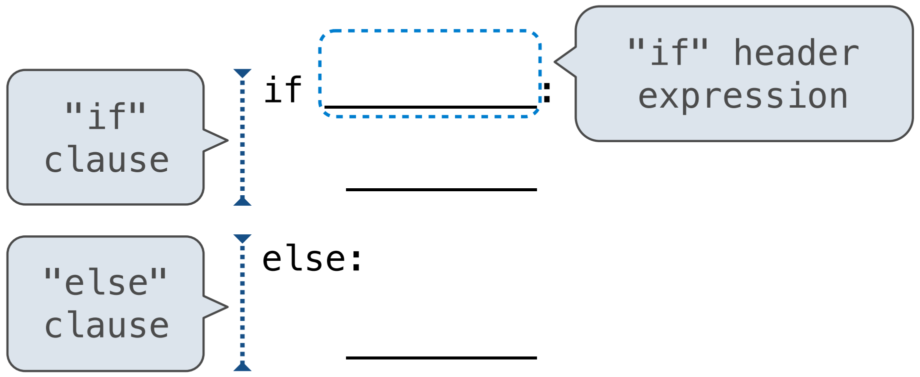

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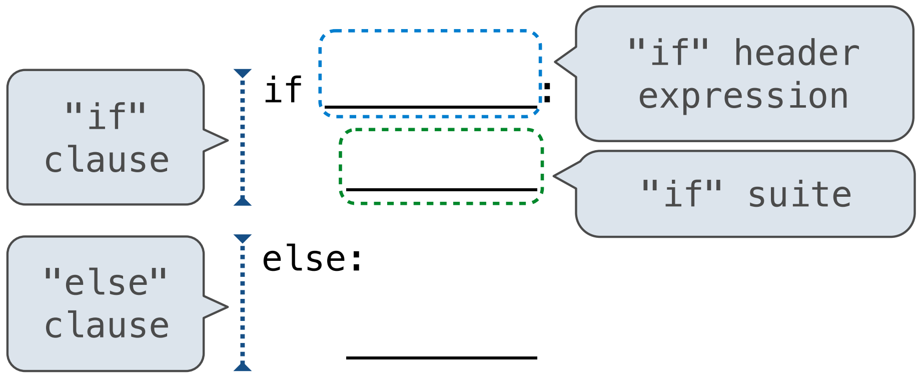

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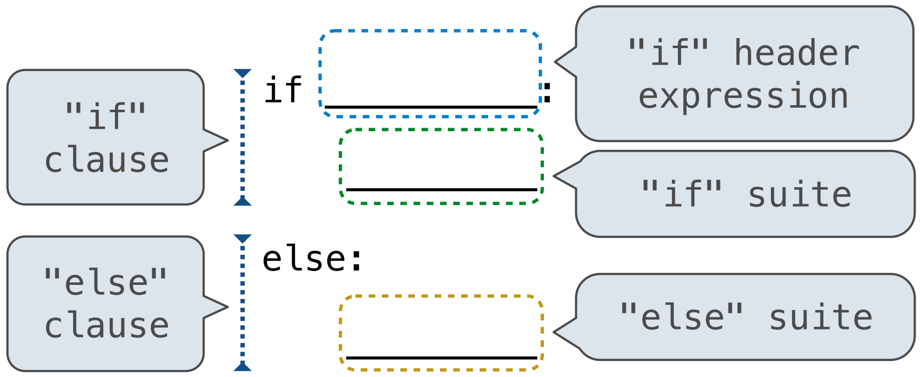

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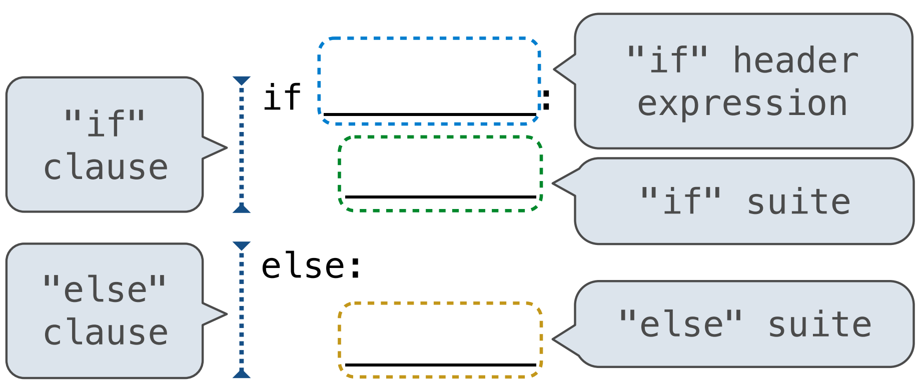

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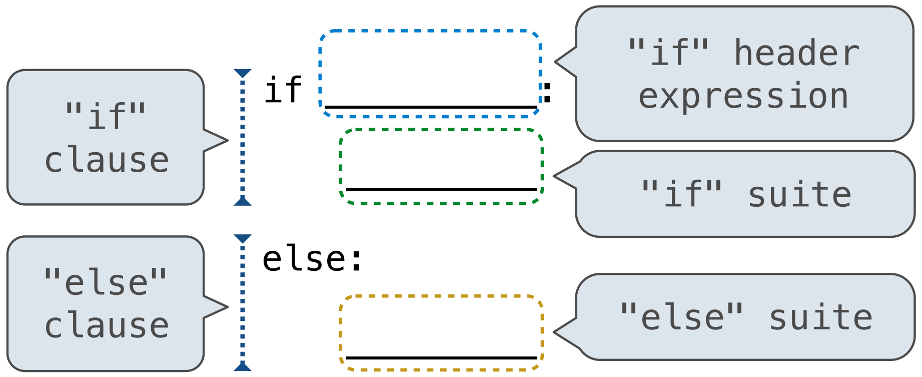

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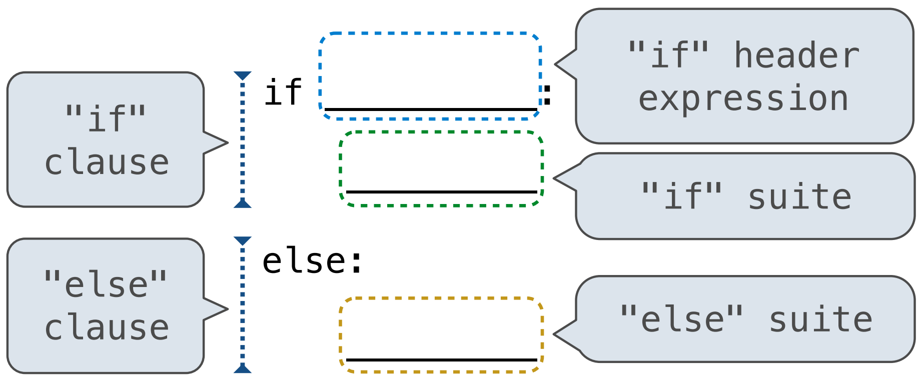

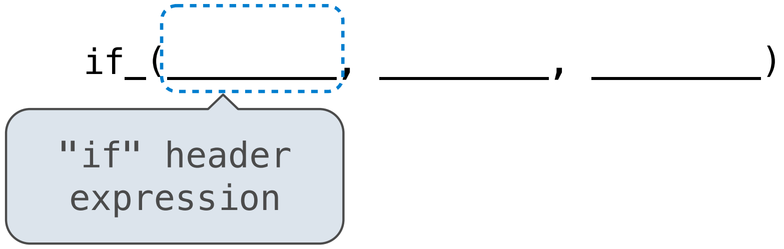

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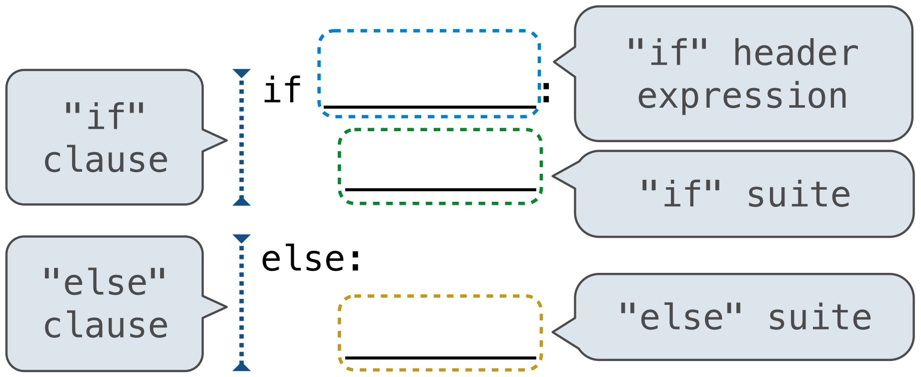

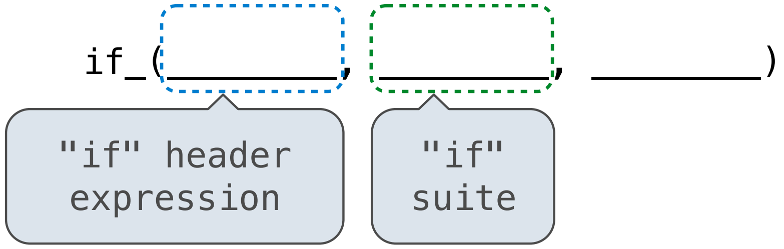

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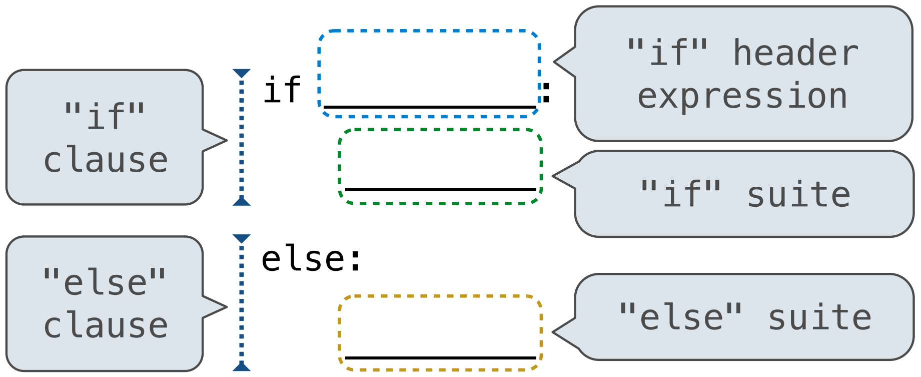

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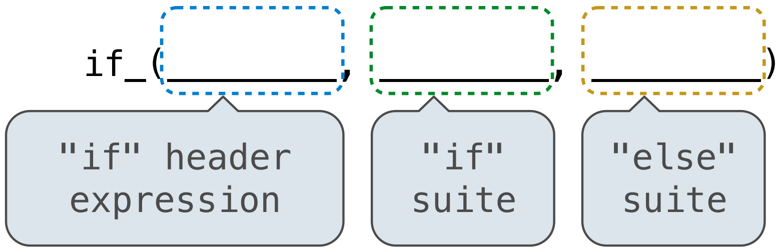

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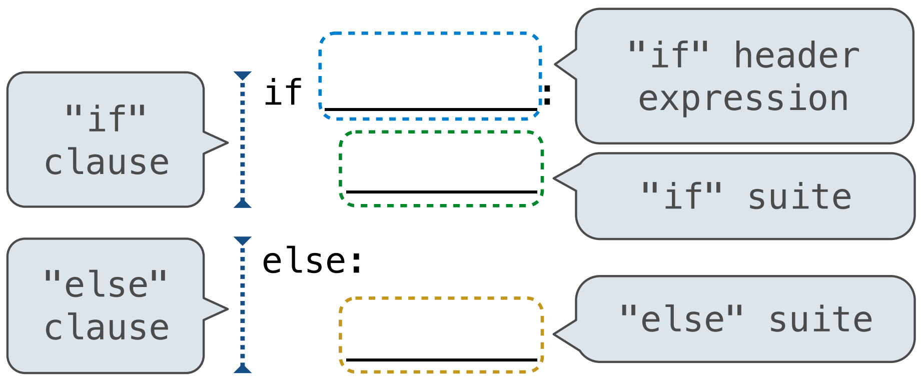

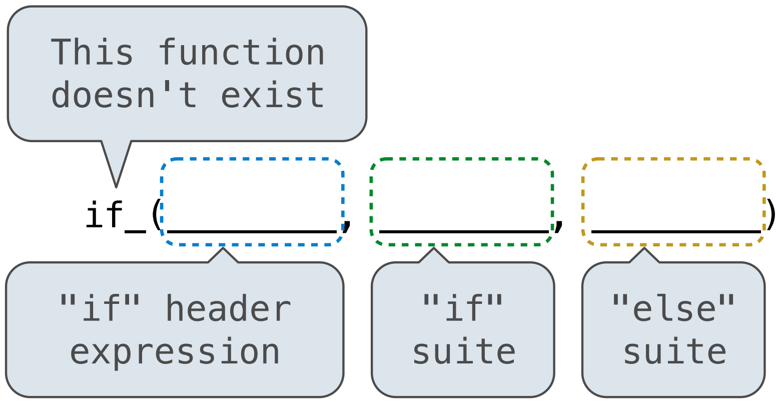
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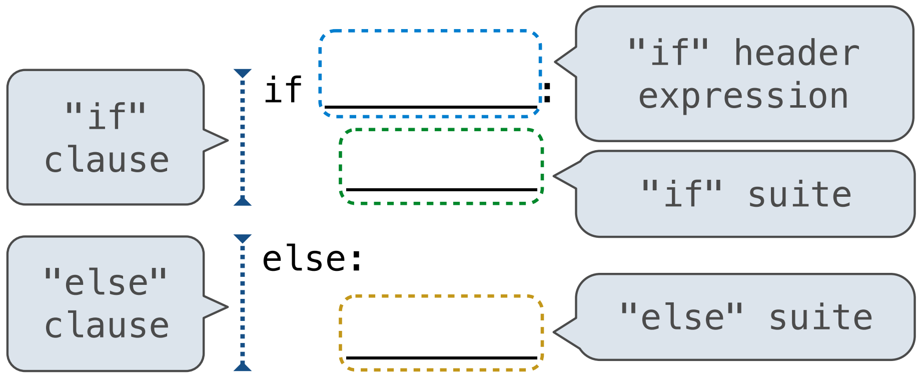

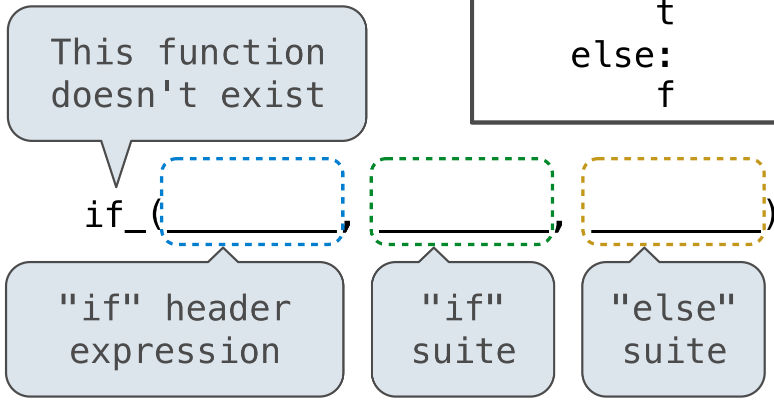

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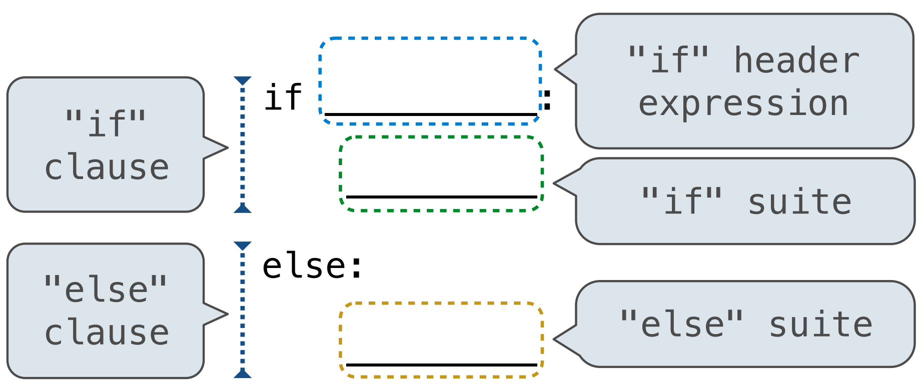

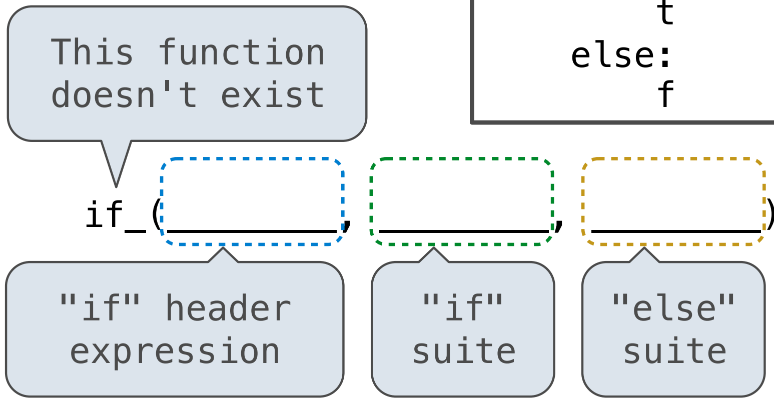
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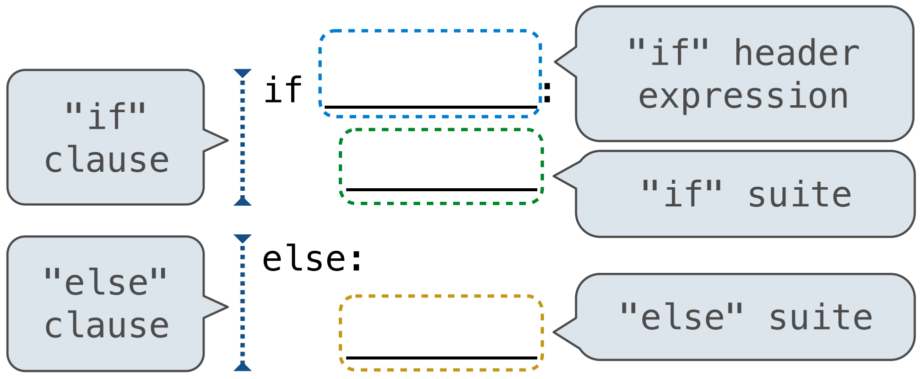

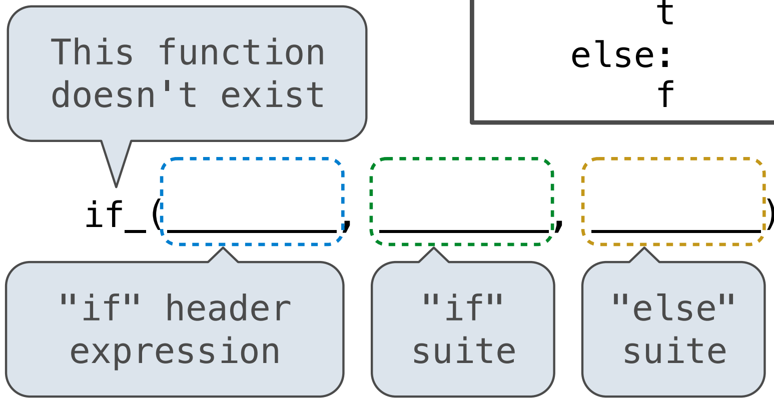

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Evaluation Rule for Call Expressions:

1. Evaluate the operator and then the operand subexpressions

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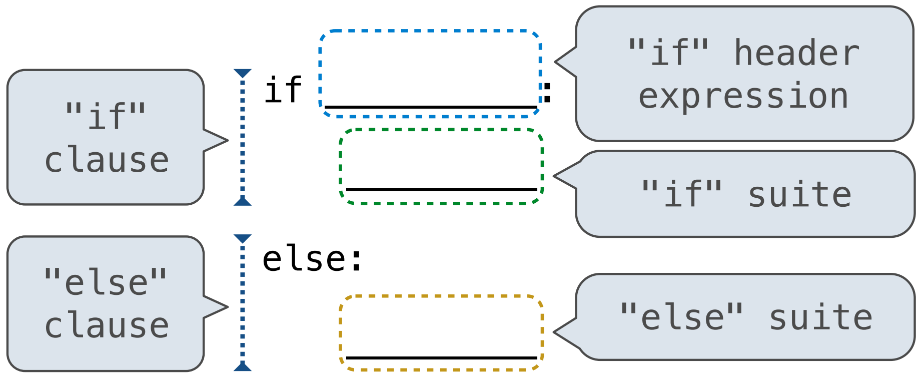

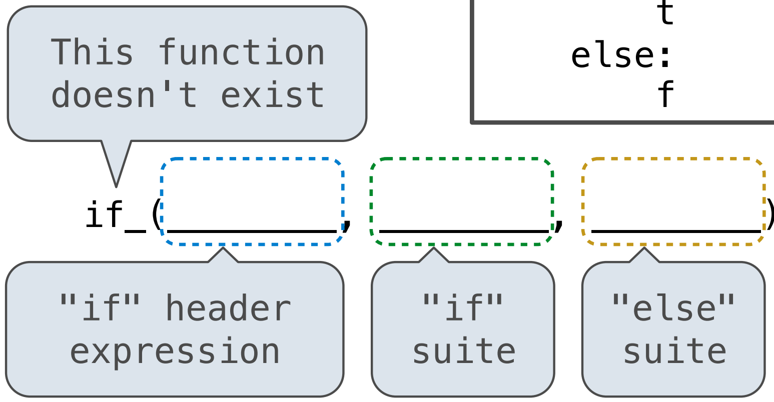

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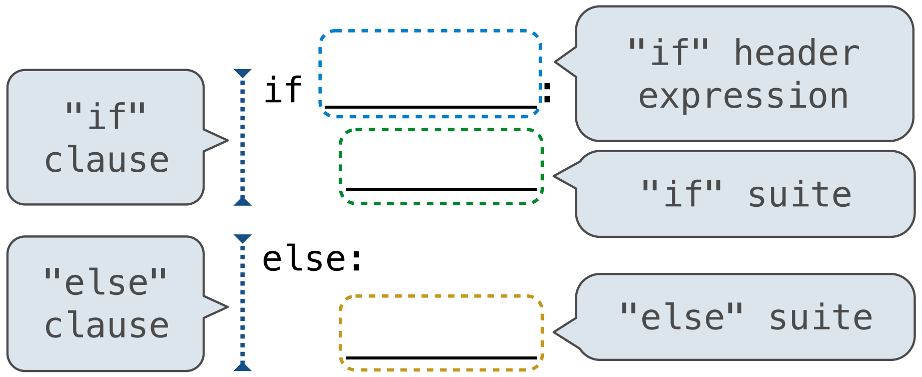

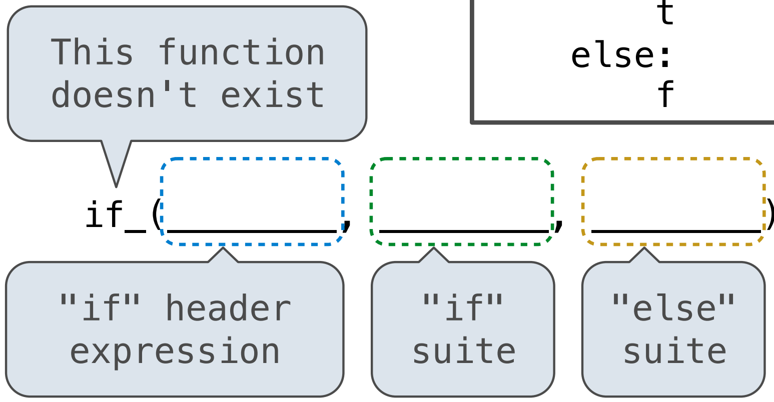

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(Demo)

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Control Expressions

Logical Operators

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2. If the result is a false value **v**, then the expression evaluates to **v**.

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(Demo)

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Evaluation rule:

1. Evaluate the **<predicate>** expression.

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Conditional Expressions

A conditional expression has the form

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Evaluation rule:

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3. Otherwise, the value of the whole expression is the value of the **<alternative>**.

```
>>> x = 0
>>> abs(1/x if x != 0 else 0)
0
```