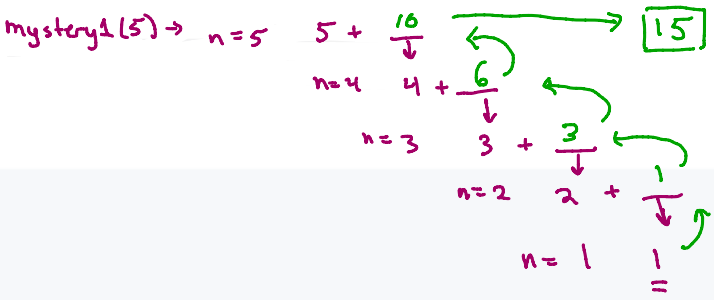
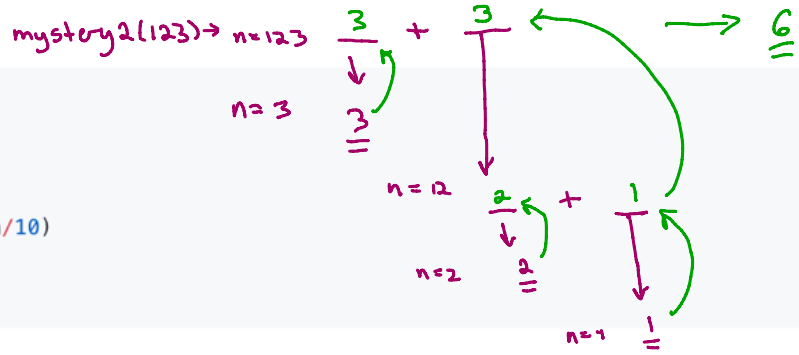
Trace #1




```ruby
def mystery1(n)
  if n == 1
    return n
  else
    return n + mystery1(n-1)
  end
end
```

- What is mystery1(5)? 15
- What is mystery1(10)? 55
- What is mystery1(0)? Stackoverflow. Will never reach basecase
- What is the time complexity of mystery1(n)? O(n) where n is the value of n
- What is the space complexity of mystery1(n)? O(n)

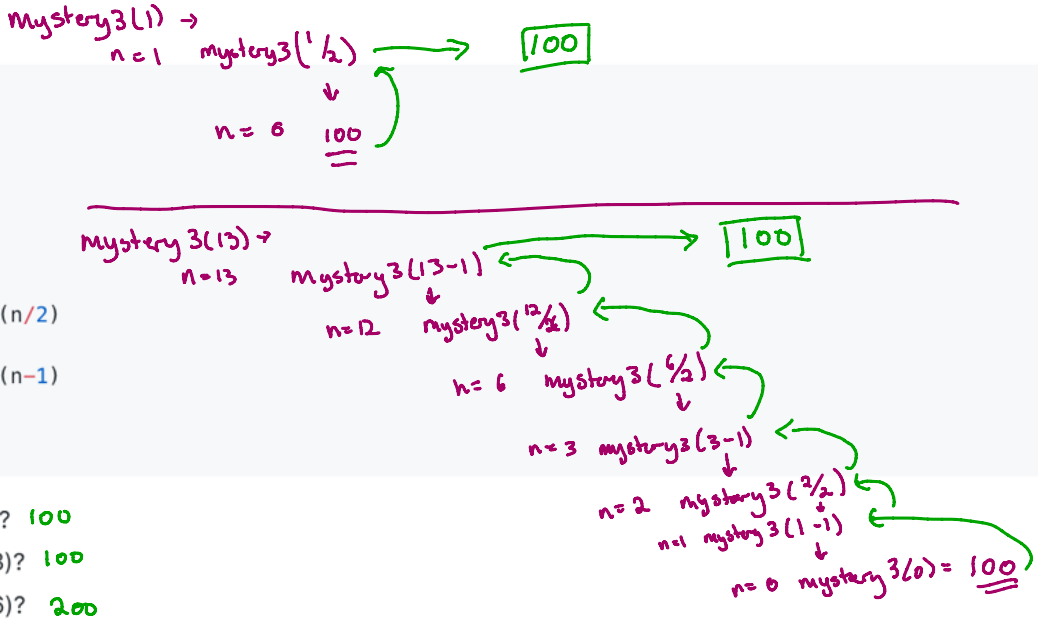
Trace #2




```ruby
def mystery2(n)
  if n < 10
    return n
  else
    return (n%10) + mystery2(n/10)
  end
end
```

- What is mystery2(123)? 6
- What is mystery2(9005)? 14
- What is mystery2(-123)? -123
- What is the time complexity of mystery2(n)? O(m) where m is the number of digits in n
- What is the space complexity of mystery2(n)? Same ↑
- *Added Fun: How could we make* `mystery2(-123)` *work the way we might expect it to work instead of the way it does?*

Trace #3




```ruby
def mystery3(n)
  if n == 0
    return 100
  elsif n == -1
    return 200
  end
  if n%2 == 0
    return mystery3(n/2)
  else
    return mystery3(n-1)
  end
end
```

- What is mystery3(1)? 100
- What is mystery3(13)? 100
- What is mystery3(-6)? 200
- What is the time complexity of mystery3(n)? O(Math.abs(n))
- What is the space complexity of mystery3(n)? O(Math.abs(n))