

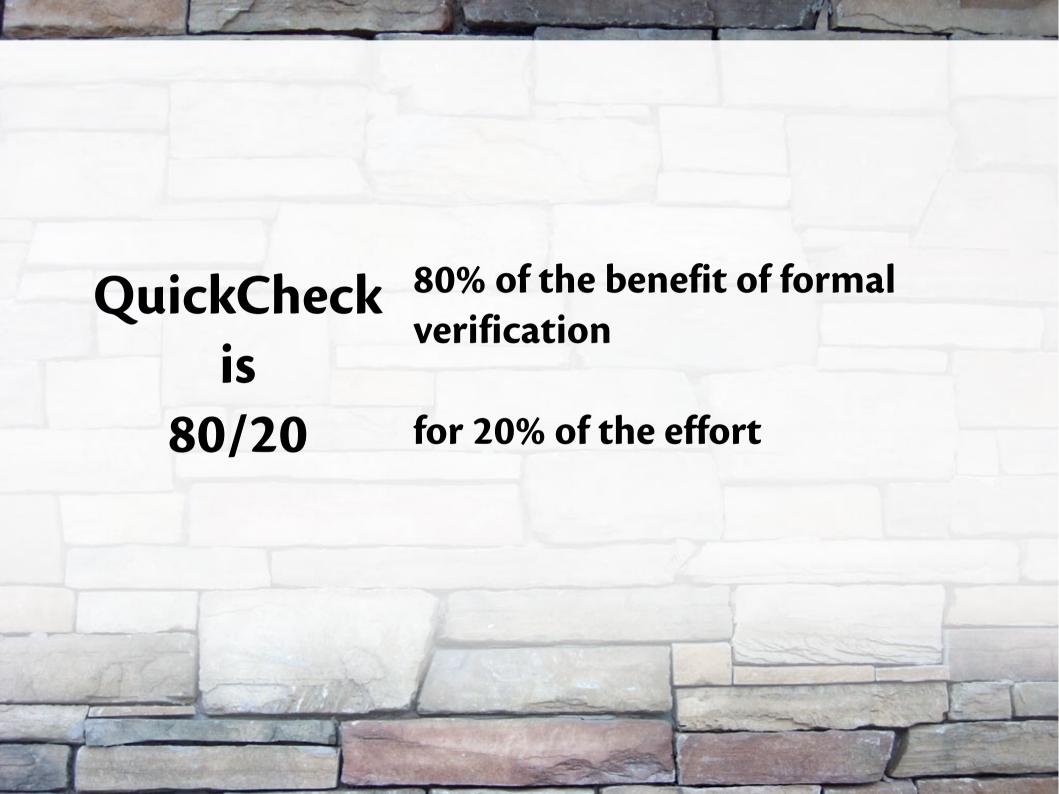
27.08.2014 • Dan Şerban • github.com/dserban

Let's start with WHY

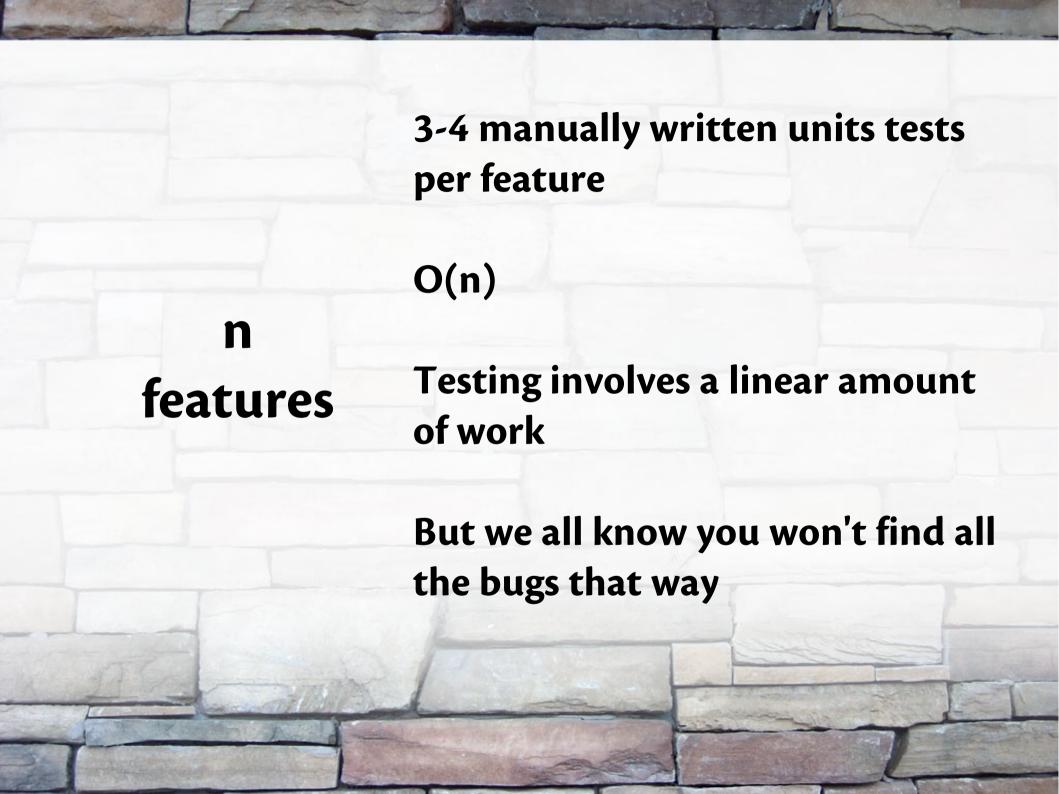


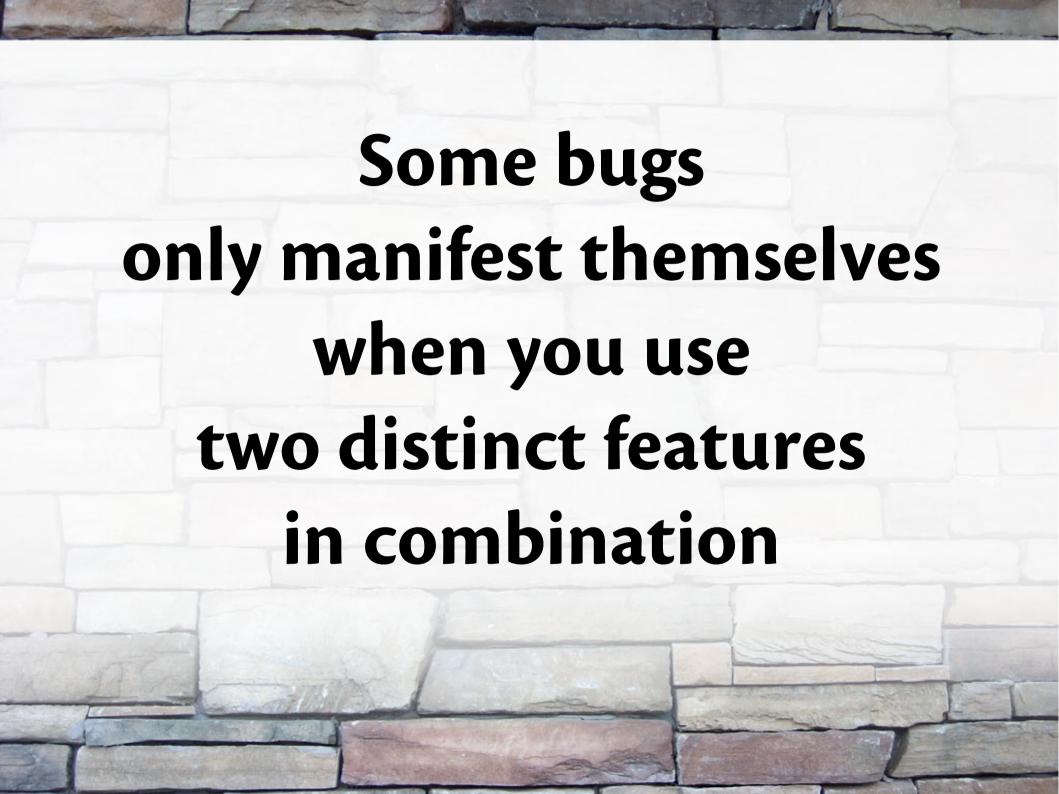


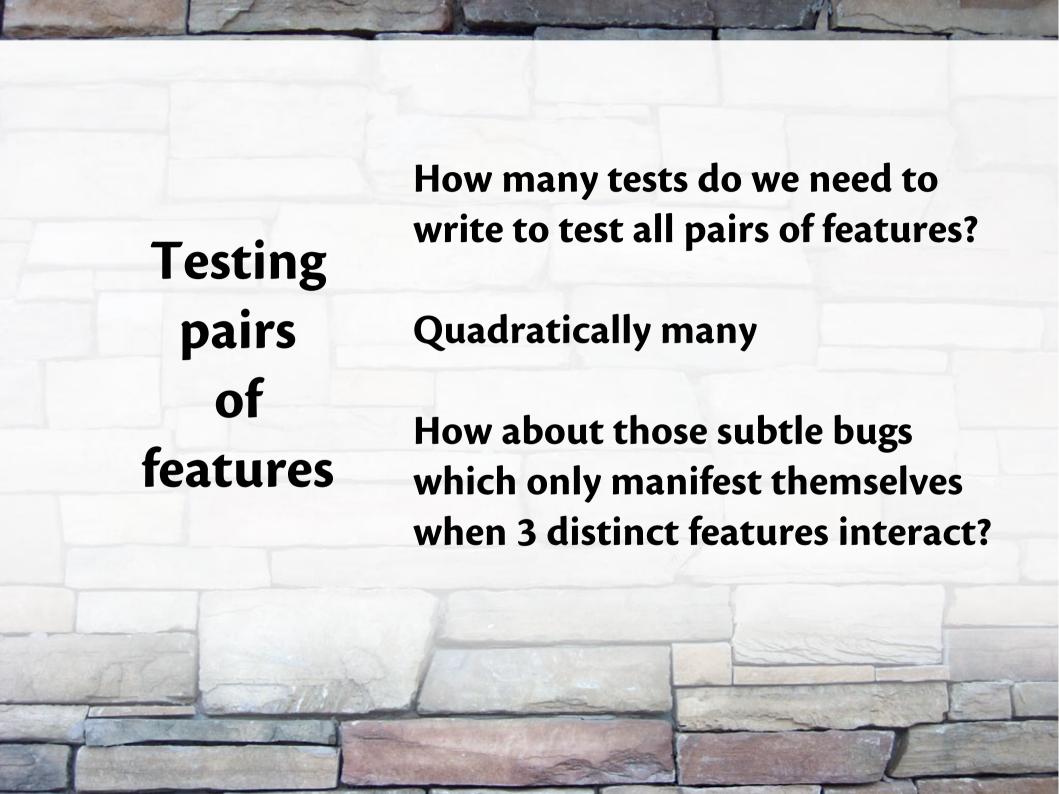




Why is testing so hard? Think of a system with n features

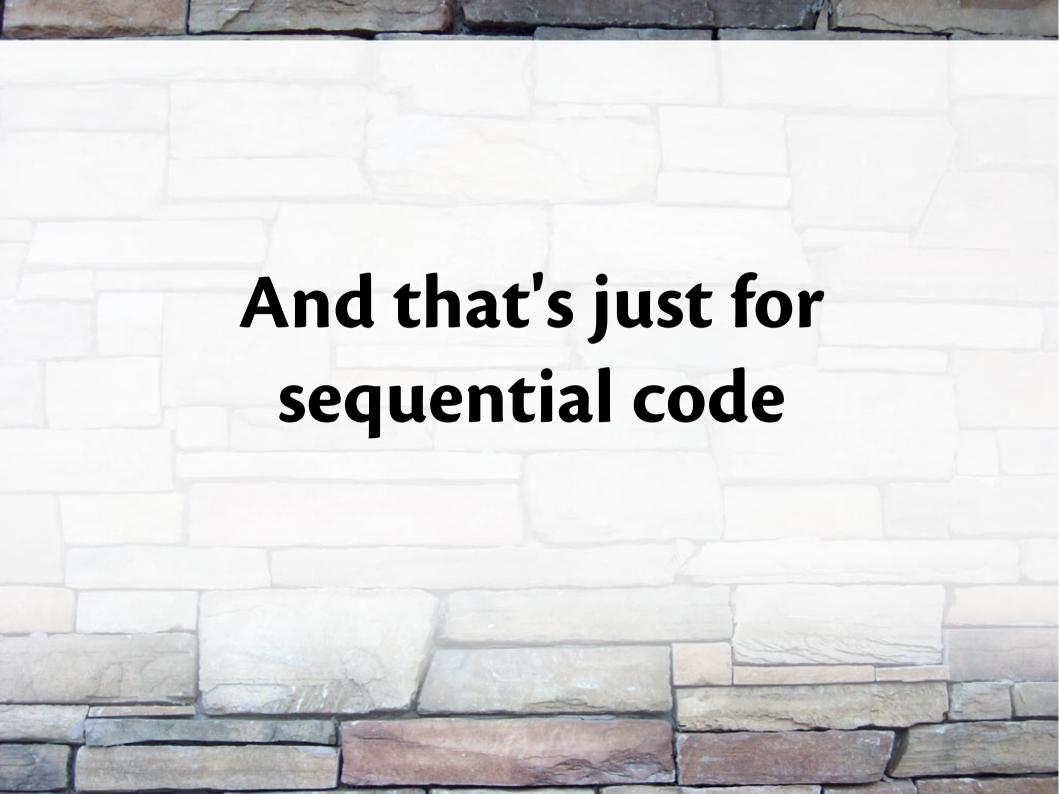






This is starting to sound like a lot of work

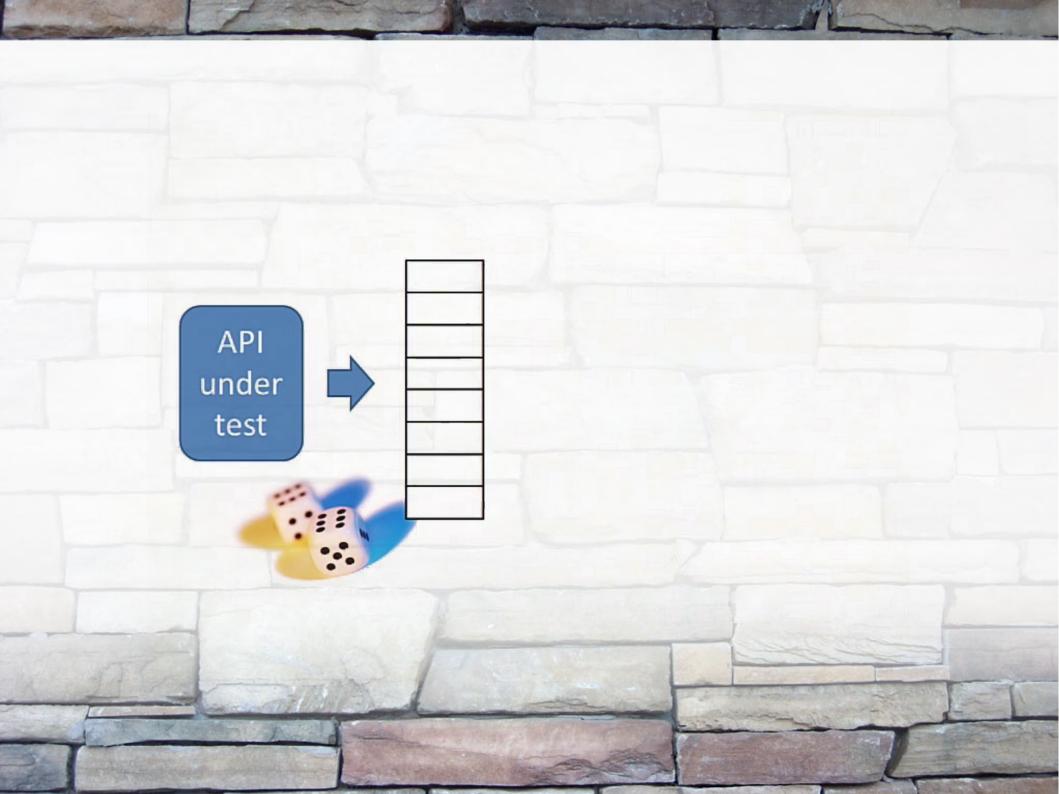


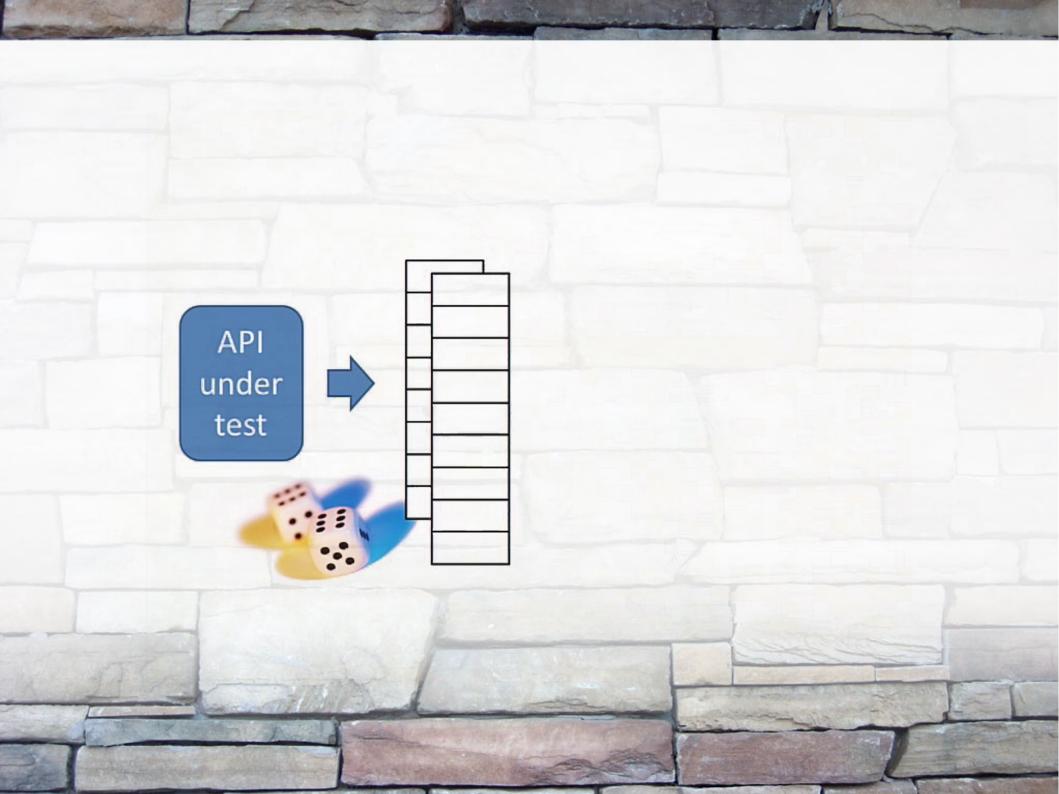


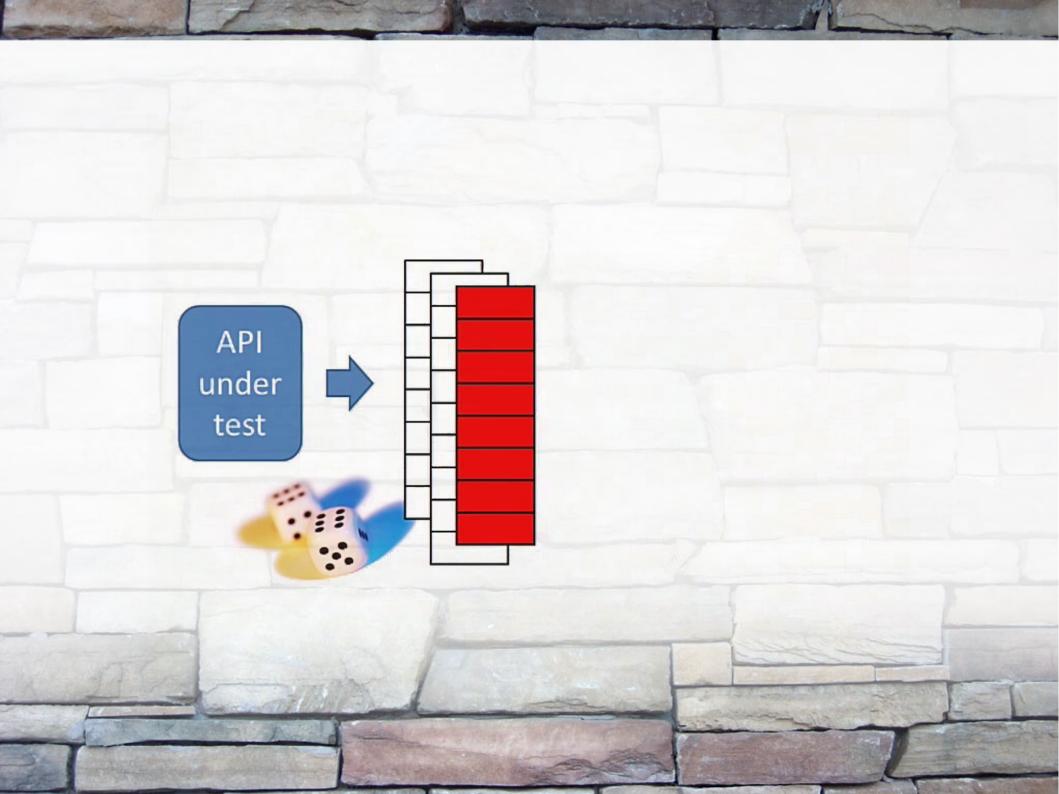


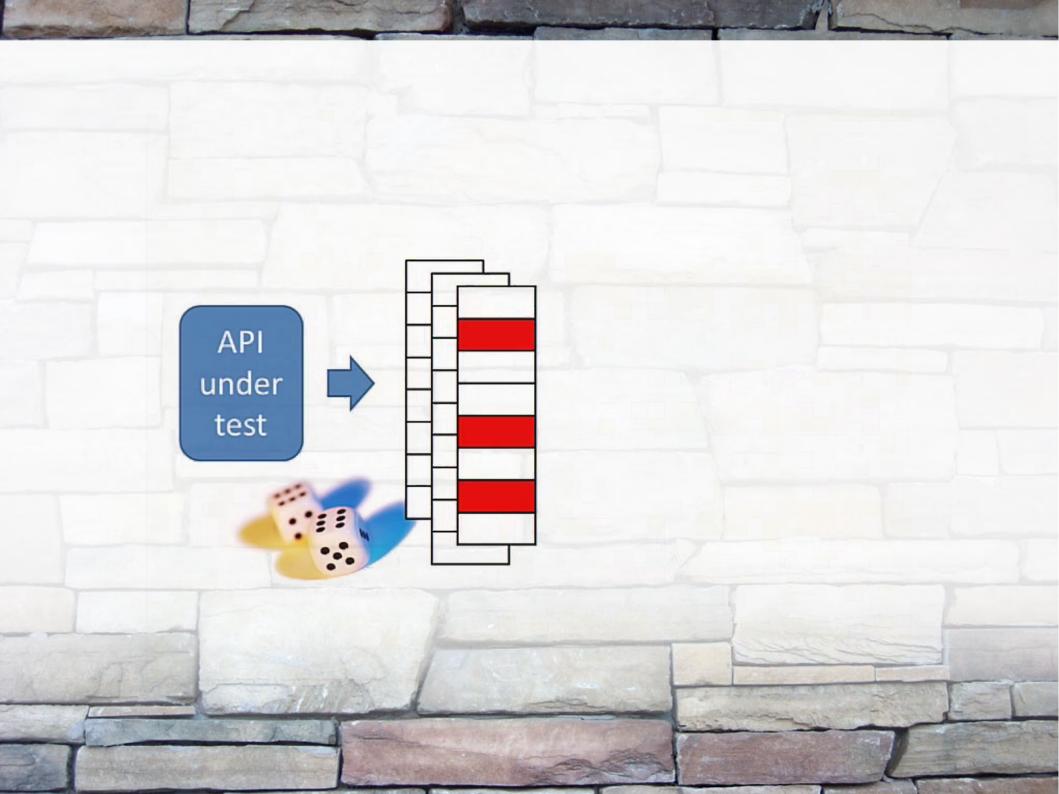
So how exactly does QuickCheck work?

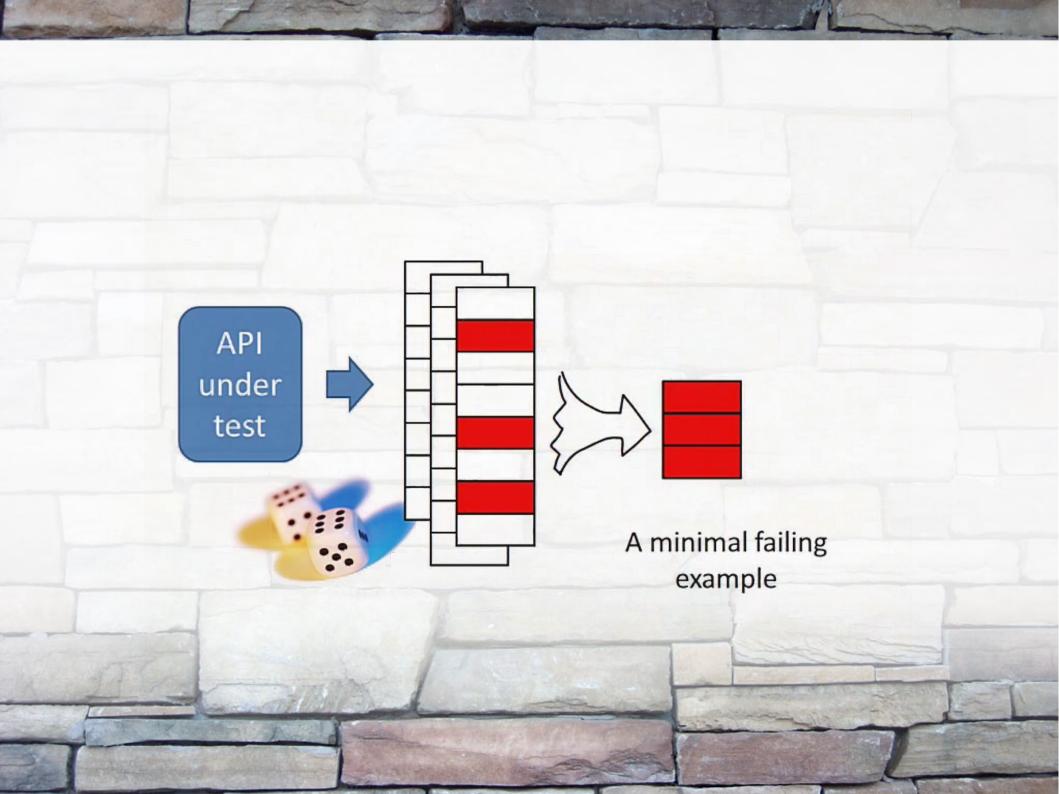


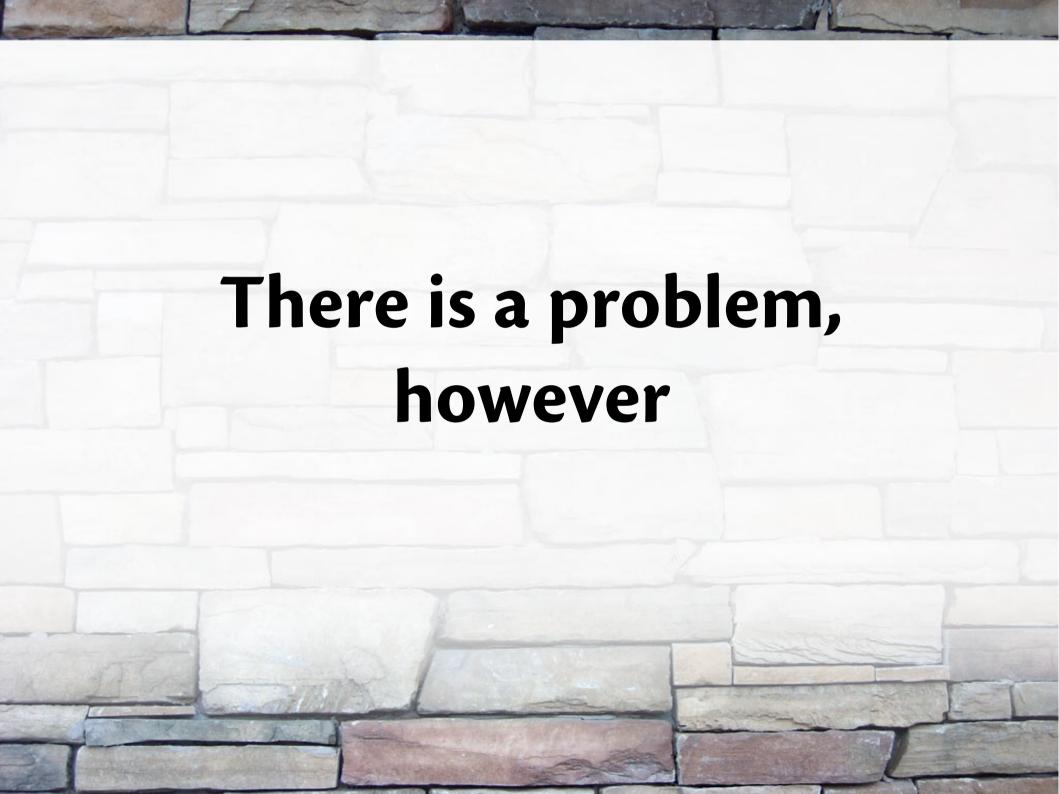


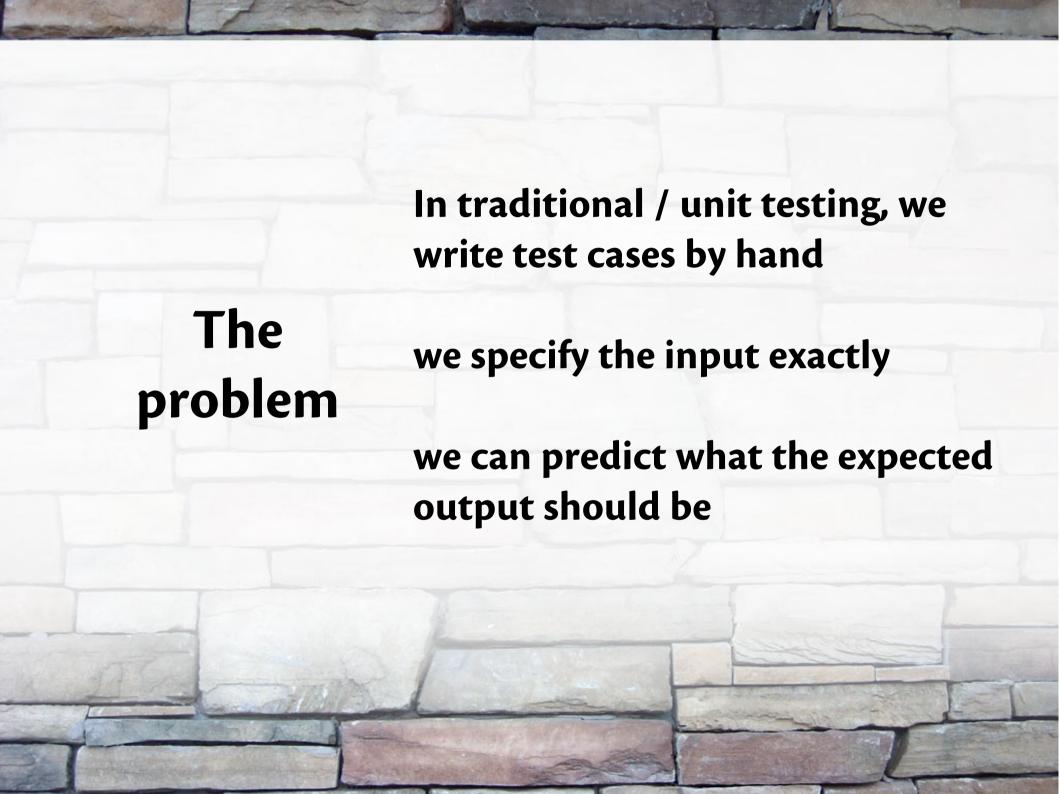


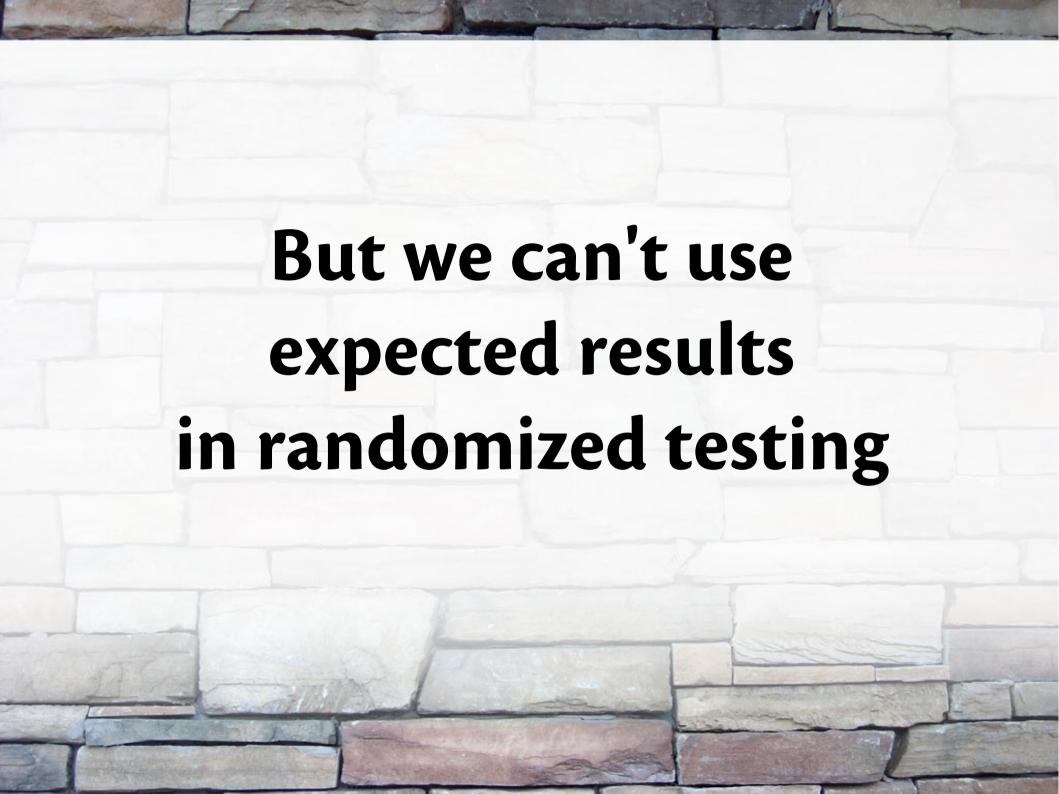


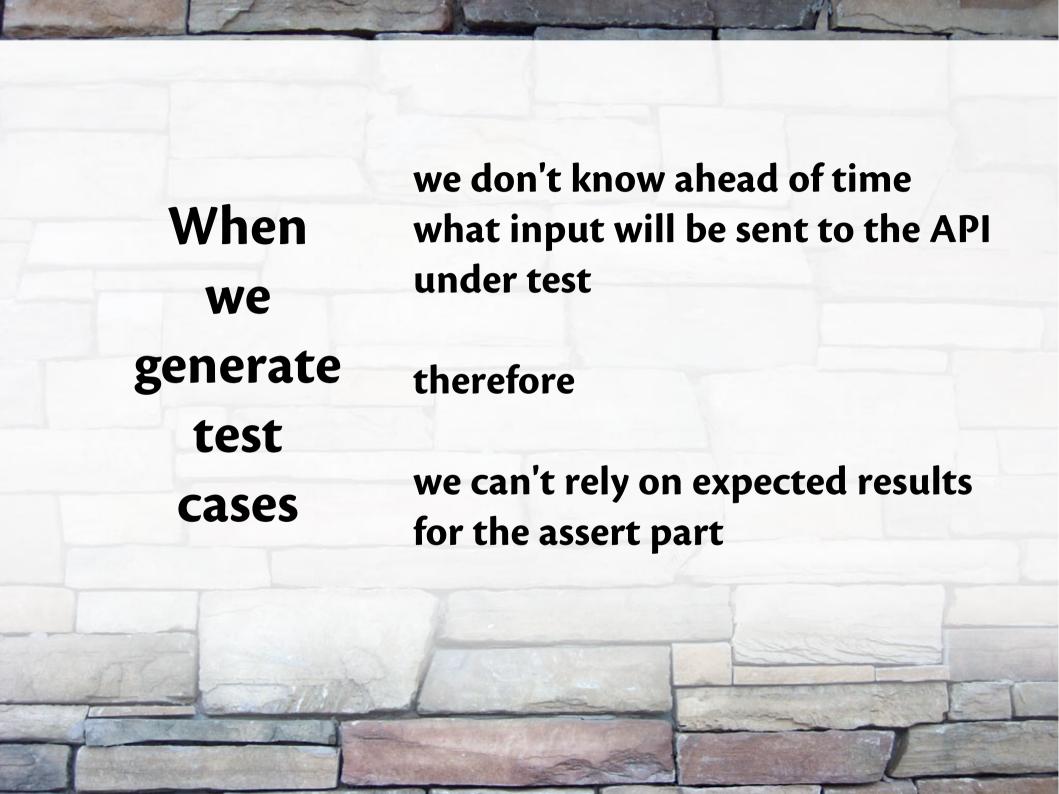


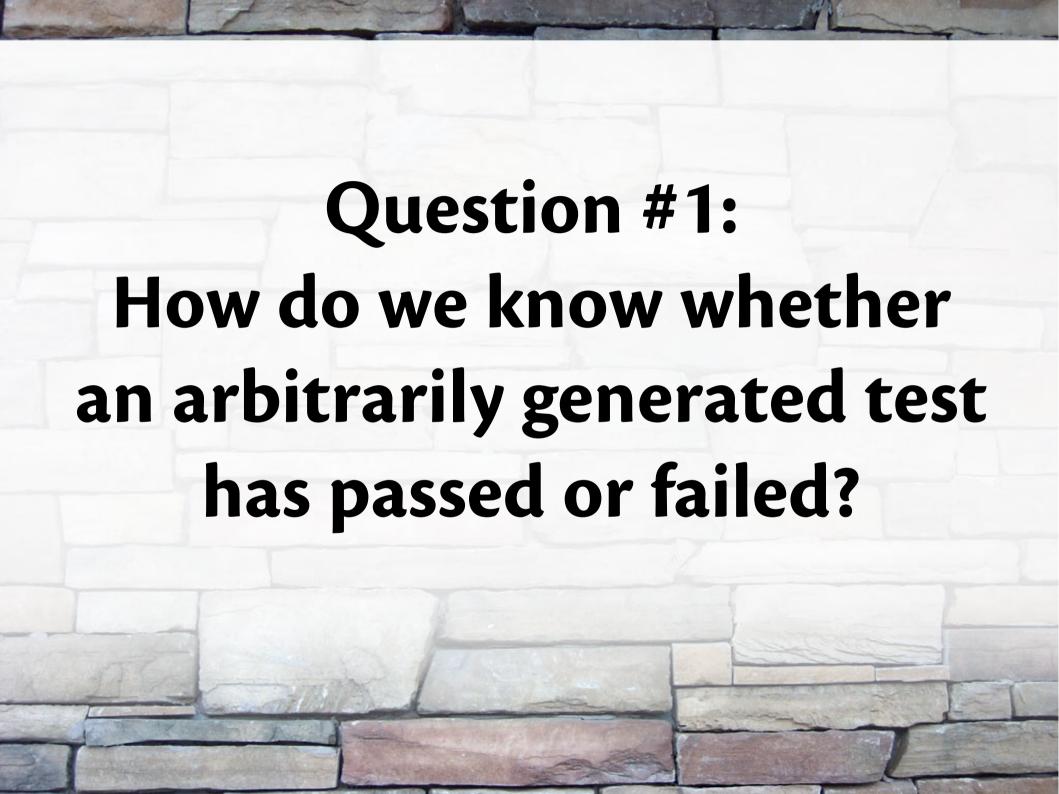












Question #2: What is a general property?

Property: "Plus is a commutative operator."

$$x + y == y + x$$

Property: "For each integer n, if n is even, then n+1 should be odd."

 $n \rightarrow even(n) ==> odd(n+1)$

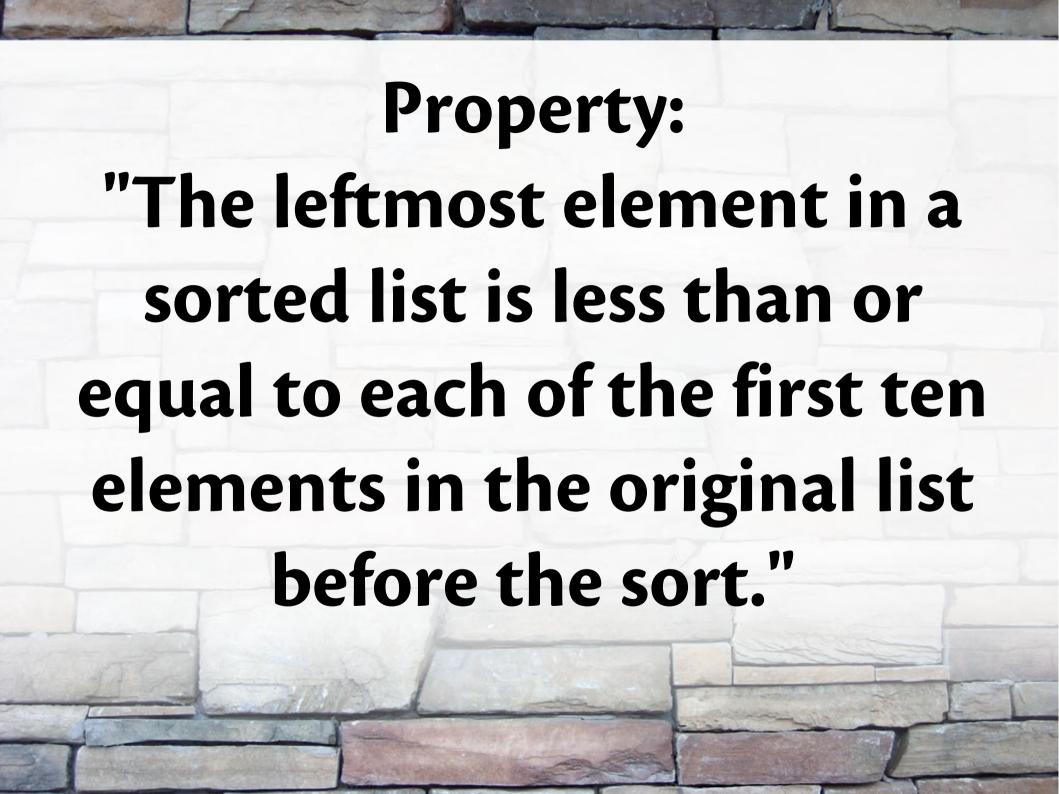


(size . compress) input < size input

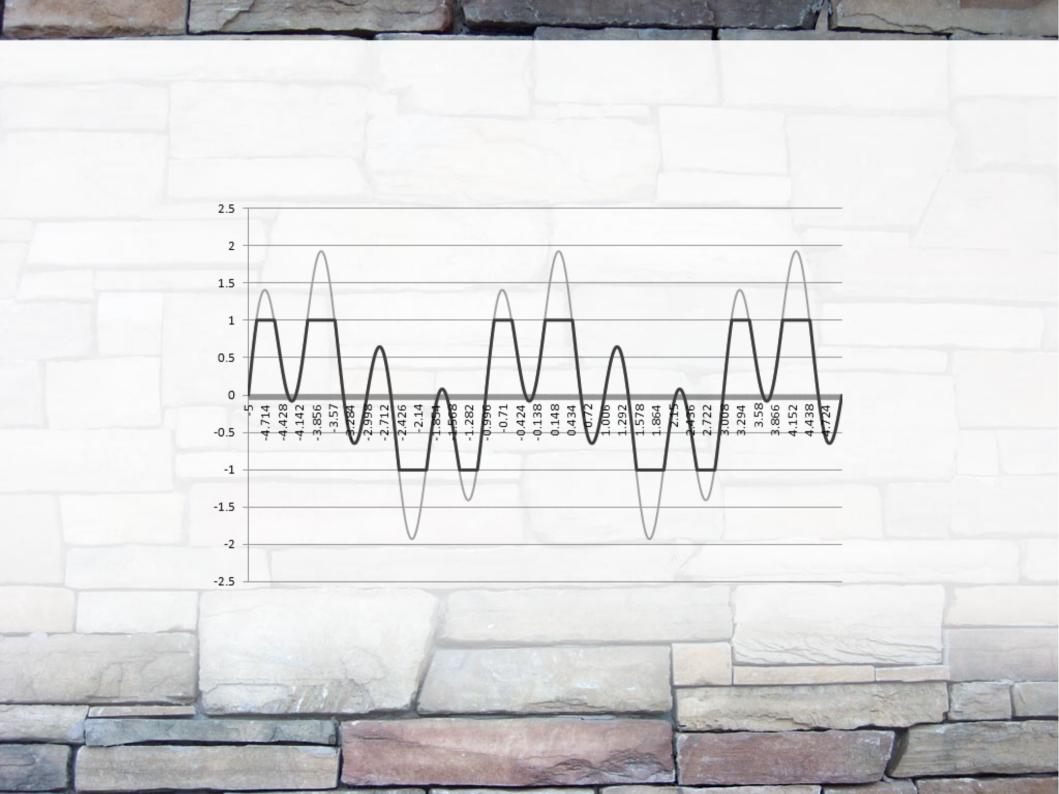
Property:

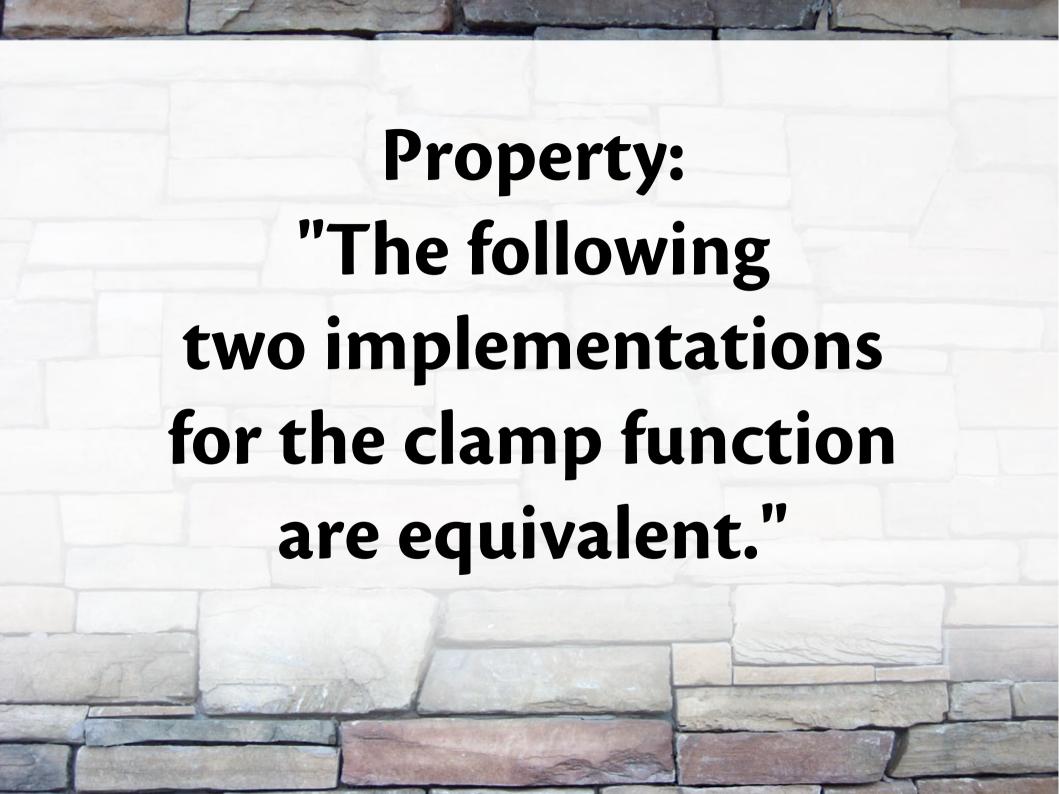
"Sorting a list twice in a row should give the same result as sorting only once."

(sort . sort) list == sort list



```
propSort myList =
  let
    headOfSortedList = (head . sort) myList
 in
    and [ headOfSortedList <= i</pre>
         | i <- take 10 myList
```





```
clampA :: Int -> Int -> Int
clampA lowerBound upperBound i
   i > upperBound = upperBound
  | i < lowerBound = lowerBound</pre>
  clampB :: Int -> Int -> Int
clampB lowerBound upperBound i =
 (!! 1) . sort $ [lowerBound, upperBound, i]
```

Property: "The MD5 algorithm should always generate a string of length 32."

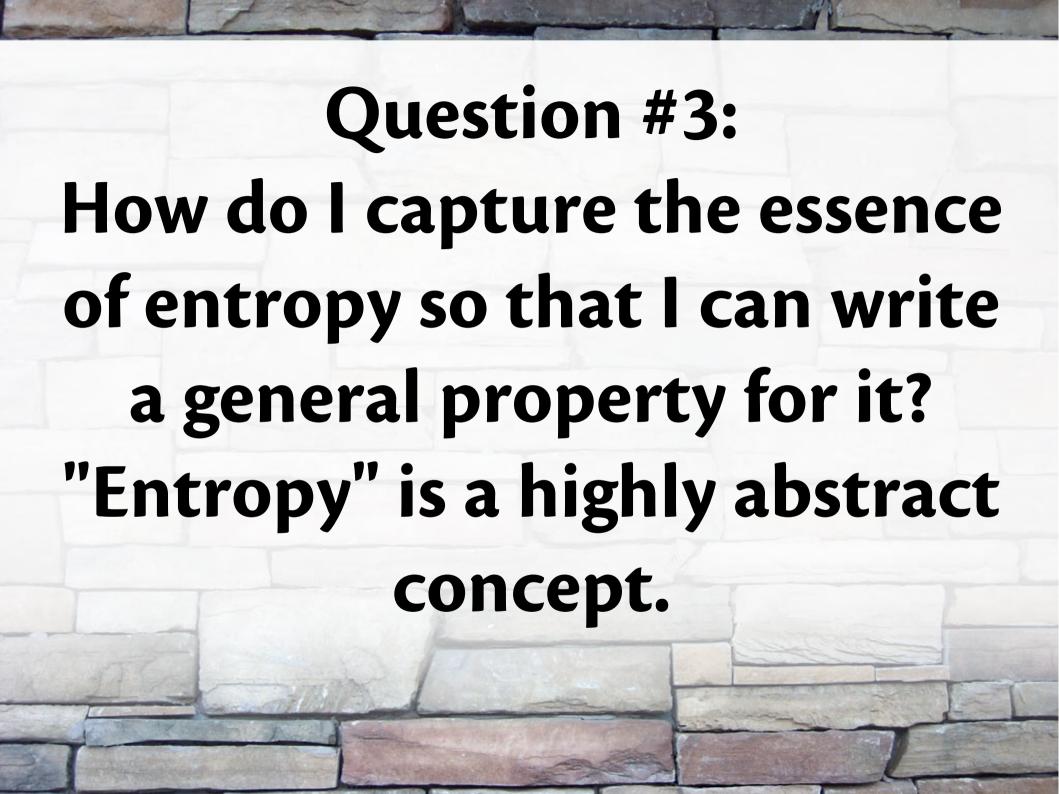
\$ echo -n "abc" | md5sum
900150983cd24fb0d6963f7d28e17f72

\$

Property: "The MD5 algorithm should always generate a sufficient amount of entropy."

\$ echo -n "abc" | md5sum
900150983cd24fb0d6963f7d28e17f72

\$



\$ echo -n "abc" | md5sum
900150983cd24fb0d6963f7d28e17f72
\$

900150983 cd 24 fb 0 d 6963 f 7 d 28 e 17 f 72

Key info here:
23 digits
9 letters

23 digits and 9 letters.

That's not at all balanced, therefore there is not enough entropy.

Test failed.



"The software-powered semaphores at a simple intersection should never greenlight both roads, not even after being hit by 10 lightning strikes in a row."



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