Re: Primes: Randomness and Prime Twin Proof

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Russelll wrote (I owe you an 'l' from earlier, we're square now):

> Well, it was clear in your post that you mischaracterized Ullrich's
> position, but other than that, almost nothing in it was clear to me.
> As I understand it you are encoding Pat(n) by a finite sequence of
> 0's and 1's, and using your definition of random to assert that
> Pat(oo),
> i.e. the infinite case, does not end in all zeroes.

Regrettably, that's not what I'm saying at all. Pat(n) is an
increasingly random sequence of 1's and 0's true.
Using my definition of random, let's see if I can explain this to you.
Consider Pat(x) for some finite x> 1.
Let's try to define this pattern.
1) every 3rd position (starting at offset 0) has a one, there that's
the pattern
damn... wait,
2) also every 5th position starting at offset 1 has a 1, there that's
the pattern
damn... wait
3) also every 7th position starting at offset 2 has a 1, there that's
the pattern...
and so on and so on up to x

Meaning, every time I think I've nailed down the pattern, there is a
change in the pattern which breaks that assumption. For any finite n
in Pat(n) there exists a finite number of these descriptions. Hence
it's as complicated as you care to make it but finite (pseudo random).

> But you've waved
> your hands through a required step, that of showing that Pat(oo)
> conforms to your definition of random.

I hope you can now see that as n increases without bound, Pat(n)
approaches (gets as close as you desire to) my definition of random.

> I cannot see anything resembling
> a proof of this step either in your website or your posts. Listing a
> bunch
> of examples of Pat(n) for low n is not a proof.

Let's say someone sells you a random number generator. It has a dial with which you can set the probability of a 1 occuring. You set it to 0.5 and you decide to test this machine for a bit. It spits out 10101010101010101010101010. You become suspicious. You continue the test and you get 1010101010101010101010. The probability of getting a large region of 1's and 0's which conforms to some pattern (in this case 10...) in a pseudo random sequence is inversely proportional to the randomness of the generator cross the length of the sequence. So the fact that the machine spit out a bunch of 10...'s suggests that it's a lower probability that this is a complicated random number generator (relative to another machine that spits out a less patterned sequence of equal length).

So where am I going with this? We know that the probability of getting a '0' in Pat(n) decreases with larger n. However the randomness increases with larger n; thus so does the randomness of the distribution.

Next I changed gears and looked at a particular entry in Pat(n), specifically the nth + 1 entry (right next to the recently fixed prime). I examined this entry with respect to increasing n and Pat(n). Because I can make Pat(n) ('s distribution) as random as I care to, I can always guarantee that I can get a '0' in this position as I iterate over Pat(n)'s for increasing n.

Now the kicker. I observed the 1's and 0's in Pat(n) at the n+1th position and wrote them down to produce a new string of 1's and 0's. The odds of getting a 1 or a 0 in this position are dependent on the odds of getting a 1 or 0 for that given n, Pat(n). How do I know that there CAN be a zero at the n+1th position? Again, because I can let n grow unbounded and let Pat(n) become as close to random (ly distributed) as desired.

So we get a string of 0's and 1's where the 0's are initially more dense than later... and the odds of getting a zero decrease as we progress left to right across the string. The string is RANDOM because it is the tail of an ever changing pattern (Pat(n) for ever increasing n). Because it is random, and because the probability is decreasing asymptotically towards 0 (never equal), we never hit a point where there will never be another 0. Any 0 between P(n) and P(n)^2 for any Pat(n) is guaranteed to be prime. Moreover, the immediate left neigbour of such a zero is also prime (P(n)) so we have an infinite supply of prime twins.

QED, swoosh, 2 points.

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