Re: number generator

Source: http://coding.derkeiler.com/Archive/Python/comp.lang.python/2007−03/msg01359.html

- *From*: Steven D'Aprano <steve@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>
- *Date*: Sun, 11 Mar 2007 10:53:03 +1100

On Sat, 10 Mar 2007 08:29:09 −0800, Paul Rubin wrote:

> Steven D'Aprano <steve@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx> writes:
>
> > Doesn't mean that it isn't random. After all, the first four numbers are random, therefore their sum is random. 50 − (something random) is also random.
>
> What does it mean for the first 4 numbers to be random? For example, is 27 random?

In isolation, no, but 27 could have been chosen at random and hence would have been unpredictable. That was my point: if we generate four unpredictable numbers (using random.randint or similar) and sum them, the sum is also unpredictable, and hence the difference between 50 and that sum is unpredictable.

> By your method, what is the probability of the first number being higher than 30? What is the probability of the fifth number being higher than 30? If these probabilities are unequal, can we really say the sequences are random?

Of course we can! "Uniform probability distribution" is a special case of random. Most random quantities are far from uniform. The Python random module includes a couple of non−uniform distributions, including exponential distribution (random.expovariate) and the famous bell curve distribution (random.normalvariate).

One common distribution which seems to have been missed is the Poisson distribution, which applies to (among many, many others) the number of 18th Century Prussian cavalry officers who fell off their horse and broke a limb, and the number of cars arriving at a petrol station in any hour.

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Steven.

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