

## Re: Random number question?

**Source:** <http://sci.tech--archive.net/Archive/sci.math/2004-06/4755.html>

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**Date:** 06/21/04

Date: Mon, 21 Jun 2004 18:51:35 +0100

"Paul Allen Panks" <[panks@sdf.lonestar.org](mailto:panks@sdf.lonestar.org)> wrote in message  
news:cb5umk\$por\$1@chessie.cirr.com...

> *How does HLA's random number generator differ from traditional BASIC's  
> version? I've long based much of my adventure gaming on random numbers,  
> especially during player/monster fighting. Does seeding a number truly  
> make it random, or only quasi-random?*

>

> *Let's say I have a number between 1 and 35. What guarantee do I have that  
> the computer won't habitually (or accidentally) pick the same range of  
> numbers twice? Or the same individual number twice?*

>

> *To find out, I wrote a simple QBasic program below:*

>

> *1 CLEAR*

> *5 CLS : PRINT "Random Number test"*

> *10 FOR x = 1 TO 10*

> *20 RANDOMIZE TIMER*

> *30 i = INT(RND \* 35) + 1*

> *40 PRINT i*

> *45 NEXT x*

>

> *The program was run three separate times, with the following results:*

>

> *Test #1*

> *Random Number test*

> *27*

> *25*

> *17*

> *31*

> *24*

> *18*

> *27*

> *34*

> *23*

> *22*

>

> *Test #2*

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```
> Random Number test
> 32
> 29
> 21
> 35
> 29
> 22
> 32
> 4
> 27
> 27
>
> Test #3
> Random Number test
> 21
> 18
> 10
> 24
> 17
> 11
> 21
> 28
> 16
> 16
>
> Ah oh...the last two tests repeated the last two sets of numbers not once
> but TWICE! That's not good!
>
> Now for the same program in HLA:
>
> program random;
> #include ("console.hhf");
> #include ("stdlib.hhf");
> #include ("math.hhf");
> static
> i:int32:=0;
> x:int32:=0;
> begin random;
> console.cls();
> stdout.put("Random number test",nl);
> start:
> add(1,x);
> rand.randomize();
> rand.urange(1,35); // pick a random number, 1 through 35
> mov(eax,i); // move it into i variable
> mov(i,eax); // set i to eax value
> stdout.put(i,nl);
> if(x<10) then
> jmp start;
> endif;
> end random;
```

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- >
- > *The HLA version gives the following 3 results:*
- >
- > *Test #1*
- > *Random number test*
- > 29
- > 24
- > 11
- > 19
- > 22
- > 8
- > 27
- > 33
- > 27
- > 28
- >
- > *Test #2*
- > *Random number test*
- > 19
- > 4
- > 32
- > 30
- > 23
- > 34
- > 24
- > 20
- > 20
- > 30
- >
- > *Test #3*
- > *Random number test*
- > 35
- > 26
- > 29
- > 17
- > 26
- > 18
- > 33
- > 29
- > 19
- > 1
- >
- > *Some repeats, but not as bad as before.*
- >
- > *Is there a way to truly limit the number of repeats during a set of random*
- > *number generation? I can foresee a lot of random numbers in my own mind,*
- > *but they have to be truly, truly random for the random number generator to*
- > *be doing a good job.*
- >
- > *Any ideas as to why both sets of random number generators seem different*
- > *in functionality?*

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>  
> *Sincerely,*  
>  
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>  
> --  
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I needed a reliable RNG that didn't throw up repeats as I wanted to simulate a large DNA profile database using totally randomly generated 'alleles'. Each profile consisting of 20 random selections from (an average of ) 12 integres in effect.

I had to throw out 2 other versions as they produced repeating sequences when called 100,000s of times. I was calling the RNG 80 million times in sequence and other runs sampling from 200 million and checking for matches. The last thing I wanted was the RNG throwing up repeats as it was probality of accidental chance matches I was interested in. All matches produced were not a manifest of repeats in the RNG using this RNG form, and  $0 < p < 1$

\*\*\*\*\*

Randomize

$z = 2^{24}$   
 $a = 214013$   
 $c = 2531011$   
 $x0 = \text{Timer}$

$\text{temp} = x0 * a + c$   
 $\text{temp} = \text{temp} / z$   
 $x1 = (\text{temp} - \text{Fix}(\text{temp})) * z$   
 $x0 = x1$   
 $p = x1 / z$

\*\*\*\*\*

The above generator using VB and Word97 sort macro etc ( apologies, I'm not a programmer ) simulation of large DNA profile database <http://www.nutteing2.freesevers.com/dnas5.htm> or nutteingd in a search engine

email nonarevers@yahoo.co.....uk (remove 4 of 5 dots)