Subject: Re: Generate Same Sequence of Random Numbers in IDL and C
Posted by Michael Galloy on Tue, 22 Jul 2014 18:07:37 GMT
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On 7/22/14, 10:21 AM, sweiss1993@gmail.com wrote:
> Hi Mike,
>
> Thanks for the reply! I seeded the way you described, and there is
> still a difference in the random number output for each program. To
> be specific, I seeded both with a constant integer of 4357 (default
> seed for GSL's RNG). I also made sure the seed was not reinitialized
> with every loop iteration. Both programs now have a constant output
> every time the program runs. However, the outputs from the programs
> do not match each other. On closer inspection, I noticed that the
> first random numbers match, but after the next iteration, they are
> not the same.
>
> Since both programs use the same number generator and start with the
> same seed, I am guessing there must be a difference in how GDL
> changes the seed with each call. So, do you or anyone happen to know
> how exactly IDL/GDL changes the seed for a constant seed input? I
> have read the documentation, and attempted to read the GDL C++ source
> code, but neither have been much help in this regard.
>
> - Sam
>

I get the same values:

```
IDL> mg_gsl_rng_test
% Compiled module: MG_GSL_RNG_TEST.
% Loaded DLM: MG_GSL.
      0.12696983
      0.51491326
      0.96671784
      0.89812542
      0.26047601
      0.70582012
      0.89723652
      0.77882970
      0.37674972
      0.93162251
     0.126970    0.514913    0.966718    0.898125    0.260476
     0.705820    0.897237    0.778830    0.376750    0.931623
```

Here is the source code for the test:

```
pro mg_gsl_rng_test
```

```
  compile_opt strictarr

  n = 10L
  original_seed = 123456ULL
  seed = original_seed

  mg_gsl_rng_env_setup
  t = mg_gsl_rng_mt19937()
  r = mg_gsl_rng_alloc(t)
  mg_gsl_rng_set, r, seed

  for i = 0L, n - 1L do begin
    print, mg_gsl_rng_uniform(r)
  endfor

  seed = original_seed
  print, randomu(seed, n)
end
```

I tested generating the values one at a time in IDL as well and it is still the same.

The bindings to call the GSL RNG functions, i.e., mg_gsl_rng_env_setup, mg_gsl_rng_mt19937, mg_gsl_rng_alloc, mg_gsl_rng_set, and mg_gsl_rng_uniform are in my library:

  http://github.com/mgalloy/mglib

Mike
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